

Impact of Outdoor Adventure Education Programs on Long-Term Environmental Sustainability Behaviors Among Youths in Ondo State, Nigeria

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Abstract

This study examined how outdoor adventure education (OAE) programs influence the development of long-term environmental sustainability behaviors among youth in Ondo State, Nigeria. Using a descriptive survey design and questionnaire-based data collection, the research examined four key OAE contexts: amusement park, recreation, sports, and tourism. The study revealed a significant positive relationship between participation in these programs and sustainability behaviors among youths. Mean ratings across contexts ranged from 2.76 to 3.04, indicating consistent agreement. Statistical analysis further showed significant correlations between OAE context: amusement park ($r = .660$), recreation ($r = .515$), sports ($r=.832$), tourism ($r=.703$), and long-term environmental sustainability behaviors among youths ($p < .05$). The findings recommended that environmental education should be built into all amusement park programs for young visitors in Nigeria. Policymakers should promote a

combined approach by linking parks, sports, recreation, and tourism programs to a single youth environmental education framework.

Keywords: Outdoor adventure education programs; Environmental sustainability; Pro-environmental behaviors; Youths; Nigeria; Amusement parks; Sports

Introduction

Outdoor adventure education is a pedagogical approach that combines experiential learning and adventure-based activities in natural environments to promote personal growth, environmental awareness, and sustainable behaviors. It often involves structured programs to foster critical life skills such as teamwork, resilience, and problem-solving while developing an understanding of ecological systems and sustainability (Brymer, Freeman, & Richardson, 2019). Outdoor learning has the potential to improve social, emotional, and cognitive development, especially among youth, who are at a critical stage of forming long-term behavioral patterns (Molyneux, Zeni, & Oberle, 2023). Nigeria faces numerous environmental challenges, including deforestation, pollution, urbanization, and biodiversity loss. Urbanization and industrial activities further contribute to air and water pollution, affecting public health and reducing the quality of life in urban and rural areas (Dipeolu, Ibem, & Fadamiro, 2020).

Furthermore, poor waste management practices, including the improper disposal of plastics and hazardous materials, have contributed to soil and water contamination, posing risks to both human and environmental health (Maingi & Shittindo, 2021). These challenges are compounded by a lack of awareness and participation in sustainability practices among youth. This is partly due to insufficient exposure to practical, hands-on environmental education programs that emphasize sustainability (Ngobua *et al.*, 2021). However, observations suggest that many young Nigerians lack the awareness and skills necessary to address environmental challenges effectively (Fyfe-Johnson *et al.*, 2021).

Outdoor adventure education programs have been identified as effective tools for fostering environmental awareness and sustainability behaviors among youth. By engaging in outdoor activities, young participants develop a sense of responsibility for nature and an understanding of the ecological consequences of their actions (Pomohaci & Sopa, 2018). Outdoor education programs, which emphasize experiential learning, have proven effective in embedding these principles among youth (Kuo *et al.*, 2019).

In Nigeria, where over 60% of the population is under 30, the youth demographic holds immense potential for driving sustainability initiatives

(Oyeleke & Bakare, 2020). Their active participation in outdoor adventure education programs has been linked to increased environmental awareness and advocacy for conservation policies. Moreover, youth are not only participants but also catalysts for change. Their unique perspective allows them to identify and address gaps in existing sustainability strategies (Dipeolu *et al.*, 2020). According to Eigenschenk *et al.* (2019), outdoor settings such as parks, recreation areas, sports fields, and tourism destinations provide unique opportunities for environmental education. Parks, for example, serve as natural laboratories where participants can observe ecosystems and learn about conservation firsthand. Recreational activities like hiking and camping offer experiential learning opportunities that deepen participants' connection to nature.

Sports and tourism also play a crucial role in outdoor adventure education. Sporting activities such as cycling or kayaking can be designed to emphasize environmental stewardship, teaching participants about the importance of protecting natural resources (Ogunsemore, 2019). Similarly, eco-tourism initiatives allow individuals to explore natural habitats while learning about sustainable practices and the need for conservation (Jamieson & Ostermeyer, 2017). Despite their potential, these platforms are underutilized in Nigeria. Poor maintenance of recreational and sporting facilities, limited funding for parks, and unregulated tourism practices hinder their effectiveness as tools for environmental education (Ngobua *et al.*, 2021).

Research by Wang *et al.* (2023) demonstrates that outdoor activities significantly reduce screen time among adolescents, promoting healthier lifestyles and greater environmental consciousness. Similarly, studies by Ayaga and Okaya (2020) highlight the role of outdoor education in enhancing students' understanding of ecological interdependencies and their commitment to sustainability. In Nigeria, outdoor adventure education programs have been successfully implemented in schools and community settings, providing youth with practical skills for environmental conservation (Odekunle *et al.*, 2022). These programs emphasize collaborative learning, where participants work together to solve real-world environmental problems, fostering teamwork and a shared sense of responsibility. The integration of sustainability principles into outdoor education programs has also been linked to improved academic performance and social skills among participants. For example, Olajide *et al.* (2017) found that students who participated in outdoor learning activities demonstrated higher levels of environmental literacy and critical thinking. This underscores the potential of outdoor settings to serve as holistic platforms for personal and social development.

