

Integrating Environmental Education into Eco-Tourism Operations in Selected Tourist Sites in Cross River State.

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Abstract

This study examined the integration of environmental education (EE) into eco-tourism operations in selected tourist sites in Cross River State, Nigeria, with particular focus on tour guides' environmental knowledge and management support programmes. Anchored in the growing recognition of eco-tourism as a pathway to sustainable development, the study adopted a correlational research design. A proportionate stratified random sampling technique was used to select 250 respondents from eco-tourism host communities. Data were collected using a validated 28-item structured questionnaire with reliability coefficients ranging from .69 to .89 (Cronbach's alpha). Simple linear regression analysis was employed to test the hypotheses. Findings revealed a statistically significant negative relationship between tour guides' environmental knowledge and the integration of EE into eco-tourism operations ($R^2 = .112$, $p < .001$), indicating a gap between knowledge acquisition and practical application. Conversely, management support programmes were not found to significantly predict EE integration ($R^2 = .000$, $p > .05$). The results suggest that while human capacity—particularly the knowledge base of tour guides—plays a critical role in eco-tourism operations, institutional and structural mechanisms may constrain effective translation of knowledge into practice. The study concludes that strengthening capacity-building initiatives, institutional policies, and practical implementation frameworks is essential for embedding environmental education into eco-tourism operations and enhancing sustainability outcomes in Cross River State.

Keywords: Environmental education, eco-tourism operations, tour guides' environmental knowledge, management support programmes, sustainability, Cross River State.

Introduction and background

Eco-tourism has emerged as a significant sector within the broader tourism industry, emphasizing responsible travel to natural areas that conserve the environment and improve the well-being of local communities. This form of tourism seeks to minimize the ecological footprint of travelers while promoting conservation efforts, cultural understanding, and sustainable economic development. As global awareness of environmental issues grows, eco-tourism has gained traction as a viable alternative to traditional tourism, which often contributes to environmental degradation and cultural exploitation. In Nigeria, eco-tourism holds immense potential due to the country's rich biodiversity, unique ecosystems, and diverse cultural heritage. The nation is home to numerous national parks, wildlife reserves, and cultural sites that attract both local and international tourists (Nwankwo & Iwu, 2022). However, the successful implementation of eco-tourism operations requires a comprehensive understanding of sustainable practices, community involvement, and effective management strategies. Integrating environmental education into eco-tourism initiatives is essential for fostering a culture of conservation and enhancing the experiences of visitors.

Despite its potential, the eco-tourism sector in Nigeria faces several challenges that hinder its growth and effectiveness. Issues such as inadequate infrastructure, limited awareness of eco-tourism principles, insufficient training for tour operators, and a lack of collaboration among stakeholders pose significant barriers to the successful integration of eco-tourism operations. Addressing these challenges is

crucial for maximizing the benefits of eco-tourism, ensuring the sustainability of natural resources, and promoting socio-economic development in local communities (Rezaeinejad & Khaniwadekar, 2021). In regions endowed with rich biodiversity and cultural heritage, such as Cross River State in Nigeria, eco-tourism serves not only as an economic driver but also as a medium for environmental education. The integration of eco-tourism operations in Nigeria is fraught with challenges that limit its effectiveness and sustainability. First, there is a pervasive lack of awareness and understanding of eco-tourism principles among key stakeholders, including local communities, tour operators, and government officials. Many stakeholders may not fully recognize the benefits of eco-tourism or how to implement sustainable practices effectively.

Environmental education is increasingly recognized as a vital component of sustainable development, particularly in the context of tourism. It aims to inform and engage individuals about environmental issues, fostering a sense of responsibility towards the environment. In Nigeria, with its rich biodiversity and diverse cultural heritage, integrating environmental education into tourist sites is essential for promoting conservation and sustainable tourism practices (Eze, 2021). The country boasts numerous tourist attractions, including national parks, wildlife reserves, and cultural heritage sites, which can benefit significantly from enhanced environmental education initiatives. The integration of environmental education in selected tourist sites can empower both tourists and local communities by raising awareness about ecological conservation and responsible tourism practices. By educating visitors on the importance of preserving natural resources and cultural heritage, stakeholders can encourage environmentally friendly behaviors that contribute to the sustainability of these sites. Furthermore, local communities can benefit economically from eco-tourism while preserving their cultural identities and natural environments (Nwankwo, 2021). However, despite the potential benefits, the implementation of effective environmental education programs in Nigeria's tourist sites faces numerous challenges. These challenges include inadequate training for tour guides, insufficient educational materials, lack of collaboration among stakeholders, and limited awareness of the importance of environmental education in tourism. Addressing these issues is critical for enhancing the effectiveness of environmental education initiatives and ensuring the sustainability of Nigeria's tourist attractions.

The integration of environmental education into selected tourist sites in Nigeria presents several challenges that hinder its effectiveness and overall impact. First, there is a significant gap in the availability and quality of educational resources aimed at both tourists and local communities. Many tourist sites lack well-developed educational materials and programs that effectively communicate the importance of environmental conservation and sustainable practices (Ogunyemi, 2023). This deficiency limits the ability of visitors to engage meaningfully with the ecological and cultural significance of the sites they visit. The training of tour guides and local educators is often inadequate, resulting in a lack of knowledge and skills necessary to deliver effective environmental education. Tour guides play a crucial role in shaping tourists' experiences and perceptions; however, many lack training in environmental issues and sustainable tourism practices. This gap can lead to misinformation and a failure to inspire tourists to adopt environmentally responsible behaviors. Also, there is often insufficient collaboration among stakeholders, including government agencies, non-governmental organizations, educational institutions, and local communities. Effective integration of environmental education requires a coordinated approach that brings together various stakeholders to develop and implement comprehensive educational programs. The absence of such collaboration can result in fragmented efforts and missed opportunities for sharing resources and expertise.

Additionally, there is a lack of awareness among tourists regarding the significance of environmental education in enhancing their travel experiences and contributing to the sustainability of tourist sites. Many travelers may not recognize the impact of their actions on the environment and local communities, leading to behaviors that can harm the very ecosystems they seek to enjoy. Finally, empirical research on the current state of environmental education integration in Nigeria's tourist sites is limited.

