

ROLE OF ENVIRONMENTAL EDUCATION IN FOSTERING SUSTAINABLE BEHAVIOURS AMONG URBAN SCHOOL STUDENTS: A SURVEY-BASED INVESTIGATION

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Abstract

The study examined the effective strategies employed in implementing environmental education initiatives among urban school students. The study adopted a descriptive survey research design. Three research questions were formulated to guide the study. The comprised all the entire school administrators in Enugu South Educational Authority, Enugu State. A sample size of 486 school administrators was used for the study using snowball sampling techniques. The instrument for data collection was a self-structured questionnaire developed by the researchers titled: "Environmental Education in Fostering Sustainable Behaviours Questionnaire (EEFSBQ)". The instrument was face-validated by three experts, two from Educational Psychology Unit, Department of Educational Foundations, University of Nigeria, Nsukka and one from the Department of Psychology, Ebonyi State University, Abakaliki. The Cronbach Alpha was used to determine the reliability of the instrument which yielded a reliability coefficient value of 0.84. Data were analyzed using mean and standard deviation. The findings of the study highlighted the crucial role of teacher professional development in enhancing educators' knowledge and skills in delivering effective environmental education. Based on the findings of the study, it was recommended among others that prioritizing ongoing professional development opportunities for educators is essential to ensure the successful implementation of environmental education initiatives. Furthermore, the use of technology tools was noted to enhance learning experiences and reach a wider audience of students.

Keywords: Behaviour, environmental education, urban schools, sustainability, professional development

Introduction

Environmental education plays a pivotal role in shaping attitudes and behaviours towards the environment, particularly among urban school students. As urbanization accelerates globally, the need for fostering sustainable behaviours becomes increasingly urgent to mitigate environmental degradation and promote a more sustainable future (United Nations Department of Economic and Social Affairs, 2020). According to Smith (2018), environmental education encompasses a diverse range of learning experiences that aim to deepen individuals' understanding of environmental issues and empower them to take informed action. In urban settings, where the majority of the world's population resides, integrating environmental education into school curricula becomes paramount in cultivating environmentally responsible citizens.

The importance of fostering sustainable behaviours among urban school students cannot be overstated. Urban areas are hubs of resource consumption and waste generation, contributing significantly to environmental challenges such as pollution, habitat destruction, and climate change (Jones et al., 2019). Without effective environmental education interventions, urban residents, particularly students, may lack the knowledge, awareness, and motivation to adopt sustainable practices. Consequently, there is a pressing need for empirical

investigations to understand the role of environmental education in promoting sustainable behaviours among urban school students.

This study presents a survey-based investigation aimed at exploring the effectiveness of environmental education in fostering sustainable behaviours among urban school students. By examining students' perceptions, attitudes, and behaviours towards environmental issues, this research seeks to provide insights into the potential impact of environmental education initiatives in urban school settings. Through a comprehensive analysis of survey data, this study aims to identify key factors influencing students' engagement with environmental education and their subsequent adoption of sustainable behaviours.

Environmental education is a process that aims to raise awareness and impart knowledge about the environment and its intricate ecosystems. It involves teaching individuals about environmental issues, such as pollution, climate change, biodiversity loss, and resource depletion, as well as fostering the skills and attitudes necessary to address these challenges sustainably. Environmental education often incorporates interdisciplinary approaches, drawing from fields such as ecology, biology, geography, sociology, and economics. Its ultimate goal is to empower individuals to become informed, responsible stewards of the environment, capable of making informed decisions and taking action to promote conservation and sustainability. Environmental education is a multifaceted approach to learning that seeks to deepen individuals' understanding of environmental issues, foster a sense of responsibility towards the environment, and empower them to take action to address environmental challenges (UNESCO, 2008). It encompasses a wide range of educational strategies, activities, and initiatives aimed at promoting environmental literacy, awareness, and stewardship among learners of all ages. Smith (2018) further elaborates on environmental education, highlighting its role in instilling a holistic understanding of the interconnections between human activities and the natural world. This understanding extends beyond traditional classroom-based learning to include experiential, hands-on activities such as outdoor field trips, nature walks, community clean-up projects, and environmental conservation initiatives. According to Jones, Smith and Johnson (2019), environmental education emphasizes the development of critical thinking skills, encouraging learners to analyze environmental issues from multiple perspectives and evaluate potential solutions based on scientific evidence and ethical considerations. By fostering a deeper understanding of complex environmental issues such as climate change, biodiversity loss, and resource depletion, environmental education empowers individuals to make informed decisions and take meaningful action to protect and conserve the environment.

Furthermore, environmental education is inherently interdisciplinary, drawing upon concepts and principles from fields such as biology, ecology, geography, sociology, and economics. This interdisciplinary approach, as highlighted by United Nations Educational, Scientific and Cultural Organization (UNESCO, 2014), recognizes the interconnectedness of social, economic, and environmental systems and encourages learners to explore the complex relationships between human societies and the natural world. Hence, environmental education serves as a catalyst for positive change by equipping individuals with the knowledge, skills, and attitudes necessary to address pressing environmental challenges and promote sustainable development. Hence, by integrating environmental education into formal and informal learning environments, educators can inspire future generations to become environmentally responsible citizens and stewards of the planet.