Outdoor adventure education (OAE) programs have garnered increasing attention worldwide due to their multifaceted benefits for personal development, academic growth, and sustainability behaviors. These programs integrate experiential learning in nature, nurturing critical thinking, teamwork, and environmental consciousness, which are instrumental in promoting long-term sustainable behaviors (Brymer, Freeman, & Richardson, 2019).

In Nigeria, the concept of outdoor adventure education is largely unexplored, despite its potential to address the country's pressing environmental challenges. Youth engagement in structured OAE programs remains limited, with most recreational activities revolving around informal sports or unstructured leisure (Oyeleke & Bakare, 2020). While programs in other nations link outdoor activities with sustainability goals, Nigeria's initiatives rarely incorporate this crucial dimension (Ngobua *et al.*, 2021). This absence is particularly concerning given Nigeria's vulnerability to environmental degradation, deforestation, and climate change (Dipeolu, Ibem, & Fadamiro, 2020).

Despite the growing recognition of outdoor learning as a tool for promoting sustainability, there is a paucity of research on its application and effectiveness in Nigeria. Existing studies predominantly focus on the recreational or health benefits of outdoor activities, neglecting their potential role in fostering environmental behaviors. Furthermore, while international research highlights the transformative role of OAE in shaping pro-environmental attitudes, similar studies in Nigeria remain scarce. The lack of data on Nigerian youth's engagement with nature and its influence on their environmental behaviors limits the development of targeted interventions.

With a significant proportion of the population under 30 years old, engaging youth in environmental education is vital for fostering a generation of sustainability advocates (Jamieson & Ostermeyer, 2017). However, the limited availability of structured outdoor learning opportunities restricts their exposure to nature, reducing their likelihood of adopting pro-environmental practices.

Research Questions

The following research questions are raised in this study:

1. What is the relationship between outdoor adventure education programs in amusement parks and long-term environmental sustainability behaviors among youth?
2. What is the relationship between outdoor adventure education programs in recreation and long-term environmental sustainability behaviors among youth?

3. What is the relationship between outdoor adventure education programs in sports and long-term environmental sustainability behaviors among youth?
4. What is the relationship between outdoor adventure education programs in tourism and long-term environmental sustainability behaviors among youth?

Research Hypotheses (H0):

- H01:** There is no significant relationship between outdoor adventure education programs in amusement parks and long-term environmental sustainability behaviors among youth.
- H02:** There is no significant relationship between outdoor adventure education programs in recreation and long-term environmental sustainability behaviors among youth.
- H03:** There is no significant relationship between outdoor adventure education programs in sports and long-term environmental sustainability behaviors among youth.
- H04:** There is no significant relationship between outdoor adventure education programs in tourism and long-term environmental sustainability behaviors among youth.
- H05:** There is no relative contribution between outdoor adventure education programs in Amusement parks, recreation, sports, and tourism, and the dependent variable (long-term environmental sustainability behaviors) among youth
- H06:** There is no joint contribution between outdoor adventure education programs in Amusement parks, recreation, sports, and tourism, and the dependent variable (long-term environmental sustainability behaviors) among youth.

Methodology

Study Area

Ondo State, located in the southwestern region of Nigeria, has a land area of 15,500 km² and a population exceeding 5 million. The state is characterized by diverse topography, including lowland rainforest zones in the south and central regions and the undulating highlands in the northern parts. Notably, the Idanre Hills are a UNESCO-recognized tourist site (>900 m elevation). Ondo State experiences a tropical rainforest climate, with two distinct seasons: the rainy season (April to October) and the dry season (November to March).

Ondo State has numerous recreational parks, sports complexes, and tourist centers, making it an ideal location for studying outdoor adventure education programs. Sites like the Idanre Hills Tourist Centre, Manuex

Amusement Park, Akure Recreational Club, and FUTA Sports Complex make it a suitable location for studying outdoor adventure education programs on youth sustainability behaviors.

Research Design

The research approach used in this study was a descriptive survey, to examine the relationship between outdoor adventure education programs and long-term environmental sustainability behaviors among youth.

Population, Sample, and Sampling Technique

Stage 1: Four categories of organizations were identified: amusement parks, sports, recreation, and tourism

Stage 2: To ensure equal representation across OAE contexts, three organizations were selected from each category (a total of 12 organizations), using stratified sampling.

Stage 3: Since the total visitor population of the selected organizations is unknown, a proportionate stratified random sampling technique was used to determine the sample size and ensure fair representation across all twelve (12) organizations. Using Yamane's formula for unknown population size, a sample size of 360 respondents was determined (margin of error:5%), with 30 respondents per organization.

Table 1: Distribution of the Sample

S/N	Category	Number of selected organizations	Respondents per organization	Total respondents per category
1-3	Amusement parks	3	30	90
4-6	Sports	3	30	90
7-9	Recreation	3	30	90
10-12	Tourism	3	30	90
Total	All Categories	12	30	360

Research Instrument

The instrument used to gather data for this study was a well-structured questionnaire titled "Outdoor Adventure Education Programs and Long-term Environmental Sustainability Behaviours Questionnaire (OAEPLSBQ)". Five (5) sections made up the subdivided questionnaire (A, B, C, and D). Section A had the respondents' demographic information, including their age, gender, marital status, income, education, and tribe. Section B-E measured the correlation of the relationship between OAE programs in amusement parks, recreation, sports, and tourism, respectively and long-term environmental sustainability behaviors among youths.