Understanding the perspectives of various stakeholders, including tourists, tour operators, and local communities, is essential for identifying barriers to effective integration and developing strategies to promote environmental education.

Environmental education (EE) is a vital component of sustainable development, aimed at equipping individuals and communities with the knowledge, skills, and values necessary to engage with environmental issues critically and responsibly. It encompasses a wide range of topics, including biodiversity conservation, climate change, pollution, resource management, and sustainable practices (Eze & Uche, 2022). As global environmental challenges intensify, such as climate change, deforestation, and loss of biodiversity, the need for effective environmental education has become increasingly urgent. The area of environmental education considered in this study includes tour guides, management support programs, tourist awareness programs, government management programs, availability of educational materials, and infrastructure.

The level of tour guides' environmental knowledge refers to the extent of understanding and awareness that tour guides possess regarding ecological principles, conservation practices, and the environmental significance of the areas they operate in. Tour guides play a pivotal role in the eco-tourism experience, acting as intermediaries between the natural environment and tourists. Their level of environmental knowledge significantly influences the effectiveness of environmental education delivered during tours. In Nigeria, where eco-tourism is gaining traction due to its rich biodiversity and cultural heritage, the knowledge base of tour guides is crucial for promoting conservation and sustainable practices among tourists (Adebayo, 2020). As eco-tourism aims to educate visitors about ecological issues and foster responsible behaviors, the integration of environmental education into tour guides' training is essential. Tour guides equipped with comprehensive environmental knowledge can provide tourists with valuable insights into local ecosystems, conservation efforts, and the impact of human activities on the environment. This knowledge not only enhances the tourists' experience but also encourages them to engage in environmentally responsible behaviors.

Management support refers to the commitment and resources provided by the leadership of eco-tourism enterprises to promote and facilitate the integration of environmental education into their operations. This concept involves the actions taken by management to prioritize environmental education within eco-tourism initiatives. It includes providing training for staff, allocating financial resources for educational materials, and fostering a culture of sustainability within the organization. Effective management support is crucial for ensuring that environmental education is not only integrated into the operational framework but also embraced by all stakeholders involved in eco-tourism. Management support programs are a critical factor in the successful integration of environmental education into eco-tourism operations. Effective management can foster a culture of sustainability within eco-tourism enterprises, ensuring that environmental education is prioritized and adequately implemented. In Nigeria, where eco-tourism is still evolving, the role of management support in facilitating environmental education initiatives is crucial for promoting sustainable practices and enhancing the visitor experience.

The findings of this study will be beneficial to the following stakeholders: Tourism policymakers and government agencies, Eco-tourism site managers (both government and private), Tour guides and tour operators, Environmental educators and curriculum developers, Tourists and local communities, Researchers and academics.

Statement of the problem

Despite the growing recognition of eco-tourism as a pathway to sustainable development, the integration of environmental education into eco-tourism operations in Cross River State remains limited and uneven. In Nigeria, with a population exceeding 200 million, the pressure on natural resources is immense, leading to environmental degradation and unsustainable practices. Integrating environmental

education into formal and informal education systems in the culture of conservation is inadequate, empowering individuals to make informed decisions. Many educational institutions lack comprehensive EE programs, resulting in a generation of students who are ill-equipped to understand and address environmental issues. This deficiency in the curriculum can lead to a lack of awareness and engagement among young people regarding the importance of environmental stewardship. Most tourist sites lack structured environmental education programs that can inform, engage, and inspire both tourists and local stakeholders toward conservation-friendly behaviors. Furthermore, management support for environmental education varies widely across sites, affecting the quality and consistency of educational interventions.

Tourist awareness programs, which are essential for promoting environmental consciousness, are often insufficient or poorly implemented. The disparity between government-managed and privately-managed tourist sites in terms of educational priorities and resources further complicates efforts to deliver cohesive environmental education experiences. Additionally, the lack of adequate educational materials and infrastructure—such as interpretive signage, brochures, visitor centers, and multimedia tools limits the capacity of eco-tourism sites to provide meaningful learning opportunities. Without the deliberate integration of environmental education into eco-tourism practices, the potential of tourism to contribute to conservation and sustainability in Cross River State may remain unrealized. This study seeks to assess the extent to which environmental education is embedded in eco-tourism operations across selected tourist sites, examining key variables such as tour guides' environmental knowledge, management support, tourist awareness programs, site ownership, and the availability of educational infrastructure. Addressing these gaps is essential for enhancing the sustainability and educational value of eco-tourism in the region.

Purpose of the study

The purpose of this study is to examine the relationship between environmental education and integration eco-tourism operations in selected tourist sites in Cross River State, Nigeria. Specifically, the study seeks to:

1. Determine the relationship between the level of integration of tour guides' environmental knowledge and the eco-tourism operations.
2. Investigate the relationship between integration of management support programme and eco-tourism operations.

Research hypotheses:

The following research hypotheses were formulated to guide the study:

1. There is no significant relationship between the level of integration of tour guides' environmental knowledge and the eco-tourism operations in selected tourist sites in Cross River State.
2. There is no significant relationship between integration of management support and the eco-tourism operations in selected tourist sites in Cross River State.

Literature review

Integration of tour guides' environmental knowledge and the eco-tourism operations.

In a study on tourist attitudes at Okomu National Park in southwest Nigeria, Digun-Aweto and Fawole (2016) examined 400 tourists to assess their experience with ecotourism services and guide-led conservation interpretation. The objective was to identify how tourists perceive ecotourism and to determine whether tour guides sensitized visitors about conservation and responsible behaviour. The

research design was quantitative and cross-sectional. Structured questionnaires were administered on site, and data were treated and analysed using SPSS with descriptive statistics (percentages and means). Results showed that 91.4% of tourists indicated that park tour guides actively sensitized them about ecotourism and conservation goals, including how to behave responsibly in protected areas. Moreover, 92% of respondents reported improved awareness of conservation due to interactions during their visits. The authors concluded that tour guides' environmental interpretation significantly shapes tourists' conservation awareness and positive attitudes towards eco-tourism, highlighting the educational role of guides in sustainable tourism operations at the park.

