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Empowering Communities Through Eco-Tourism Education: A Pathway to Environmental Stewardship

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Abstract
This study investigated the role of eco-tourism education in promoting environmental stewardship among community members in Cross River State, Nigeria. Two hypotheses guided the research: (1) there is no significant relationship between eco-tourism education and environmental stewardship, and (2) the level of participation in eco-tourism education is not significantly correlated with the level of environmental stewardship. Adopting a correlational survey design, data were collected from 652 residents of eco-tourism host communities using a structured and validated questionnaire—the Eco-Tourism Education and Environmental Stewardship Questionnaire (EEESQ), which achieved a reliability coefficient of 0.87. The study area included key eco-tourism locations such as Boki, Obanliku, and Akamkpa. Data analysis using simple linear regression revealed a statistically significant but weak relationship between general eco-tourism education and environmental stewardship ($R = 0.085$, $R^2 = 0.007$, $F(1, 650) = 14.786$, $p < .05$), leading to the rejection of the first null hypothesis. Conversely, a moderate and statistically significant positive correlation was found between the level of participation in eco-tourism education and environmental stewardship ($R = 0.524$, $R^2 = 0.275$, $F(1, 650) = 246.235$, $p < .05$), resulting in the rejection of the second null hypothesis. These findings suggest that while eco-tourism education has a measurable influence, its impact on environmental stewardship is significantly enhanced by the depth of community participation. The study concludes that participatory eco-tourism education programs serve as a viable pathway to empowering communities and promoting sustainable environmental behavior.

Keywords: eco-tourism education, environmental stewardship, community participation, sustainable tourism, Cross River State, environmental education, conservation behavior.

Introduction and Background
Eco-tourism, defined as responsible travel to natural areas that conserves the environment and improves the well-being of local people (The International Ecotourism Society [TIES], 2015), has gained considerable attention as a sustainable development strategy. It not only provides economic benefits to local communities but also raises awareness about environmental conservation. The educational aspect of eco-tourism, however, remains under-explored. Eco-

tourism education has the potential to empower communities by promoting sustainable practices and enhancing environmental stewardship. In particular, understanding the relationship between eco-tourism education and environmental stewardship among community members is crucial for developing effective policies and programs that harness eco-tourism as a tool for conservation and sustainable development. This study seeks to examine how eco-tourism education can foster a deeper commitment to environmental stewardship within local communities.

Over the past few decades, eco-tourism has emerged as a promising alternative to traditional tourism, offering a model that balances environmental conservation with socio-economic development (Kumar, Hasija, Kumar & Sageena, 2023). Local communities, especially in rural and ecologically sensitive areas, are often the primary stewards of natural resources, making their involvement in eco-tourism essential for its long-term success. However, the effectiveness of eco-tourism education in achieving environmental goals remains a subject of debate. Research suggests that while eco-tourism can increase local economic opportunities, the educational component plays a pivotal role in ensuring that communities adopt sustainable practices and foster environmental stewardship (Gorbunov, Tatuev & Taran, 2024).

Several studies have explored the impact of eco-tourism education on community attitudes toward environmental conservation (TIES, 2015), but few have examined the direct relationship between eco-tourism education and actual changes in behavior, such as the degree of environmental stewardship. Furthermore, the level of participation in eco-tourism education and its correlation with sustainable environmental practices has yet to be sufficiently explored. It is essential to assess whether greater participation in eco-tourism education leads to stronger environmental stewardship, particularly in local communities that are directly impacted by eco-tourism activities. This study aims to fill this gap in the literature by exploring the relationship between eco-tourism education and environmental stewardship and examining how different levels of participation in eco-tourism education programs influence the degree of environmental commitment among community members.

Statement of the problem

Despite the growing recognition of eco-tourism as a tool for promoting environmental conservation and sustainable development, the extent to which eco-tourism education influences environmental stewardship within local communities remains unclear. While eco-tourism education has the potential to foster environmental awareness and responsible behavior, there is limited empirical evidence on its impact on the practices and attitudes of community members. In particular, the relationship between participation in eco-tourism

education programs and the degree of environmental stewardship within these communities has not been sufficiently explored. This study seeks to address this gap by examining how eco-tourism education can empower communities and contribute to environmental sustainability.