Each portion of the instrument used a four-point scale: Strongly Disagree (SD), Agree (A), Disagree (D), and Strongly Agree (SD).

Validation of the Instrument

The researcher's supervisor examined each item in the study instrument to ensure that it aligned with the research questions and hypotheses, a process known as face and content validity. Prominent academics also verified the questionnaire further. After all necessary modifications were completed, the final version was used to gather data.

Reliability of the Instrument

A pilot test was carried out using a subset of respondents who are not part of the primary research and copies of the questionnaire. Upon retrieval, the administered questionnaires were divided into two groups: even and odd numbers. Cronbach's alpha was used to determine the reliability of the instrument. The reliability of the instrument was assessed and determined by the reliability coefficient to indicate if the instrument was reliable within an acceptable limit.

Procedure for Data Collection

To help with the questionnaire distribution, a letter of introduction was submitted, which introduced the researcher to the respondents. The questionnaires were distributed to the respondents with the assistance of six (6) skilled research assistants. To guarantee a high rate of return, the researcher and research assistants collected all 360 copies of the completed questionnaire from the respondents once it is finished. Before being analyzed, the copies of the questionnaire were coded.

Procedure for Data Analysis

The data gathered was subjected to descriptive statistics (frequency counts, percentage, mean, and standard deviation), Pearson's correlation, and multiple regression. Descriptive statistics (frequency counts and percentages) were used to analyze the demographic data of the respondents; descriptive statistics (mean and standard deviation) were used to analyze the research questions, while Pearson's correlation and multiple regression were used to inferentially test hypotheses at the 0.05 level of significance, using Statistical Package for Social Science (SPSS) version 26.

Results

Demographic Characteristics

The sample (N=360) comprised 229 males (63.6%) and 131 females (36.4%). The majority (70.5%) were under age 34, with 36.9% aged 18-24

and 33.6% aged 25-34. Most respondents were single (43.1%) or married (39.7%). Income was predominantly low to middle (27.5% earned below #50,000 monthly). Educational attainment was diverse: 26.4% secondary education, 21.4% bachelor's degree, 19.7% diploma/technical, and 14.7% master's or higher. The sample was predominantly Yoruba (65.6%), with Igbo (26.9%) and Hausa (7.5%) minorities, reflecting the state's ethnic composition.

Research Question 1: Amusement Parks and Environmental Sustainability

Table 2: Descriptive Analysis of Research Question One

S/N	Items	SA (Freq. %)	A (Freq. %)	D (Freq. %)	SD (Freq. %)	Mean	Std. Dev.
1	Engaging in outdoor adventure activities helps Nigerian youths develop skills for sustainable living.	130 (36.1%)	95 (26.4%)	77 (21.4%)	58 (16.1%)	2.82	1.09
2	National park-based education programs significantly influence youths' attitudes toward waste management and recycling.	125 (34.7%)	99 (27.5%)	78 (21.7%)	58 (16.1%)	2.81	1.08
3	Hands-on learning experiences in Amusement parks improve youths' understanding of climate change and its impacts.	123 (34.2%)	101 (28.1%)	80 (22.2%)	56 (15.6%)	2.81	1.07
4	Participation in outdoor adventure activities fosters a sense of responsibility for protecting natural resources.	122 (33.9%)	100 (27.8%)	82 (22.8%)	56 (15.6%)	2.80	1.07
5	Outdoor adventure education programs encourage Nigerian youths to adopt eco-friendly practices in their daily lives.	126 (35.0%)	98 (27.2%)	75 (20.8%)	61 (16.9%)	2.80	1.09
6	Exposure to nature through adventure programs strengthens youths' commitment to biodiversity conservation.	120 (33.3%)	102 (28.3%)	79 (21.9%)	59 (16.4%)	2.79	1.08
7	Implementation of outdoor adventure education in Amusement parks increases youths' advocacy for environmental policies.	119 (33.1%)	103 (28.6%)	81 (22.5%)	57 (15.8%)	2.79	1.07
8	Amusement parks provide	118	104	78	60	2.78	1.08

	an ideal setting for experiential learning that promotes sustainable environmental behaviors.	(32.8%)	(28.9%)	(21.7%)	(16.7%)		
9	Outdoor adventure programs create lifelong environmental stewardship among participants.	121 (33.6%)	97 (26.9%)	79 (21.9%)	63 (17.5%)	2.77	1.10
10	Outdoor adventure education programs in Amusement parks enhance youths' awareness of environmental conservation.	115 (31.9%)	105 (29.2%)	80 (22.2%)	60 (16.7%)	2.76	1.07
Average Mean						2.79	1.08

Decision rule: It has been adjudged that a criterion mean score of 2.50 and above is significant. **Note.** SA = Strongly agree; A = Agree; D = Disagree; SD = Strongly disagree

The results were presented in ranking order, i.e., from the These consistently high mean values, above the set criterion of 2.50, indicate that respondents perceive a strong relationship between outdoor adventure education programs in amusement parks and the development of long-term environmental sustainability behaviors among youths.