In the study *Tourists' Choice for Tour Guides in Enhancing Site Experience at Lekki Conservation Centre, Lagos State*, Abidakun and Tunde-Ajayi (2021) investigated how tourists perceived the effectiveness of tour guides in supporting their ecotourism experience at a natural conservation centre. The objective was to determine tourists' preference for guided tours and their perception of tour guide services. The design was empirical, using a purposive sample of 100 tourists who completed structured questionnaires. Data were analysed with descriptive and inferential statistics, including t-tests and ANOVA to explore differences in perceptions across socio-demographic groups. Findings revealed that a large majority of tourists preferred guided tours and were satisfied with services; tour guides interacted effectively with visitors, answered questions, and enhanced site interpretation. Inferential tests showed statistically significant differences in perceived guide effectiveness based on tourists' characteristics, demonstrating that guide-led environmental interpretation affects tourists' satisfaction and site experience. The authors concluded that tour guides play a crucial educational role in enhancing eco-tourism experiences and should be supported by destination managers.

In the study evaluating tourist satisfaction with ecotourism services across six destinations in southwest Nigeria, Adesunloye and Arowosafe (2025) sought to measure how various service attributes, including guided educational tour services, interpretative facilities, and educational signage, influence visitor satisfaction. A total of 320 well-structured questionnaires were administered, and data were analysed using descriptive statistics and inferential tests controlling for relationships between service components and satisfaction. Among the determinants of tourist satisfaction, guided educational tour services (60.0%), educational guides for tourists (57.5%), and interpretative facilities (56.7%) were all identified as key contributors. While this study did not isolate tour guide knowledge as a single variable, the prominence of guided tours and educational interpretation among satisfaction drivers empirically shows that visitors value environmental interpretation and guide-related education as part of eco-tourism services. The authors concluded that such guided and interpretive services should be strengthened to improve sustainability and tourists' willingness to revisit.

A Lekki Conservation Centre's tourist perception study by Edwin and Eneloke (2021) primarily examined general service attributes at a conservation site, its methodology and findings indirectly support the role of interpretive and guide-related services in eco-tourism integration. Using a structured questionnaire with 300 domestic and inbound tourists, analyzed with descriptive statistics, the study found that visitors' experiences were influenced by the quality of services, including navigation, interpretation, and environmental education elements embedded within services offered at the site. While the authors focused on overall perception, the implication is that interpretive capacity, often delivered through guides and educational programming affects tourists' eco-tourism experiences and perceptions of destination quality, underscoring the importance of interpretive content (including environmental knowledge) within eco-tourism operations.

Related research by Onnoghen et al. (2025) examined eco-volunteerism and environmental engagement as strategies to enhance eco-tourism in Nigeria. This study used field observation and participative qualitative methods to explore how environmental education activities, including guided eco-activities, interpretation sessions, and volunteer participation, contribute to sustainable tourism outcomes. The findings highlighted

that environmental education and engagement activities strengthen tourists' understanding of conservation issues, promote responsible behaviours, and support community involvement. The study concluded that incorporating educational and interpretive roles, including tour guides acting as environmental educators, enhances eco-tourism integration and sustainability at Nigerian destinations.

In the study by Abidakun and Tunde-Ajayi (2021) at Lekki conservation Centre, Lagos State, the authors investigated tourists' choice and perception of tour guide services and how these influence site experience. The objective was to determine tourists' preference for guided tours and their perception of the effectiveness of tour guides in enhancing environmental and interpretive understanding at an ecotourism destination. The research design was quantitative, using a structured questionnaire administered to 100 purposively sampled tourists at Lekki Conservation Centre. Data were analyzed using descriptive statistics and inferential tests to examine tourists' perceived effectiveness of guides based on socio-demographic characteristics. The study reported that a majority of tourists preferred tours with guides and were satisfied with guide communication, interpretation of environmental information, and answers to visitors' questions. Findings showed high mean scores on items such as guide interaction and explanation of site features, indicating that guides contributed significantly to visitors' enjoyment and understanding of the destination. The authors concluded that tour guides enhance tourists' overall experience and recommended that tour guide services be strengthened to support eco-tourism operations and sustainability at nature-based sites like Lekki Conservation Centre (Abidakun & Tunde-Ajayi, 2021).

In a by Aniramu, et al (2025), the researchers examined sustainable tourism and ecotourism practices across multiple Nigerian ecodestinations using a mixed methods design that included structured surveys with tourists and empirical analysis of ecotourism practice variables. One of the variables in the structural model was eco-tour guide practice, measured alongside environmental conservation and eco-friendly amenities. The study used semi-structured questionnaires with 290 local and international tourists, analysed through Structural Equation Modeling (SEM) to test hypothesized relationships. The ecotourism practice component, which included eco-tour guide practice (e.g., environmental interpretation and guiding services), was found to be significantly related to tourism development agenda and tourist satisfaction (e.g., practice significance at $p \leq 0.05$). The study concluded that eco-tourism practices, including guide-related roles, positively influence the broader tourism development agenda and should be integrated strategically to achieve sustainable growth at eco-destinations. These empirical results support the idea that tour guide environmental practices (part of guide knowledge and interpretation) are meaningful contributors to eco-tourism operational outcomes in Nigeria.

Tour guides play a pivotal role in the eco-tourism experience by serving as interpreters of environmental knowledge and facilitators of sustainable tourism behavior. Their environmental knowledge significantly influences how well environmental education is integrated into eco-tourism operations. Empirical studies across different contexts highlight the crucial function of guides in shaping tourists' environmental attitudes and practices through informed communication.

Üzülmez, İştin, and Barakazı (2023) conducted a study to examine the environmental awareness, ecotourism awareness, and ecotourism perception of professional tourist guides in Turkey. Recognizing that tourist guides serve as key actors in outdoor recreational activities, especially in ecotourism settings, the study aimed to identify the factors influencing their perceptions of ecotourism and their environmental attitudes.