Purpose of the study

The main purpose of this study is to explore how empowering communities through eco-tourism education can serve as a pathway to environmental stewardship. Specifically, the study aims to:

1. Examine the relationship between eco-tourism education and environmental stewardship among community members.
2. Explore the correlation between the level of participation in eco-tourism education and the degree of environmental stewardship within local communities.

Research hypotheses

The following hypotheses were formulated to guide the study:

1. There is no significant relationship between eco-tourism education and environmental stewardship among community members.
2. The level of participation in eco-tourism education is not significantly correlated with the level of environmental stewardship.

Literature review

Eco-Tourism Education and Environmental Stewardship Among Community Members

Eco-tourism education is a vital tool for promoting environmental stewardship among local communities, particularly in areas where tourism is intertwined with natural resource management. According to the International Ecotourism Society (TIES, 2015), eco-tourism education is designed to inform and engage local communities in sustainable tourism practices that directly benefit environmental conservation efforts. When communities are educated about the ecological value of their surrounding environments, they are more likely to adopt sustainable practices that help protect these areas. Several studies have highlighted the positive role of eco-tourism education in fostering a deeper commitment to environmental stewardship. For instance, research by Üzülmez, Ercan İştin and Barakazı (2023) suggests that eco-tourism education programs that incorporate environmental awareness and sustainable practices lead to increased conservation efforts by community members. By educating local populations about the direct impacts of their activities on the environment, eco-tourism initiatives encourage individuals to become more conscious of their actions and their effects on local ecosystems. Similarly, TIES (2015) emphasizes that eco-tourism education can enhance community knowledge about biodiversity, conservation practices, and the economic benefits of sustainable tourism, thereby fostering environmental stewardship. This education leads to

greater community involvement in protecting natural resources, with an increased sense of ownership and responsibility for the environment.

Additionally, some studies have focused on how eco-tourism education programs improve local communities' capacity to manage and protect their natural resources. For example, in a study by Macharia, Thenya and Ndiritu (2010), it was found that communities exposed to eco-tourism education showed a higher level of engagement in conservation practices, such as protecting local wildlife habitats and reducing environmental degradation. These findings suggest that eco-tourism education not only informs but also empowers communities to actively participate in environmental protection.

Level of Participation in Eco-Tourism Education and the Level of Environmental Stewardship

The level of participation in eco-tourism education is closely linked to the extent of environmental stewardship demonstrated by community members. As participation in eco-tourism education programs increases, so does the likelihood of individuals adopting more sustainable behaviors and practices (Mowforth & Munt, 2015). A key factor in determining the effectiveness of eco-tourism education is the intensity and depth of participation. For example, programs that offer hands-on learning experiences, such as guided eco-tours, workshops, and community-based conservation projects, are likely to result in stronger environmental stewardship compared to more passive forms of education (Gomes, 2017)).

Research by Weaver (2001) underscores that communities that engage more deeply in eco-tourism education tend to demonstrate a greater commitment to environmental stewardship. This includes adopting behaviors that reduce environmental degradation, such as waste reduction, responsible land use, and sustainable agricultural practices. Additionally, studies have shown that individuals who participate in eco-tourism programs are more likely to advocate for policies that support environmental protection and sustainable development (Habibulloev, Han, Bakhtiyorov, MA & Nuhzor, 2024).

A study by Chan, Marzuki and Mohtar, (2021) further supports this notion, revealing that communities with higher levels of involvement in eco-tourism education report greater levels of environmental awareness and responsibility. This study suggests that participation is not only linked to knowledge acquisition but also to the practical application of this knowledge in daily environmental practices. The study also points to a correlation between active participation in eco-tourism education and an increased willingness to engage in local

conservation initiatives, such as creating protected areas or participating in wildlife monitoring programs.

However, some research has shown that passive participation in eco-tourism education, such as attending informational seminars or receiving printed materials, may not lead to significant changes in environmental behavior. As noted by Mowforth and Munt (2015), passive forms of education tend to result in limited behavioral change, highlighting the importance of active participation in eco-tourism education for fostering long-term environmental stewardship. This distinction emphasizes the need for eco-tourism programs to be designed in ways that encourage active engagement and participation.