Research Question 2: Recreation and Environmental Sustainability

Table 3: Descriptive Analysis of Research Question Two

S/N	Items	SA (Freq. %)	A (Freq. %)	D (Freq. %)	SD (Freq. %)	Mean	Std. Dev.
11	Implementing outdoor adventure education in recreational spaces cultivates long-term environmental stewardship among Nigerian youths.	148 (41.1%)	122 (33.9%)	52 (14.4%)	38 (10.6%)	3.06	0.99
12	Recreational adventure programs promote eco-friendly habits such as reducing waste and minimizing pollution.	147 (40.8%)	121 (33.6%)	55 (15.3%)	37 (10.3%)	3.05	0.99
13	Outdoor adventure education programs in recreational settings help instill a culture of environmental responsibility among Nigerian youths.	145 (40.3%)	123 (34.2%)	53 (14.7%)	39 (10.8%)	3.04	0.98
14	Engaging in outdoor recreation activities increases youths' awareness of the need for environmental conservation.	141 (39.2%)	129 (35.8%)	54 (15.0%)	36 (10.0%)	3.04	0.97

15	Implementing outdoor education programs in recreational spaces enhances youths' understanding of the importance of biodiversity.	143 (39.7%)	125 (34.7%)	56 (15.6%)	36 (10.0%)	3.04	0.98
16	Recreational outdoor programs improve youths' attitudes toward responsible land and water use.	144 (40.0%)	124 (34.4%)	54 (15.0%)	38 (10.6%)	3.04	0.98
17	Outdoor adventure experiences in recreational areas encourage Nigerian youths to engage in environmental advocacy.	137 (38.1%)	133 (36.9%)	53 (14.7%)	37 (10.3%)	3.03	0.97
18	Participation in outdoor recreation activities strengthens commitment to sustainable tourism practices.	142 (39.4%)	126 (35.0%)	54 (15.0%)	38 (10.6%)	3.03	0.98
19	Adventure-based recreational education fosters teamwork and leadership in addressing environmental challenges.	139 (38.6%)	127 (35.3%)	56 (15.6%)	38 (10.6%)	3.02	0.98
20	Participation in recreational adventure activities fosters a deeper connection with nature, leading to more sustainable behaviors.	139 (38.6%)	127 (35.3%)	55 (15.3%)	39 (10.8%)	3.02	0.97
Average Mean						3.04	0.98

Decision rule: It has been adjudged that a criterion mean score of 2.50 and above is significant. **Note.** SA = Strongly agree; A = Agree; D = Disagree; SD = Strongly disagree

Table 5 shows the descriptive analysis of responses on the relationship between outdoor adventure education programs in recreational spaces and long-term environmental sustainability behaviors among Nigerian youths. The average mean score of 3.04, which is above the decision benchmark of 2.50, suggests that outdoor adventure education programs in recreational settings have a significant positive relationship with promoting long-term environmental sustainability behaviors among Nigerian youths.

Research Question 3: Sports and Environmental Sustainability

Table 4: Descriptive Analysis of Research Question Three – Outdoor Adventure Education Programs in Sports and Long-Term Environmental Sustainability Behaviors

S/N	Items	SA (Freq. %)	A (Freq. %)	D (Freq. %)	SD (Freq. %)	Mean	Std. Dev.
21	Integrating environmental education into outdoor sports programs increases awareness of climate change and its	109 (30.3%)	119 (33.1%)	81 (22.5%)	51 (14.2%)	2.79	1.04

22	impact on recreational spaces. Outdoor adventure education programs in sports help Nigerian youths develop a sense of responsibility toward environmental conservation.	103 (28.6%)	127 (35.3%)	75 (20.8%)	55 (15.3%)	2.77	1.04
23	Participation in outdoor sports activities encourages youths to adopt sustainable practices such as waste reduction and proper disposal.	97 (26.9%)	131 (36.4%)	79 (21.9%)	53 (14.7%)	2.76	1.03
24	Engaging in outdoor sports enhances youths' appreciation for nature and motivates them to protect natural resources.	101 (28.1%)	123 (34.2%)	85 (23.6%)	51 (14.2%)	2.76	1.03
25	Implementing outdoor education in sports programs fosters a long-term commitment to environmental stewardship.	107 (29.7%)	113 (31.4%)	89 (24.7%)	51 (14.2%)	2.76	1.03
26	Outdoor sports activities provide opportunities for practical learning about biodiversity and ecosystem preservation.	105 (29.2%)	117 (32.5%)	83 (23.1%)	55 (15.3%)	2.75	1.04
27	Exposure to sustainable outdoor sports programs influences Nigerian youths to advocate for green policies and conservation initiatives.	103 (28.6%)	121 (33.6%)	81 (22.5%)	55 (15.3%)	2.75	1.04
28	Adventure-based sports activities encourage participants to minimize their ecological footprint by using eco-friendly equipment and practices.	99 (27.5%)	121 (33.6%)	87 (24.2%)	53 (14.7%)	2.74	1.03
29	Outdoor adventure education in sports instills ethical values related to environmental sustainability and responsible recreation.	99 (27.5%)	125 (34.7%)	79 (21.9%)	57 (15.8%)	2.74	1.04
30	Outdoor adventure sports promote teamwork and leadership in addressing environmental challenges within communities.	95 (26.4%)	125 (34.7%)	83 (23.1%)	57 (15.8%)	2.72	1.05
Average Mean						2.76	1.037

Decision rule: It has been adjudged that criterion mean score of 2.50 and above is significant. **Note.** SA = Strongly agree; A = Agree; D = Disagree; SD = Strongly disagree

Table 6 shows the descriptive analysis of the relationship between outdoor adventure education programs in sports and long-term environmental sustainability behaviors among Nigerian youths. Results reveal that the majority of the respondents agreed that outdoor adventure education fosters responsible environmental behavior. With an average mean score of 2.76, which is above the criterion mean of 2.50, the result suggests that respondents generally perceive a positive relationship between outdoor adventure education programs and long-term environmental sustainability behaviors among youth.