The research employed a quantitative approach, collecting responses from 336 professional tourist guides actively operating across Turkey. Correlation analysis revealed predominantly positive relationships among various dimensions of environmental awareness. Furthermore, regression analysis indicated that both ecotourism awareness and knowledge significantly influenced perceptions of ecotourism's economic contributions.

The study makes a notable contribution to the literature by highlighting the role of tourist guides as both informants and facilitators of sustainable tourism practices. It emphasizes that raising environmental and ecotourism awareness among guides is critical to fostering a sustainable ecotourism model. The authors recommend future research to deepen understanding of the link between ecological awareness and tourism sustainability, especially within the framework of education and policy development for tourism professionals.

According to Weiler and Black (2015), knowledgeable tour guides are more effective in promoting environmental awareness and encouraging conservation behavior among tourists. In their study conducted in Australia, they found that tour guides who received targeted environmental training were better equipped to deliver interpretive messages that aligned with ecological conservation goals. This suggests a strong relationship between the depth of guides' environmental knowledge and the quality of environmental education disseminated during tours.

Similarly, Bacchus and Keo (2023) emphasized that environmental education in eco-tourism settings is most effective when delivered by guides who possess not only factual environmental knowledge but also the communication skills to translate that knowledge into engaging narratives. Their study, based on fieldwork in marine parks, revealed that guides with higher environmental literacy were more likely to influence tourists' post-visit conservation behavior, indicating a lasting impact of guide-led environmental education.

Samal and Dash (2023) conducted an integrative literature review to explore the relationships among ecotourism, biodiversity conservation, and local livelihoods. Recognizing ecotourism as a form of nature-based tourism, the authors argue that it serves two critical purposes improving the livelihoods of local communities and conserving biodiversity. The study aimed to understand where current research converges and diverges across these themes and to identify gaps for future research.

The authors adopted a two-pronged methodological approach. First, they conducted a descriptive analysis of literature published between 2002 and 2021, using a categorization framework to classify the studies. Second, they carried out a thematic content analysis to systematically evaluate the focus areas and trends in the ecotourism literature. The findings showed a growing interest in ecotourism, with most of the research originating from developing countries. However, the review also revealed that many of these nations face significant challenges in managing natural resources and implementing effective ecotourism practices.

A notable gap identified in the literature was the lack of empirical evidence concerning the actual functioning of ecotourism systems. Key elements such as the role of tour guides, the influence of governance structures, and the impacts of psychological, technical, and political variables were often overlooked. Furthermore, few studies addressed the implications of climate change and the carbon footprint associated with ecotourism, despite these being pressing global concerns.

To address these issues, Samal and Dash (2023) recommended the adoption of a "coexistence model," emphasizing community-based ecotourism (CBET) as a strategy to simultaneously promote conservation and community development. They also advocated for measuring the carrying capacity of tourist sites and offering vocational training to local populations to increase their participation in the ecotourism value chain. Additionally, the authors called for more attention to eco-certification and awareness of tourists' roles in sustaining ecotourism initiatives.

Overall, this study underscores the importance of integrating ecological, social, and economic considerations into ecotourism planning and implementation. Its findings are particularly relevant for developing regions like Cross River State, Nigeria, where eco-tourism holds potential for biodiversity preservation and community empowerment.

A study conducted by Zhang and Chan (2016) in Hong Kong showed that the effectiveness of eco-tourism interpretation was largely dependent on the guide's ability to present accurate and relevant environmental information. The research also noted that insufficient training and low environmental knowledge among guides resulted in missed opportunities for educational engagement and visitor learning. The study called for structured capacity-building programmes to enhance guides' competence in environmental communication.

In the African context, Brown (2020) investigated tour guiding in Botswana's protected areas and found that the environmental knowledge of local guides varied widely, affecting the consistency of environmental messages delivered to tourists. They highlighted a gap in formal training, suggesting that without a standardized framework for environmental education among guides, eco-tourism may fall short of its educational and conservation objectives.

In Nigeria, Eja, Ukwayi, and Ojong (2012) explored the factors that contribute to the success of Nigeria as a tourist destination, particularly in relation to tourist arrivals in various parts of the country. The study was motivated by the increasing relevance of Nigeria's environment in attracting international and domestic tourists, with notable hotspots such as Lagos and Cross River State drawing significant attention. The researchers aimed to critically assess the success factors influencing tourism inflow and to provide a foundational database that could assist policymakers in shaping effective tourism development strategies.

The study covered fifteen states across Nigeria and utilized a large-scale survey method. A total of 1,500 questionnaires were distributed among residents living near prominent tourist attractions. In addition, data were sourced from tourism bureaus and site managers. The researchers employed both dynamic panel analysis and ordinary least squares (OLS) regression to analyze the data collected. The findings revealed that tourist arrivals in Nigeria are influenced not only by endogenous (internal) and exogenous (external) factors but also by experiential components, such as tourists' personal experiences, and the quality of infrastructure at tourist sites. These insights indicate that beyond macroeconomic stability and environmental appeal, Nigeria's tourism potential is heavily dependent on the provision of functional social and economic amenities that enhance the visitor experience. The study concludes by emphasizing the importance of infrastructure development, tourist satisfaction, and consistent government support. For Nigeria to fully harness the economic benefits of tourism, the authors argue that there must be a concerted effort to improve infrastructural facilities and stabilize the broader socio-economic environment.

Similarly, Iwuchukwu (2024) conducted a qualitative study to examine the socio-economic impacts and the extent of community engagement in the Cross River State National Park, with a particular focus on their implications for tourism development in Nigeria. Tourism, recognized globally as one of the fastest-growing economic sectors, often thrives on natural and environmental resources such as scenic landscapes, wildlife, and cultural heritage. The Cross River State National Park, established in 1991, represents one of Nigeria's premier eco-tourism destinations, known for its rich biodiversity and ecological significance. However, for tourism in such protected areas to be sustainable, the involvement of local communities is essential.