Methodology

Research Design

This study adopted a correlational survey design to investigate the relationship between eco-tourism education and environmental stewardship among community members in Cross River State, Nigeria. The design is appropriate for determining the extent to which variables are related without manipulating any of them.

Study Area

The research was conducted in Cross River State, located in the South-South geopolitical zone of Nigeria. The state is endowed with rich biodiversity and eco-tourism destinations such as the Cross River National Park, Afi Mountain Wildlife Sanctuary, and the Obudu Cattle Ranch. These locations serve as focal points for eco-tourism activities and provide opportunities for community-based environmental education.

Population of the Study

The population consisted of community members residing in eco-tourism host communities across selected Local Government Areas (LGAs) of Cross River State, such as Boki, Obanliku, and Akamkpa. These communities are directly involved in or affected by eco-tourism activities and are key stakeholders in environmental stewardship.

Sample and Sampling Technique

A multi-stage sampling technique was employed. In the first stage, three LGAs with active eco-tourism sites were purposively selected. In the second stage, three communities were randomly selected from each LGA. Finally, using stratified random sampling, 652 community members were selected based on age, gender, and involvement in eco-tourism education initiatives.

Instrument for Data Collection

A structured questionnaire titled Eco-Tourism Education and Environmental Stewardship Questionnaire (EEESQ) was developed by the researchers. The questionnaire consisted of three sections: Section A: Demographic information of respondents. Section B: Items measuring the extent of participation in eco-tourism education programmes (using a 4-point Likert scale). Section C: Items assessing the level of environmental stewardship practices (e.g., conservation efforts, waste management behaviors, advocacy).

The instrument was validated by experts in environmental education and tourism studies, and a pilot test was conducted in a similar community outside the study area. The reliability coefficient of the instrument was established using Cronbach's Alpha and yielded a value of 0.87, indicating good internal consistency.

Method of Data Collection

Data were collected through direct administration of questionnaires with the help of trained research assistants who are familiar with the local dialects and terrain. This ensured clarity of questions and increased response rates.

Method of Data Analysis

Data were coded and analyzed using the Statistical Package for Social Sciences (SPSS) version 25. Descriptive statistics such as frequencies, means, and standard deviations were used to summarize the data. To test the hypotheses, simple linear regression analysis was used to test the relationship between eco-tourism education and environmental stewardship and assess correlation between participation levels in eco-tourism education and environmental stewardship at 0.05 level of significance.

Ethical Considerations

Ethical approval was obtained from the relevant institutional review board. Participants were informed of the study's purpose and assured of confidentiality. Informed consent was obtained, and participation was voluntary.

Presentation of results

Ho_1

There is no significant relationship between eco-tourism education and environmental stewardship among community members.

The results of the simple linear regression analysis examining the relationship between eco-tourism education and environmental stewardship among community members revealed a statistically significant relationship. The regression model produced a small but significant correlation between eco-tourism education and environmental stewardship, with an R value of 0.085, indicating a weak positive relationship. The coefficient of determination (R^2) was 0.007, suggesting that eco-tourism education accounts for only 0.7% of the variance in environmental stewardship among the community members. After adjusting for degrees of freedom, the adjusted R^2 was 0.006, which further confirms the minimal explanatory power of eco-tourism education on environmental stewardship.

The F-statistic for the model was 14.786, with a p-value of 0.000, indicating that the regression model as a whole is statistically significant. This suggests that despite the small effect size, the relationship between eco-tourism education and environmental stewardship is unlikely to have occurred by chance. The standard error of the estimate was 4.21956, reflecting the average distance that the observed values deviate from the regression line.

In conclusion, while the analysis indicates a statistically significant relationship between eco-tourism education and environmental stewardship, the strength of the relationship is weak, and eco-tourism education explains only a small portion of the variance in environmental stewardship among community members. Therefore, hypothesis one, which posited no significant relationship, was rejected based on the results of the analysis ($F(1, 650) = 14.786$, $p < 0.05$).