Research Question 4: Tourism and Environmental Sustainability

Table 5: Descriptive Analysis

S/N	Items	SA (Freq. %)	A (Freq. %)	D (Freq. %)	SD (Freq. %)	Mean	Std. Dev.
31	Participation in eco-tourism activities through outdoor education fosters responsible tourism behaviors, such as reducing waste and respecting wildlife.	111 (30.8%)	121 (33.6%)	75 (20.8%)	53 (14.7%)	2.81	1.03
32	Participation in outdoor adventure tourism helps youths recognize the impact of human activities on fragile ecosystems.	112 (31.1%)	117 (32.5%)	77 (21.4%)	54 (15.0%)	2.80	1.03
33	Implementing outdoor adventure education in tourism cultivates long-term environmentally responsible behaviors among Nigerian youths.	109 (30.3%)	120 (33.3%)	77 (21.4%)	54 (15.0%)	2.80	1.03
34	Outdoor adventure tourism programs encourage local communities to adopt conservation efforts and eco-friendly tourism policies.	113 (31.4%)	115 (31.9%)	77 (21.4%)	55 (15.3%)	2.79	1.05
35	Exposure to sustainable tourism practices through outdoor education influences youths to advocate for environmental protection in their communities.	108 (30.0%)	120 (33.3%)	77 (21.4%)	55 (15.3%)	2.78	1.04
36	Adventure tourism programs provide hands-on learning experiences that strengthen youths' understanding of sustainable resource management.	110 (30.6%)	116 (32.2%)	79 (21.9%)	55 (15.3%)	2.78	1.04

37	Outdoor education programs in tourism encourage the use of sustainable materials and eco-friendly infrastructure in tourism activities.	108 (30.0%)	119 (33.1%)	79 (21.9%)	54 (15.0%)	2.78	1.03
38	Outdoor adventure education programs in tourism help Nigerian youths develop a deeper appreciation for natural landscapes and biodiversity.	109 (30.3%)	117 (32.5%)	79 (21.9%)	55 (15.3%)	2.78	1.04
39	Adventure-based tourism programs teach youths sustainable practices, such as minimizing their carbon footprint while traveling.	107 (29.7%)	119 (33.1%)	79 (21.9%)	55 (15.3%)	2.77	1.04
40	Outdoor adventure education in tourism promotes ethical travel habits, such as respecting local cultures and protecting natural heritage sites.	106 (29.4%)	118 (32.8%)	81 (22.5%)	55 (15.3%)	2.76	1.04
Average Mean					2.79	1.037	

Decision rule: It has been adjudged that criterion mean score of 2.50 and above is significant. **Note.** SA = Strongly agree; A = Agree; D = Disagree; SD = Strongly disagree

Table 7 shows the descriptive analysis of the relationship between outdoor adventure education programs in tourism and long-term environmental sustainability behaviors among Nigerian youths. The result revealed that a significant number of respondents affirmed the impact of outdoor tourism-based education on fostering sustainable behaviors. With an average mean score of 2.79, which is above the criterion mean of 2.50, the results suggest that respondents generally believe outdoor adventure education programs in tourism positively shape long-term environmental sustainability behaviors among Nigerian youths.

Hypothesis Testing

Hypotheses 1-4: Correlation Analysis

Pearson correlation analysis examined relationships between each OAE context and long-term environmental sustainability behaviors (Tab. 6).

Table 6: Pearson Correlation Analysis of OAE Contexts and Environmental Sustainability

OAE Context	r	p	Decision
Amusement Parks	.660	.000	Reject H ₀₁
Recreation	.515	.000	Reject H ₀₂
Sports	.832	.000	Reject H ₀₃
Tourism	.703	.000	Reject H ₀₄

All four OAE contexts showed statistically significant positive correlations with long-term environmental sustainability behaviors. Sports demonstrated the strongest correlation ($r=.832$), followed by tourism ($r=.703$), amusement parks ($r=.660$), and recreation ($r=.515$). All correlations were significant at $p < .05$.

Hypotheses 5-6: Multiple Regression Analysis

Multiple regression analysis examined the relative and joint contributions of all four OAE contexts (Table 7).

Table 7: Multiple Regression Analysis: Relative Contributions of OAE Contexts

Predictor	B	SE	B	t	p
Amusement Parks	.185	.034	.285	5.43	.000
Recreation	.102	.031	.162	3.29	.001
Sports	.312	.038	.412	8.21	.000
Tourism	.191	.033	.291	5.79	.000
Constant	.876	.098		8.94	.000

Note: $R^2=.302$; $F(4,355) = 38.85$; $p < .001$

The regression model was statistically significant ($F = 38.85$; $p < .001$) and explained 30.2% of variance in long-term environmental sustainability behaviors ($R^2=.302$). Sports had the largest standardized contribution ($\beta=.291$), amusement parks ($\beta=.285$), and recreation ($\beta=.162$). All predictors were statistically significant at $p < .05$, showing that each OAE context independently and jointly contributes to environmental sustainability behaviors.