The study employed qualitative methods, drawing data from various sources including archival records, published journals, museum materials, and observations from both local residents and park visitors. Findings revealed that the park contributes positively to the socio-economic well-being of nearby communities, particularly through employment creation and income generation from eco-tourism-related activities. Residents benefit directly and indirectly from tourism-related services such as guiding, crafts, lodging, and transportation. Despite these benefits, the study also identified key challenges. Notably, community engagement in park management was found to be limited, and there was an apparent inequity in the distribution of tourism benefits. These issues have the potential to undermine the local population's support for conservation efforts and sustainable tourism development. The research emphasized that for

eco-tourism to flourish and contribute meaningfully to conservation and community development, local stakeholders must be included in decision-making processes and benefit-sharing mechanisms.

Iwuchukwu (2024) concluded by recommending strategies for enhancing community participation, including the development of inclusive governance structures, equitable benefit-sharing frameworks, and education initiatives aimed at empowering local populations. He also stressed the importance of promoting responsible tourism practices that not only protect ecological resources but also prioritize the well-being of host communities. These measures are considered critical to ensuring the long-term sustainability of the Cross River State National Park and the broader tourism sector in Nigeria.

Periera (2005) explores the critical role that tourist guides play in adding value to ecotourism experiences, particularly through interpretation in the State of Amazonas, Brazil. The study highlights that in ecotourism—where the experience is largely intangible—the quality of interpretation delivered by the guide significantly shapes tourists' perceptions and satisfaction. By framing narratives, providing context, and connecting visitors to the ecological and cultural significance of the site, guides help to differentiate one ecotour from another. The paper argues that the guide's interpretive skill essentially defines the ecotourism product, influencing not only visitor experience but also attitudes toward sustainable practices. In this sense, guides can either promote environmental stewardship or hinder sustainability if poorly trained. The research critiques the status of tourist guides in Amazonas, noting deficiencies in their interpretive training, organizational structure, and working conditions. Periera calls for improved training and professional support for guides, emphasizing that their role is not only to inform but also to inspire responsible tourism behavior.

Furthermore, Makopondo and Onyango (2021) explored eco-tourism in Kenya and reported that the professional qualifications and environmental knowledge of guides influenced both tourist satisfaction and the achievement of sustainable tourism outcomes. Guides who were well-versed in conservation issues were not only more effective in environmental interpretation but also perceived as more credible and trustworthy by tourists.

Taken together, these empirical studies underscore the importance of enhancing tour guides' environmental knowledge as a strategic component of eco-tourism management. Integration of environmental education into eco-tourism is not merely about the availability of educational materials or signage, but also about the capacity of human resources—particularly guides—to communicate environmental values meaningfully. In contexts like Cross River State, where biodiversity is high but eco-tourism education is still evolving, training guides to function as educators is critical for long-term sustainability and conservation success.

Integration of Management support programme and eco-tourism operations.

In the study of eco-tourism management at Cross River National Park, Ojo (2019) examined the role of management support in promoting sustainable eco-tourism practices. The objective of the study was to determine how administrative policies and managerial involvement influence the integration of eco-tourism operations, particularly regarding guided tours, environmental education, and resource allocation. The research adopted a descriptive survey design involving 150 park staff and 250 tourists. Data were collected using structured questionnaires and in-depth interviews. Responses were coded, cleaned, and analyzed using SPSS, employing descriptive statistics and correlation analyses to determine relationships between management support and operational effectiveness. The findings revealed that parks with active managerial oversight, such as providing training to guides, maintaining interpretive trails, and supplying educational materials, experienced higher tourist satisfaction and more consistent conservation messaging. The study concluded that management support is critical in ensuring eco-tourism operations are well-integrated, sustainable, and educationally effective.

Nwachukwu (2020), the researcher investigated how management practices influence the delivery of eco-tourism services and environmental interpretation. The study aimed to evaluate whether administrative support and oversight affect tourist engagement and guide-led educational programs. A mixed-method research design was employed, involving 120 tourists and 40 site staff, with data collected through structured questionnaires and key informant interviews. Data were analyzed using descriptive statistics and thematic analysis, with Pearson correlation used to assess the relationship between management support and tourist satisfaction. Results indicated that managerial interventions, including staff training, provision of safety measures, and supervision of interpretive programs, significantly improved the quality and consistency of eco-tourism delivery. Nwachukwu concluded that management support is a key determinant of eco-tourism integration, ensuring that visitor experiences align with environmental conservation objectives.

Obudu Mountain Resort, Afolabi (2021) examined the impact of management policies on eco-tourism sustainability and operational integration. The study aimed to identify how managerial involvement affects guide training, resource allocation, and interpretive services. The research adopted an ex-post facto design with a sample of 200 tourists and 50 resort staff. Data were collected via structured questionnaires and observational checklists. The responses were treated through coding and analyzed using SPSS, employing descriptive statistics, cross-tabulations, and regression analysis. The study found that management support, demonstrated through proper allocation of resources, scheduling of guided tours, and supervision of environmental programmes, was positively correlated with effective eco-tourism integration and enhanced visitor satisfaction. Afolabi concluded that without active management support, eco-tourism objectives are difficult to achieve, as operational practices may lack consistency and environmental messaging may be weakened.

Okomu National Park, Ifeoma C. Eze (2022) investigated the relationship between administrative support and the delivery of eco-tourism services. The study specifically focused on whether the presence of managerial policies and oversight influenced the effectiveness of tour guide educational programs and the implementation of conservation practices. A descriptive survey design was used with 100 park officials and 150 tourists, and data were collected via structured questionnaires and semi-structured interviews. Analysis involved descriptive statistics and regression modeling to determine the strength of the relationship between management support and eco-tourism integration. Findings revealed that managerial activities, including supervising guides, providing interpretive signage, and facilitating environmental workshops, enhanced both tourist learning and sustainable site management. The study concluded that management support is essential for embedding eco-tourism practices in routine site operations and for achieving sustainability goals.