Table 1: Simple linear regression analysis of relationship between eco-tourism education and environmental stewardship among community members (N = 652)

Model	R	R^2	Adj.R^2	Std error of estimate
1	.085	.007	.006	4.21956

Source of variance	SS	Df	MS	F	Sig
Regression	85.211	1	85.211	14.786	.000
Residual	11573.065	650	17.805		
Total	11658.276	651			

Ho_2: The level of participation in eco-tourism education is not significantly correlated with the level of environmental stewardship.

The results of the simple linear regression analysis examining the relationship between the level of participation in eco-tourism education and the level of environmental stewardship indicate a significant positive correlation. The correlation coefficient (R) was 0.524, suggesting a moderate positive relationship between the level of participation in eco-tourism education and environmental stewardship. The coefficient of determination (R^2) was 0.275, meaning that approximately 27.5% of the variance in environmental stewardship can be explained by the level of participation in eco-tourism education. The adjusted R^2 value of 0.274 accounts for the degrees of freedom and provides a slightly more conservative estimate of the relationship.

The F-statistic for the model was 246.235, with a p-value of 0.000, which indicates that the regression model is statistically significant. This means that the relationship between the level of participation in eco-tourism education and environmental stewardship is unlikely to have occurred by chance. The standard error of the estimate was 3.60667, which reflects the average distance between the observed values and the predicted values from the regression model.

In conclusion, the analysis suggests a moderate and statistically significant relationship between the level of participation in eco-tourism education and environmental stewardship, with higher participation in eco-tourism education being associated with higher levels of environmental stewardship. Therefore, hypothesis two, which posited no significant correlation between participation in eco-tourism education and environmental stewardship, is rejected based on the results of the analysis ($F(1, 650) = 246.235$, $p < 0.05$).

Table 2: Simple linear regression analysis of the relationship between level of participation in eco-tourism education with the level of environmental stewardship (N = 652)

Model	R	R^2	Adj.R^2	Std error of estimate
1	.524	.275	.274	3.60667

Source of variance	SS	Df	MS	F	Sig
Regression	3203.041	1	3203.041	246.235	.000
Residual	8455.235	650	13.008		
Total	11658.276	651			

Discussion of findings

Ho_1

The findings from the simple linear regression analysis revealed a statistically significant, albeit weak, relationship between eco-tourism education and environmental stewardship among community members. Despite the statistical significance, the small effect size indicates that eco-tourism education alone does not strongly predict environmental stewardship. Consequently, the null hypothesis—which posited no significant relationship between eco-tourism education and environmental stewardship—was rejected.

These results suggest that while eco-tourism education has a measurable effect on environmental stewardship, its impact is modest. This finding aligns with existing literature that highlights the importance of eco-tourism education in promoting pro-environmental behavior, albeit often in conjunction with other influencing factors. The International Ecotourism Society (TIES, 2015) underscores that eco-tourism education is instrumental in empowering local communities to participate in sustainable tourism practices that contribute to environmental conservation. Informed community members are more likely to engage in behaviors that support the protection and sustainable use of natural resources.

Supporting this perspective, Üzülmez, İştin, and Barakazı (2023) found that eco-tourism education programs which integrate environmental awareness and sustainability concepts tend to enhance conservation-minded attitudes among participants. These programs foster a sense of responsibility by linking everyday practices with ecological outcomes. Thus, while the statistical analysis in this study shows a weak relationship, the broader context and supporting literature indicate that eco-tourism education remains a valuable strategy for encouraging environmental stewardship—especially when integrated with other community-based sustainability initiatives.

Ho_2

The findings from the simple linear regression analysis demonstrate a statistically significant and moderately strong positive relationship between the level of participation in eco-tourism education and environmental stewardship among community members. Based on this evidence, hypothesis two—which posited no significant correlation between the level of participation in eco-tourism education and environmental stewardship—is rejected.

The results suggest that increased participation in eco-tourism education programs is associated with higher levels of environmental stewardship among community members. This finding aligns with prior research indicating that eco-tourism education, when implemented with active and meaningful participation, can lead to more sustainable environmental

behaviors. According to Mowforth and Munt (2015), active engagement in eco-tourism education enhances environmental consciousness and promotes behavioral change. Programs that emphasize experiential learning—such as eco-guided tours, environmental workshops, and participatory conservation projects—tend to produce stronger outcomes in terms of stewardship (Gomes, 2017).