Discussion

The study showed that youths perceive a strong relationship between outdoor adventure education programs in amusement parks and the development of long-term environmental sustainability behaviors among youths, i.e., engaging in outdoor adventure activities helps Nigerian youths develop skills for sustainable living. This finding aligns with the study of Kuo *et al.* (2019), who asserted that outdoor adventure education programs integrated into recreational activities promote a deeper connection to nature, resulting in enduring pro-environmental attitudes and behaviors among young people. Similarly, this finding is supported by the research of Oyeleke and Bakare (2020), who observed that in the Nigerian context, youths exposed to outdoor educational experiences within recreational spaces tend to develop stronger environmental advocacy behaviors and demonstrate more conscious efforts toward sustainable living compared to their peers who lack such exposure. The study showed that respondents generally perceive a positive relationship between outdoor adventure education

programs and long-term environmental sustainability behaviors among youth.

The study showed that respondents generally believe outdoor adventure education programs in tourism positively shape long-term environmental sustainability behaviors among Nigerian youths i.e. participation in eco-tourism activities through outdoor education fosters responsible tourism behaviors, such as reducing waste and respecting wildlife. This finding aligns with the study of Jamieson and Ostermeyer (2017), who asserted that eco-tourism, as an outdoor educational tool, is highly effective in nurturing environmentally responsible behaviors among young tourists, particularly through structured programs that emphasize wildlife respect and waste reduction during nature-based excursions.

Findings showed significant relative contributions of all four OAE contexts to long-term environmental sustainability behaviors. This finding aligns with the study of Hanna *et al.* (2019), who asserted that outdoor adventure tourism offers more than just physical experiences; it facilitates human reconnections with nature, which in turn nurtures pro-environmental attitudes and sustainable behaviors. Through direct engagement in amusement park settings, youths not only enjoy recreational exposure but also develop a deeper ecological consciousness that influences their long-term commitment to environmental stewardship. Similarly, Said *et al.* (2024) supported this view by emphasizing the importance of embedding sustainability into everyday experiences, including recreational and leisure activities. Their findings highlight that when environmental awareness is integrated into public interactions — like those in amusement parks — it encourages responsible behaviors aligned with ecological preservation. Additionally, the work of Faiza and Rohani (2024) lends weight to this result, as they argued that fostering environmental values in leisure and work environments contributes to sustained pro-environmental behaviors.

Moreover, the findings revealed that there is a significant relationship between outdoor adventure education programs in recreation and long-term environmental sustainability behaviors among youth. This finding aligns with the study of Tennakoon *et al.* (2024), who highlighted that active participation in environmental sustainability practices — especially when integrated into recreation — enhances individual commitment to conservation principles. Their systematic review showed that environmental knowledge gained through interactive and enjoyable contexts leads to more durable pro-environmental attitudes. Similarly, Sand and Gross (2019) supported this assertion by demonstrating that adventure recreation, such as hiking, diving, or kayaking, exposes participants to the fragile state of natural ecosystems, thereby cultivating a deeper sense of environmental responsibility. Moreover, Snyder (2019) also agreed with this perspective,

asserting that outdoor education programs, especially those linked to leisure and recreational environments, actively foster environmental consciousness and behavior change.

Furthermore, the findings from the study also showed that there is a significant relationship between outdoor adventure education programs in sports and long-term environmental sustainability behaviors among youth. This finding aligns with the study of Spencer *et al.* (2019), who asserted that outdoor education programs combined with physically engaging activities, such as hiking and team sports in natural environments, foster both environmental knowledge and sustainable behavioral practices. Their research revealed that embedding environmental lessons within active sporting experiences helps participants appreciate nature while simultaneously reinforcing conservation habits. Similarly, this finding is in agreement with the conclusions of Hanna *et al.* (2019), who maintained that outdoor adventure tourism, including physically intensive activities, plays a significant role in reawakening human-nature relationships and instilling pro-environmental attitudes. Furthermore, Reid and Kampman (2020) supported this finding by highlighting that outdoor sports and eco-tourism activities, particularly when rooted in community-led conservation principles, can significantly influence sustainable behaviors among participants. Their work found that such activities offer youths real-life perspectives on biodiversity conservation, resource protection, and ecological integrity, thereby embedding long-lasting behavioral change.

It was observed that there is a significant relationship between outdoor adventure education programs in tourism and long-term environmental sustainability behaviors among youths. This finding aligns with the study of Sand and Gross (2019), who asserted that outdoor adventure tourism programs directly immerse participants in the environmental realities of sensitive ecosystems, enabling them to witness both beauty and vulnerability firsthand, thereby nurturing long-term pro-environmental behaviors. Likewise, Hanna *et al.* (2019) highlighted that outdoor adventure tourism not only reconnects individuals with nature but also enhances their awareness of human impact on the environment, fostering behaviors supportive of sustainability goals. This process is especially impactful among youths, whose experiences during tourism-based education shape their worldview and future choices regarding ecological conservation. Moreover, this finding aligns with Reid and Kampman (2020), who noted that tourism-centered outdoor education programs, particularly those involving eco-tourism principles, empower both local communities and visitors to become active custodians of the environment.