In the study of Idanre Hills Eco-Tourism Site, Adeyemi (2023) explored the role of management support in integrating eco-tourism into site operations. The study's objective was to examine how managerial involvement influences staff training, interpretive programming, and the consistency of eco-tourism services delivered to visitors. A cross-sectional survey design was used, involving 80 staff members and 180 tourists. Data collection was through structured questionnaires and observational checklists. Data were coded, cleaned, and analyzed using descriptive statistics and Spearman correlation analysis. Results showed that management interventions, such as providing environmental education resources, supervising guides, and monitoring tourist activities, significantly improved both visitor satisfaction and adherence to eco-tourism guidelines. Adeyemi concluded that managerial support is vital for the operationalization and sustainability of eco-tourism, ensuring that educational and conservation objectives are consistently achieved.

Management support is a critical determinant of the success of environmental education integration in eco-tourism operations. The extent to which eco-tourism managers prioritize, fund, and implement environmental education strategies often determines whether eco-tourism sites serve as platforms for

conservation learning or merely leisure destinations. Empirical evidence from multiple studies highlights that managerial commitment and institutional support significantly influence the implementation and sustainability of environmental education in tourism settings.

Saurombe, du Plessis, and Swanepoel (2018) developed an integrated managerial framework aimed at fostering an ecotourism culture in Zimbabwe. Recognizing the country's untapped potential as an ecotourism destination, the authors argue that cultivating a shared ecotourism culture among stakeholders can revitalize the industry and contribute to socio-economic development. Using a qualitative, exploratory, and interpretive approach, the researchers conducted semi-structured interviews with ten ecotourism experts across three managerial levels in Zimbabwe. The data were analyzed using grounded theory, which allowed for the emergence of themes and patterns grounded in participants' responses.

Findings revealed a general awareness among managers of what constitutes an ecotourism culture. However, implementation is hindered by leadership deficits, lack of clear guiding principles, and weak compliance mechanisms. In response, the authors proposed a conceptual framework using a tree metaphor, with five key strategies and guiding principles representing different components (e.g., roots, branches) necessary for cultivating and sustaining ecotourism culture at both strategic and operational levels.

The study underscores the importance of clear leadership, participatory planning, policy coherence, and institutional capacity in driving ecotourism performance. It provides a practical tool for tourism managers and policymakers seeking to embed ecotourism principles into Zimbabwe's tourism governance and practice.

In his chapter titled *The Management of Ecotourism as a Way of Contributing to the Development of Protected Areas of Cuando Cubango-Angola*, Ezaquias (2022) explores the critical role that ecotourism can play in fostering sustainable development within Angola's protected areas, particularly in the Cuando Cubango region. Ezaquias argues that ecotourism management must be rooted in an integrated system that combines political and institutional coordination, meaningful local community participation, recognition of endogenous potential, and multidimensional interpretations of ecotourism. The chapter presents a structured five-stage procedure for ecotourism management, designed to guide efforts toward sustainable outcomes. These stages include preparation, diagnosis, definition of key success factors, setting of objectives and actions, and a continuous process of evaluation and monitoring. Each stage is interlinked and reinforced through feedback mechanisms to ensure adaptability and responsiveness to local needs and conditions.

To develop and validate the proposed procedure, the study employed both scientific and empirical research methods, utilizing data collection tools and analytical techniques. The procedure was assessed by a panel of experts who deemed it highly relevant and useful for informing decision-making processes related to ecotourism and conservation in the region. Ultimately, Ezaquias emphasizes that well-managed ecotourism can contribute meaningfully to the development of protected areas, provided that it is implemented through a participatory, coordinated, and strategically guided approach.

Similarly, Ballantyne, Packer, and Falk (2011) examined how wildlife tourism experiences contribute to visitors' environmental learning and behavioral change, both immediately after the experience and over the long term. Using structural equation modelling, the researchers analyzed data from multiple tourism sites to determine which factors most significantly influenced these outcomes. The study identified three key sets of variables: visitors' pre-visit attributes (such as environmental values and learning motivations), aspects of the tourism experience, and the resulting educational and behavioral impacts.

The findings showed that visitors who entered the experience with strong environmental values and a motivation to learn were more likely to report long-term behavioral changes. However, the study also emphasized the importance of reflective engagement during the experience—both cognitive and emotional processing—which was significantly linked to positive short- and long-term outcomes. The authors

concluded that wildlife tourism can effectively promote environmental sustainability when it actively engages visitors in meaningful, reflective experiences. They recommended that tourism managers design interpretive programs that encourage such engagement to maximize educational and conservation benefits.

In the African context, a study by Robinson et al. (2021), the challenges associated with implementing community-based natural resource management (CBNRM) in pastoral rangelands were examined through a comparative analysis of five case studies—two each from Kenya and Ethiopia, and one from Tunisia. The researchers adopted a common data collection protocol across all sites, enabling a consistent and comparative approach. The study sought to understand why CBNRM approaches have yielded mixed outcomes in pastoral contexts, focusing particularly on the influence of the broader social-ecological landscape.

The findings reveal that several key factors shape the effectiveness of CBNRM initiatives in pastoral rangelands. Among these are the socio-political and biophysical characteristics of the larger landscape in which a community's rangeland territory is embedded. Specifically, the degree to which a community's rangeland is defined or limited by intersecting land uses, land tenure systems, major political borders, and physical landscape features plays a crucial role. The study emphasizes that in regions where pastoralist communities operate across expansive, open rangelands, a narrowly defined, community-level management approach is often insufficient. Instead, successful natural resource governance in such contexts requires multi-level, cross-community, and spatially adaptive interventions.

This research highlights the need for policy and practice to move beyond isolated community frameworks and to embrace flexible, integrative governance models that reflect the complexities of pastoral social-ecological systems.

Zheng, Xu, and Kong (2017) investigated the interrelationship between environmental education, knowledge management, and professional performance within the context of ecotourism. Recognizing the rising demand for leisure and cultural experiences among urban populations, the study focused on the Yongchun Niumulin Ecological Tourism Zone in China. Using a survey method, the authors collected data from 243 valid respondents comprising supervisors and employees within the ecotourism sector.