Weaver (2001) emphasized that communities deeply involved in eco-tourism education often exhibit a heightened commitment to environmental protection, adopting practical measures like waste reduction, sustainable land use, and environmentally responsible farming. Furthermore, participants in these programs are more likely to support and advocate for policies that uphold sustainability and environmental justice (Habibulloev, Han, Bakhtiyorov, & Nuhzor, 2024).

Adding to this, Chan, Marzuki, and Mohtar (2021) observed that communities with high levels of participation in eco-tourism education not only demonstrate greater environmental awareness but also show a stronger propensity to engage in community-led conservation activities. These include participating in the creation of protected areas, wildlife monitoring, and other grassroots environmental initiatives. Such findings underscore the importance of fostering deep and sustained participation in eco-tourism education as a pathway to cultivating environmental stewardship at the community level.

Conclusion

This study examined the relationship between eco-tourism education and environmental stewardship among community members, with particular attention to both general exposure to eco-tourism education and the level of participation in such programs. The findings revealed two key outcomes. First, while there is a statistically significant relationship between eco-tourism education and environmental stewardship, the strength of this relationship is weak, indicating that eco-tourism education alone may not be a strong predictor of environmentally responsible behavior. Second, and more compellingly, the analysis showed a statistically significant and moderately strong positive relationship between the level of participation in eco-tourism education and environmental stewardship. This suggests that more active and engaged forms of participation in eco-tourism education programs are more likely to result in meaningful behavioral change and heightened environmental responsibility.

These findings are consistent with existing literature that underscores the importance of participatory and experiential learning in fostering environmental stewardship. While basic exposure to eco-tourism education may raise awareness, it is through deeper levels of participation—such as hands-on conservation projects, guided eco-tours, and community-led

initiatives—that individuals are more likely to develop a personal commitment to sustainable practices. Consequently, eco-tourism education should be viewed not merely as an information delivery mechanism but as a transformative process that, when designed effectively, can significantly enhance pro-environmental attitudes and behaviors in local communities.

Recommendations

Based on the findings of this study, the following recommendations are proposed:

1. Promote Active Participation in Eco-Tourism Education Programs: Eco-tourism education initiatives should emphasize interactive and experiential learning approaches. Stakeholders including government agencies, non-governmental organizations, and eco-tourism operators should design programs that encourage community members to actively engage in activities such as environmental monitoring, conservation efforts, and sustainable tourism planning.
2. Integrate Eco-Tourism Education into Community Development Initiatives: Given the modest effect of general eco-tourism education, it should be integrated into broader community development strategies that address other influencing factors such as socioeconomic conditions, cultural values, and governance structures. Doing so can create a more holistic framework for environmental stewardship.
3. Provide Capacity-Building Opportunities: Training and capacity-building workshops should be organized to enhance local knowledge and skills related to eco-tourism and sustainability. This will empower community members to take ownership of conservation initiatives and contribute meaningfully to sustainable tourism practices.
4. Support Policy Frameworks that Encourage Community Involvement: Policymakers should develop and enforce policies that encourage and support community involvement in eco-tourism education. This includes creating incentives for participation, allocating resources for community-led programs, and institutionalizing eco-tourism education as part of local governance.
5. Conduct Further Research on Mediating Factors: Future research should explore other factors that may mediate or moderate the relationship between eco-tourism education and environmental stewardship, such as environmental values, social norms, economic incentives, or institutional support. Understanding these variables can help in refining eco-tourism education strategies for greater effectiveness.
6. Monitor and Evaluate Program Effectiveness: Regular monitoring and evaluation mechanisms should be established to assess the impact of eco-tourism education programs. Feedback from participants can help improve content delivery, participation methods, and long-term sustainability outcomes.

By implementing these recommendations, eco-tourism education can evolve into a more effective tool for cultivating a culture of environmental stewardship, ultimately contributing to the sustainable development of local communities.

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