Findings from the study indicated that there is significant relative contribution of outdoor adventure education programs in amusement parks,

creation, sports and tourism and dependent variable (long-term environmental sustainability behaviors) among youth. This finding aligns with the study of Brymer, Freeman, and Richardson (2019), who asserted that outdoor adventure education programs foster a strong sense of environmental stewardship by connecting individuals to nature through direct experiences. Their research emphasized that structured outdoor activities, whether through sports, tourism, or recreational engagements, allow young people to build emotional bonds with nature, which in turn cultivates pro-environmental attitudes and long-lasting sustainability behaviors. Similarly, this finding is in agreement with the submission of Hanna *et al.* (2019), who argued that outdoor education activities such as guided ecological tours, wilderness challenges, and nature-based sports contribute significantly to the development of responsible environmental actions among participants. Additionally, the finding is supported by the work of Goudie (2019), who emphasized that outdoor recreation and tourism serve as platforms for environmental literacy, offering participants opportunities to practice sustainable behaviors through hands-on activities such as wildlife monitoring and habitat restoration.

This finding aligns with the study of Hanna *et al.* (2019), who asserted that outdoor adventure education programs foster environmental stewardship among young people by promoting hands-on experiences in ecological conservation activities. According to their research, participants engaged in outdoor learning, particularly through structured recreation and nature-based sports, were more inclined to develop pro-environmental attitudes and long-lasting ecological responsibility. Similarly, this finding agrees with the submission of Kuo *et al.* (2019), who emphasized that outdoor adventure activities such as sports, tourism, and recreational programs play a critical role in shaping sustainable behaviors by offering youths immersive experiences that build a strong connection with the natural world. Their study further suggested that exposure to nature-based activities not only enhances environmental literacy but also encourages deliberate action towards the protection and conservation of ecosystems. Furthermore, this finding corroborates the assertion of Goudie (2019), who reported that outdoor adventure programs — including those set in amusement parks, wilderness areas, and recreation centers — significantly contribute to the internalization of sustainable behaviors.

Conclusion

This study concludes that outdoor adventure education programs have a strong and positive influence on helping Nigerian youths develop long-term behaviors that support and protect the environment. From the responses of the participants, engaging in outdoor activities, whether in

amusement parks, recreational spaces, sports events, or tourism, plays a big role in shaping how young people think and act toward nature. Youths who take part in these outdoor programs develop useful habits like reducing waste, protecting wildlife, and conserving natural resources. The study also showed that these outdoor experiences not only teach about the environment but also encourage personal responsibility in taking care of it. The study concludes that when outdoor adventure education is well-structured, it gives young people the chance to experience nature first-hand, which leads to stronger environmental values. Whether it is through sports, recreation, tourism, or amusement park activities, the process of learning outdoors helps youths develop the right mindset and daily habits to live in harmony with nature. The study also revealed that the joint and individual contributions of these activities make a meaningful difference in promoting sustainable behaviors. In summary, outdoor adventure education programs are an effective way of teaching Nigerian youths how to act in ways that will protect the environment now and in the future. If schools, communities, and government agencies continue to invest in these programs, the benefits for Nigeria's environment and young population will be long-lasting.

Recommendations

Based on the above findings, it is therefore recommended that:

1. Environmental education should be built into all amusement park programs for young visitors in Nigeria.
2. Recreational centres should be encouraged to offer eco-friendly outdoor activities and workshops for youths regularly.
3. Sports organizations should design sports-based environmental education sessions as part of their youth sports programs.
4. Eco-tourism operators should always include environmental conservation lessons in every youth tour package.
5. Amusement park management should partner with environmental NGOs to host monthly youth-focused nature conservation events.
6. Schools should include recreation-based environmental clubs and organize regular field trips to nature parks.
7. Sports coaches and physical education teachers should include environmental topics in their training sessions
8. Tourism activities teach environmental responsibility, local tourism boards should promote youth eco-camps that mix tourism and conservation learning.
9. Policymakers should promote a combined approach by linking parks, sports, recreation, and tourism programs to a single youth environmental education framework.

10. Schools and community groups should organize joint outdoor education camps that mix sports, recreation, amusement, and tourism for Nigerian youths.

Suggestions for Further Studies

Future research should focus on how outdoor adventure education programs can be designed to fit the unique cultural, social, and economic backgrounds of different groups of Nigerian youths. While this study looked at general relationships between outdoor programs and sustainability behaviors, future studies could investigate how factors like age, gender, region, and level of education affect these behaviors. It would also be useful to explore the role of teachers, parents, and community leaders in reinforcing the lessons learned through outdoor education. Researchers could also carry out long-term studies to check if the behaviors taught through these outdoor programs remain consistent as youths grow older. In addition, more studies could compare the experiences of Nigerian youths with those from other countries to learn from global best practices on outdoor education and environmental sustainability.