The study found significant positive correlations among three key variables: knowledge management and environmental education, environmental education and professional performance, and knowledge management and professional performance. These findings suggest that equipping ecotourism professionals with environmental knowledge and effectively managing this knowledge significantly enhances their job performance.

The study emphasizes the importance of integrating environmental education into staff training and using structured knowledge management strategies to support sustainable tourism growth. It also underscores the necessity of improving human resource capacity to promote both environmental conservation and tourism quality. The authors offer recommendations aimed at enhancing the sustainability and long-term development of domestic ecotourism operations.

Furthermore, research by Kiper (2013) in Turkey emphasized that managerial vision and commitment are essential for integrating sustainability principles into tourism. Management plays a vital role in determining whether environmental education is treated as a strategic priority or a peripheral activity. The study demonstrated that leadership with an environmental orientation was more likely to allocate budgets for educational programmes, partner with conservation organizations, and ensure that tourism development aligns with ecological preservation.

These empirical findings collectively point to the conclusion that management support expressed through vision, leadership, policy-making, resource allocation, and staff development is indispensable for the

integration of environmental education into eco-tourism operations. In the context of Cross River State, where eco-tourism potential is high, management support is critical for transforming tourist sites into hubs of environmental learning and awareness. Strengthening leadership involvement and institutional commitment can thus enhance the conservation and educational outcomes of eco-tourism in the region.

Methodology

The correlational research design was adopted for this study. The study is situated in Cross River State, located in the southern region of Nigeria. Geographically, the state lies between latitudes 4.27°N and 5.32°N, and longitudes 2.20°E and 7.50°E. As of 2025, the population of Cross River State was estimated at approximately 3,866,300 people (National Bureau of Statistics, 2025). The target population of this study is the total number of residents in host communities of eco-tourism hot-spots. This population includes tour guides, tourism site managers, staff, Tourists visiting the selected eco-tourism sites and other residents. Others are Site managers, Eco-tourism coordinators, Environmental education officers Staff responsible for tourism/environmental education planning or implementation. The eco-tourism destinations to be covered include the Cross River National Park, Agbokim Waterfalls (Etung), Kwa Falls (Akamkpa), Becheve Nature Reserve (Obanliku), Ikom Monoliths (Ikom), Drill Monkey Ranch (Calabar and Boki), Cross River National Park (Akamkpa), Afi Mountain Wildlife Sanctuary (Boki), Ikang Beach (Calabar), and the Obudu Cattle Ranch (Obanliku) with a total population of 139,398. This is shown on table 1.

Sampling techniques

The study utilized a proportionate stratified random sampling technique, which involved dividing the eco-tourism host communities into strata based on their population size and then selecting samples proportionally and randomly from each stratum. This approach ensures fair representation, enhances statistical accuracy, and supports valid comparisons across communities. The sampling proceeded based on the following steps:

Stratified Sampling: The total population was divided into strata based on host communities of identified eco-tourism sites (e.g., Obudu, Ikang, Afi).

Each stratum (host community) was treated as a distinct sub-population because of its unique ecological, cultural, and demographic characteristics relevant to eco-tourism and environmental awareness.

Proportional Allocation: The sample size for each host community was proportional to the size of its population relative to the total population across all strata.

This ensured that larger communities (e.g., Boki and Akamkpa) received a larger share of the total sample (400), while smaller communities (e.g., Etung and Bakassi) received smaller but proportionate samples.

Random Sampling within Each Stratum: After determining the sample size for each community, participants were randomly selected within each host community to avoid selection bias and ensure representativeness. The sample size for this study is 250 respondents.

Instrumentation

Data was obtained through structured questionnaire. A twenty-eight-item questionnaire called integrating environmental education into eco-tourism operations in selected tourist sites in Cross River State. The instrument was designed in three sections, “A,” “B” and “C” section. “A” consists of the respondents' socio-personal data while “B” consisted of twenty-one items and section “C” asked five questions on integration of environmental education into eco-tourism operations.

The instrument was face and content validated by experts in test and measurements and experts in environmental education. Cronbach alpha reliability method was used. The instrument was administered once on 35 inhabitants in 2 communities in Biase which were not part of the sample communities of this study. After the instrument was administered and retrieved from the respondents, they were coded, and the data subjected to statistical analysis using Cronbach alpha reliability scale. The reliability coefficient

estimates realized from the result were within the range of .69 to .89. This indicated that the instrument was consistent in measuring what it was expected to measure. Data were collected through a four-point Likert-type questionnaire administered in the sampled host communities by three trained assistants, with respondents assured of confidentiality and objectivity, and responses coded from 1 (strongly disagree) to 4 (strongly agree), including reverse scoring for negatively worded items.

Data were analysed hypothesis-by-hypothesis using simple linear regression to examine the relationships between tour guides' environmental knowledge and eco-tourism operations, as well as between management support programmes and the integration of environmental education into eco-tourism operations in selected tourist sites in Cross River State.

Results and discussion

Hypothesis one

There is no significant relationship between the level of integration of tour guides' environmental knowledge and the eco-tourism operations in selected tourist sites in Cross River State.

A simple linear regression analysis was conducted to examine the effect of tour guides' environmental education (EE) knowledge on the integration of environmental education in ecotourism operations. The result on table 1 indicated a statistically significant negative relationship between tour guides' EE knowledge and the integration of environmental education in ecotourism operations, $F(1, 248) = 31.17, p < .001$.

The model explained approximately 11.2% of the variance in the integration of environmental education ($R^2 = .112$, Adjusted $R^2 = .108$), suggesting that tour guides' EE knowledge accounted for a modest but meaningful proportion of the variation in the dependent variable.

The unstandardized regression coefficient ($B = -0.299, t = -5.58, p < .001$) revealed that for every one-unit increase in tour guides' environmental education knowledge, there was a corresponding 0.299-unit decrease in the integration of environmental education in ecotourism operations. This indicates an inverse relationship, implying that higher EE knowledge among tour guides is associated with slightly lower levels of integration of environmental education in ecotourism practices—an unexpected finding that may suggest issues such as insufficient institutional support or the lack of practical application opportunities despite knowledge acquisition.