The importance of fostering sustainable behaviours among urban school students cannot be overstated. Urban areas are significant contributors to environmental challenges such as pollution, habitat destruction, and climate change (Jones et al., 2019). As the majority of the global population resides in urban settings (United Nations Department of Economic and Social Affairs, 2020), the impact of urban residents on the environment is substantial.

Without effective intervention, unsustainable practices in urban areas can exacerbate environmental degradation, threatening ecosystems and jeopardizing the well-being of current and future generations. Fostering sustainable behaviours among urban school students is crucial for several reasons. Firstly, it empowers students to become agents of change within their communities, driving the adoption of environmentally friendly practices and influencing societal norms (Duncan & Mikkelsen, 2020). By instilling values of environmental stewardship and responsibility, schools play a vital role in shaping students' attitudes and behaviours towards the environment.

Secondly, promoting sustainable behaviours among students aligns with broader efforts to achieve global sustainability goals, such as the United Nations Sustainable Development Goals (UNSDGs). Goal 4 of the UNSDGs emphasizes the importance of quality education, including education for sustainable development, as a means to foster sustainable lifestyles and promote sustainable development (United Nations, 2015). By integrating sustainability principles into education, schools contribute to the attainment of these goals, laying the foundation for a more sustainable future. However, given the significance of environmental education in fostering sustainable behaviours, this study presents a survey-based investigation aimed at assessing the effectiveness of environmental education initiatives in urban school settings. The purpose of this investigation is twofold:

To Evaluate the Impact of Environmental Education: The survey aims to assess the extent to which environmental education programs implemented in urban schools influence students' perceptions, attitudes, and behaviours towards environmental issues. By collecting data on students' experiences with environmental education, the study seeks to determine the effectiveness of existing initiatives in fostering sustainable behaviours. **To Identify Opportunities for Improvement:** Additionally, the survey aims to identify areas where environmental education efforts can be enhanced to better promote sustainable behaviours among urban school students. By gathering feedback from students, educators, and other stakeholders, the study seeks to uncover challenges, gaps, and opportunities for improvement in current environmental education practices. Hence, through a comprehensive analysis of survey data, this investigation aims to generate insights that can inform the design and implementation of future environmental education initiatives in urban school settings. By understanding the factors that influence students' engagement with environmental education and their subsequent adoption of sustainable behaviours, this study contributes to the ongoing efforts to promote environmental sustainability and empower the next generation of environmental stewards.

Study conducted by Ernst and Theimer (2011) has demonstrated the positive impact of environmental education on fostering sustainable behaviours among students. Studies have consistently shown that environmental education interventions can lead to increased knowledge, awareness, and concern for environmental issues (Rickinson et al., 2004). For example, a meta-analysis conducted by Liefländer et al. (2013) found that environmental education programs were effective in improving students' environmental knowledge and attitudes. Moreover, environmental education has been linked to changes in behavior, with students exhibiting greater engagement in environmentally friendly practices following participation in environmental education initiatives (Duerden & Witt, 2010; Ernst & Theimer, 2011). These behavioral changes may include actions such as recycling, conserving energy and water, reducing waste, and advocating for environmental conservation efforts (Duerden & Witt, 2010). However, while the evidence supporting the effectiveness of environmental education is promising, challenges remain in translating knowledge and awareness into sustained behavior change (Chawla, 2015). Factors such as competing priorities, limited resources, and socio-cultural influences can hinder the adoption of sustainable behaviours among students (Chawla, 2015).

Urban school settings present unique challenges and opportunities for environmental education. On one hand, urban areas are characterized by high population densities, limited green spaces, and increased exposure to environmental hazards such as pollution and waste (UN DESA, 2018). However, these factors may pose barriers to implementing effective environmental education programs, as urban schools may face constraints in accessing natural environments and resources for hands-on learning experiences (Chawla, 2015). Additionally, urban schools often serve diverse student populations with varying socio-economic backgrounds and cultural perspectives, which can influence students' attitudes and behaviours towards the environment (Rickinson et al., 2004). Addressing these socio-cultural differences and ensuring inclusivity in environmental education initiatives is essential for promoting equitable access to environmental learning opportunities. Despite these challenges, urban school settings also offer unique opportunities for environmental education. Urban environments serve as living laboratories for exploring a wide range of environmental issues, including urbanization, biodiversity, and sustainable urban development (Barthel et al., 2010). By capitalizing on the resources and expertise available in urban areas, educators can design innovative environmental education programs that engage students in real-world problem-solving and foster a deeper understanding of urban sustainability issues.