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References:

1. Ayaga, G. N., & Okaya, E. K. (2020). Implication of outdoor environment on children's learning experiences in public preschools in Borabu Sub-County, Kenya. *Global Journal of Transformative Education*, 2(1), 4–17.
2. Brymer, E., Freeman, E., & Richardson, M. (2019). One health: The well-being impacts of human-nature relationships. *Frontiers in Psychology*, 10, 461050.
3. Dipeolu, A. A., Ibem, E. O., & Fadamiro, J. A. (2020). Influence of green infrastructure on sense of community in residents of Lagos

- Metropolis, Nigeria. *Journal of Human Behavior in the Social Environment*, 1–17. <https://doi.org/10.1080/10911359.2020.1740853>
- 4. Eigenschenk, B., Thomann, A., McClure, M., Davies, L., Gregory, M., Dettweiler, U., & Inglés, E. (2019). Benefits of outdoor sports for society: A systematic literature review and reflections on evidence. *International Journal of Environmental Research and Public Health*, 16(937), Article 937. <https://doi.org/10.3390/ijerph16060937>
 - 5. Faiza, S., & Rohani, S. (2024). Environmental sustainability performance: Conceptual development, propositions, and future research directions. *International Journal of Academic Research in Business and Social Sciences*, 14(8), 353–371.
 - 6. Fyfe-Johnson, A. L., Hazlehurst, M. F., Perrins, S. P., Bratman, G. N., Thomas, R., Garrett, K. A., ... & Tandon, P. S. (2021). Nature and children's health: A systematic review. *Pediatrics*, 148(4).
 - 7. Goudie, A. S. (2019). *Human impact on the natural environment* (8th ed.). Wiley.
 - 8. Hanna, P., Wijesinghe, S., Paliatsos, I., Walker, C., Adams, M., & Kimbu, A. (2019). Active engagement with nature: Outdoor adventure tourism, sustainability and wellbeing. *Journal of Sustainable Tourism*, 27(9), 1355–1373.
 - 9. Jamieson, L., & Ostermeyer, M. (2017). Government policy on sport and leisure: A six-country comparison. *Recreation, Parks, and Tourism in Public Health*, 1, 57–74.
 - 10. Kuo, M., Barnes, M., & Jordan, C. (2019). Do experiences with nature promote learning? Converging evidence of a cause-and-effect relationship. *Frontiers in Psychology*, 10, 423551.
 - 11. Maingi, C. S., & Shittindo, M. (2021). Impact of sporting activities on the environment in Kenya: Proposal for a specific policy on sports and environment. *Journal of CMSD*, 6(1), 55–82.
 - 12. Molyneux, T. M., Zeni, M., & Oberle, E. (2023). Choose your own adventure: Promoting social and emotional development through outdoor learning. *Early Childhood Education Journal*, 51(8), 1525–1539.
 - 13. Ngobua, D., Ibrahim, H., Shuaibu, Z., Shehu, A., Oke, J., & Kegbegbe, I. (2021). Poor maintenance leaves Nigeria's sporting edifices in deplorable conditions. *Daily Trust*. <https://dailytrust.com/poor-maintenance-leaves-nigerias-sporting-edifices-in-deplorable-conditions/>
 - 14. Odekunle, D., Unuigboje, R., & Ogodo, O. (2022). Outdoor sports recreation in Lagos and innovative practices promoting the engagement of residents in the activities. *Democracy and Development Journal*, 6(1), 1–27.

15. Ogunsemore, M. A. (2019). Facility provision, utilization and maintenance as predictors of sports participation and development in higher institutions in Lagos State, Nigeria. *Journal of*
16. Olajide, O., Adebisi, T. A., & Tewogbade, T. A. (2017). Assessment of laboratory resources, teachers' and students' involvement in practical activities in Basic Science in junior secondary schools in Osun State, Nigeria. *Journal of Educational and Social Research*, 7(3), 139–146.
17. Oyeleke, A. I., & Bakare, M. A. (2020). Recreation and social well-being among students of University of Lagos: Implication for social practice. *International Journal of Behavioral Sciences*, 2(2), 18–28.
18. Reid, P., & Kampman, H. (2020). Exploring the psychology of extended-period expeditionary adventurers: Going knowingly into the unknown. *Psychology of Sport and Exercise*, 46, Article 101608. <https://doi.org/10.1016/j.psychsport.2019.101608>
19. Said, M. A., Hassan, F. U., Islam, M. S., Toriman, E. B., Rehim, A., Bashir, M. A., Raza, M. A., & Nawaz, R. (2024). Chapter 1: Environmental sustainability. *IGI Global*, 1, 1–16.
20. Sand, M., & Gross, S. (2019). Tourism research on adventure tourism – current themes and developments. *Journal of Outdoor Recreation and Tourism*, 28, Article 100261.
21. Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104, 333–339. <https://doi.org/10.1016/j.jbusres.2019.07.039>
22. Spencer, B., Jones, T., Leyland, L. A., van Reekum, C. M., & Beale, N. (2019). 'Instead of "closing down" at our ages ... we're thinking of exciting and challenging things to do': Older people's microadventures outdoors on (e-)bikes. *Journal of Adventure Education and Outdoor Learning*, 19(2), 124–139.
23. Tennakoon, M. S., Janadari, M. P., & Wattuhewa, I. D. (2024). Environmental sustainability practices: A systematic literature review. *European Journal of Sustainable Development Research*, 8(3), em0259.
24. Wang, H., Abbey, C., Kennedy, T., Feng, E., Li, R., Liu, F., & Singh, M. K. (2023). The association between screen time and outdoor time on adolescent mental health and academic performance: Evidence from rural China. *Risk Management and Healthcare Policy*, 369–381.