Table: Summary of Simple Linear Regression Analysis of the relationship between the level of integration of tour guides' environmental knowledge and the eco-tourism operation

R	R Square	Adjusted R Square	Std. Error of the Estimate			
.334	.112	.108	.73803			
Source		Sum of squares	Df	Mean square	F-ratio	Sig.
Regression		16.980	1	16.980	31.174	.000
Residual		135.084	248	.545		
Total		152.064	249			
Predictor	B		Std. Error	Beta	T	Sig.
(Constant)	30.083		1.254	—	23.994	.000
Tour guide EE knowledge	-0.299		0.054	-0.334	-5.583	.000

a Dependent Variable: integration of Environmental Education into Ecotourism operation

b Predictors: (Constant), Tourism guide Environmental Education knowledge

Hypothesis two:

There is no significant relationship between integration of management support programmes and the ecotourism operations in selected tourist sites in Cross River State.

A simple linear regression analysis was conducted to determine whether management support significantly predicts the integration of environmental education (EE) in ecotourism operations. As shown on table 2, the result revealed that management support programmes was not a significant predictor of ecotourism operations, $F(1, 248) = 0.10, p = .758$.

The regression model explained virtually none of the variance in the dependent variable ($R = .020, R^2 = .000, \text{Adjusted } R^2 = -.004$), indicating that management support had no meaningful influence on the extent to which environmental education is integrated into ecotourism operations.

The unstandardized regression coefficient ($B = 0.017, t = 0.309, p = .758$) suggests that for every one-unit increase in management support, there is a corresponding 0.017-unit increase in the integration of environmental education. However, this relationship is statistically insignificant, indicating that variations in management support do not predict changes in the level of EE integration within ecotourism activities.

This implies that other factors beyond management support may be more critical in determining the degree to which environmental education is embedded in ecotourism operations.

Table 2 : Summary of Simple Linear Regression Analysis relationship between integration of management support programmes and the eco-tourism operations

R	R Square	Adjusted R Square	Std. Error of the Estimate		
.020	.000	-.004	.78290		
Source	Sum of squares	Df	Mean square	F-ratio	Sig.
Regression	0.059	1	0.059	0.096	.758
Residual	152.005	248	0.613		
Total	152.064	249			
Predictor	B	Std. Error	Beta	T	Sig.
(Constant)	22.700	1.257	—	18.054	.000
Management support	0.017	0.055	0.020	0.309	.758

a. Dependent Variable: integration of Environmental Education into Ecotourism operation

b. Predictors: (Constant), management support

Discussion of findings

Level of Tour Guides' Environmental Knowledge and the Eco-Tourism Operations

The result of the regression analysis revealed a significant negative relationship between tour guides' environmental knowledge and the eco-tourism operations ($\beta = -.334, t = -5.583, p < .001$). This suggests that higher levels of environmental knowledge among tour guides were associated with lower reported integration of environmental education within eco-tourism operations. Although this finding is statistically significant, its direction contrasts with expectations based on prior empirical literature.

Previous studies (Üzülmez, İştin, & Barakazi, 2023; Weiler & Black, 2015) emphasize that knowledgeable tour guides play a vital role in promoting environmental awareness and sustainable behavior among tourists. Üzülmez et al. (2023) found that environmental and ecotourism awareness among guides in Turkey significantly enhanced perceptions of ecotourism's contributions to sustainability. Similarly, Weiler and Black (2015) demonstrated that tour guides who underwent environmental training were more effective in communicating conservation messages to visitors.

The present finding, however, diverges from these results, possibly reflecting contextual or operational constraints within the study area. One plausible explanation is that while guides may possess theoretical environmental knowledge, such knowledge may not be effectively applied in daily eco-tourism operations due to inadequate institutional support, lack of interpretive tools, or limited opportunities for practice. Thus, although the relationship is significant, its inverse nature underscores a potential gap between knowledge and application within the local eco-tourism framework.

Integration of Management Support programmes and the Eco-Tourism Operations

The regression result indicated that management support had no significant effect on the eco-tourism operations ($\beta = .020, t = .309, p = .758$). This suggests that management commitment or administrative backing did not statistically predict the degree to which environmental education was embedded in eco-tourism practices across the studied sites.

This finding is not fully consistent with previous research emphasizing the centrality of management in facilitating environmental education and sustainable tourism outcomes. For instance, Saurombe, du Plessis, and Swanepoel (2018) found that leadership commitment and policy coherence were key to building an ecotourism culture in Zimbabwe. Likewise, Ezaquias (2022) stressed that effective management in

Angola's protected areas must integrate institutional coordination, community participation, and adaptive strategies for ecotourism success.

The insignificant relationship found in this study may reflect systemic weaknesses, including bureaucratic inefficiencies, unclear policy directives, or limited financial support for educational initiatives. As Ballantyne, Packer, and Falk (2011) argued, effective environmental learning within tourism settings depends not only on managerial intent but also on consistent operational practices and reflective engagement. Therefore, the current result may point to a disconnect between managerial policy and practical implementation of environmental education at the site level.

The findings of this study have several theoretical and practical implications for eco-tourism development and environmental education practice. First, the significant influence of tour guides' environmental knowledge underscores the importance of targeted capacity-building programmes to enhance their interpretive and communication skills for sustainability education. Second, the lack of significant influence of management type on environmental education integration suggests that both public and private eco-tourism operators have comparable potential to promote environmental awareness when supported by adequate institutional policies and resources.

This study concludes that effective integration of environmental education into eco-tourism operations is largely driven by the knowledge and awareness of human actors—particularly tour guides and tourists—rather than by management type or mere infrastructural availability. While management support and educational materials remain important, their impact depends on how effectively they are leveraged to promote learning.

Based on the findings, the following recommendations are made:

1. Capacity Building: Regular environmental training and certification programmes should be organized for tour guides to enhance their interpretive competence and sustainability communication skills.
2. Policy Strengthening: Eco-tourism managers—both public and private—should institutionalize policies that prioritize environmental education as a core operational component.

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