In the realm of environmental education, effective strategies are essential for implementing initiatives that foster sustainable behaviours among urban school students. Researchers such as Barthel, Folke, and Colding (2010) have identified several key strategies for enhancing environmental education efforts. These strategies include providing experiential learning opportunities, such as field trips, outdoor education programs, and school gardens, to engage students in practical learning about environmental issues. Additionally, integrating environmental education across subject areas, as suggested by Liefländer et al. (2013), reinforces sustainability concepts in science, social studies, language arts, and other disciplines. Project-based learning, as highlighted by Duerden and Witt (2010), encourages critical thinking, problem-solving, and collaboration by engaging students in inquiry-based projects that address real-world environmental challenges. Collaboration with local organizations and community leaders, as recommended by Ernst and Theimer (2011), provides resources, expertise, and opportunities for students to actively participate in environmental stewardship projects. Professional development for educators, as advocated by Chawla (2015), enhances their knowledge and skills in delivering effective environmental education, including pedagogical approaches and outdoor teaching methods. Empowering students to take leadership roles, as proposed by Rickinson et al. (2004), fosters ownership of environmental initiatives and encourages advocacy efforts within schools and communities. Finally, the integration of technology tools, as suggested by various researchers, enhances environmental learning experiences and reaches a wider audience of students. By implementing these strategies, educators can address the challenges in promoting environmental literacy and sustainability within urban school settings.

Environmental education is increasingly recognized as vital for fostering sustainable behaviours among urban school students. Research highlights its effectiveness in improving students' knowledge, attitudes, and actions towards the environment. Urban areas, home to the majority of the global population, face unique environmental challenges, making environmental education crucial in promoting sustainable urban development. However, challenges remain in ensuring equitable access to environmental learning opportunities. Disparities in resources and educational opportunities persist, particularly affecting marginalized communities. Moving forward, efforts should focus on integrating sustainability principles into curriculum frameworks, providing professional development for educators, and fostering partnerships between schools and communities. Through innovative approaches

and collaboration, environmental education can empower urban students to become informed and responsible stewards of the environment.

Statement of the Problem

While environmental education holds promise as a means of fostering sustainable behaviours among urban school students, significant challenges persist in effectively implementing and evaluating environmental education initiatives in urban school settings. Urban areas face unique environmental challenges, including pollution, habitat destruction, and resource depletion, which can have profound impacts on the health and well-being of urban residents. Despite the importance of environmental education in addressing these challenges, urban schools often lack the resources, support, and infrastructure necessary to deliver high-quality environmental education programs. Furthermore, disparities in access to environmental learning opportunities persist, particularly affecting marginalized communities within urban areas. Socio-economic factors, including income level, race, and ethnicity, can influence students' access to environmental education resources and experiences, exacerbating existing inequalities in environmental awareness and engagement. The effectiveness of environmental education programs in fostering sustainable behaviours among urban school students is also a subject of debate. While some studies have demonstrated positive outcomes, including increased environmental knowledge and attitudes, others have questioned the long-term impact of environmental education on behavior change. Factors such as competing priorities, limited resources, and socio-cultural influences may hinder the translation of knowledge and awareness into sustained action. Furthermore, addressing these challenges requires a multifaceted approach that addresses the structural, systemic, and socio-economic barriers to environmental education in urban school settings. By identifying gaps in current practices, exploring innovative strategies for curriculum design and delivery, and promoting collaboration between schools, communities, and environmental organizations, we can work towards a more equitable and effective approach to environmental education for urban school students.

Purpose of the Study

The general purpose of the study was to examine the effective strategies employed in implementing environmental education initiatives among urban school students. Specifically, the study seeks to:

1. ascertain the role of school administrators in promoting environmental education and fostering sustainable behaviours among urban school students.
2. examine the challenges that hinder the implementation of effective environmental education initiatives in urban schools.
3. determine the effective strategies to implement environmental education initiatives among urban school students?

Research Questions

The following research questions guided the study.

1. What are the roles of school administrators in promoting environmental education and fostering sustainable behaviours among urban school students?
2. What are the challenges that hinder the implementation of effective environmental education initiatives in urban schools?
3. What are the effective strategies to implement environmental education initiatives among urban school students?

Methods

The study adopted a descriptive survey research design. Three research questions were formulated to guide the study. The comprised all the entire school administrators in Enugu

South Educational Authority, Enugu State. A sample size of 486 school administrators was used for the study using snowball sampling techniques. This sample was evenly distributed within the urban schools in Enugu South Education Authority. The instrument for data collection was a self-structured questionnaire developed by the researchers titled: "Environmental Education in Fostering Sustainable Behaviours Questionnaire (EEFSBQ)". The instrument was face validated by three experts, two from Educational Psychology Unit, Department of Educational Foundations, University of Nigeria, Nsukka and one from the Department of Psychology, Ebonyi State University, Abakaliki. The Cronbach Alpha was used to determine the reliability of the instrument which yielded a high reliability coefficient value of 0.84. Data were analyzed using mean and standard deviation. The survey used items phrased in a positive manner for participant responses, where ratings of 4, 3, 2, and 1 denoted Strongly Agree, Agree, Disagree, and Strongly Disagree, respectively. Equally, negatively worded items followed the opposite scale. The mean score derived from the coded data was 2.50.

RESULTS

Research Question One: What are the roles of school administrators in promoting environmental education and fostering sustainable behaviours among urban school students?

Table 1: Mean Ratings and Standard Deviation of Responses on the role of school administrators in promoting environmental education and fostering sustainable behaviours among urban school students

S/N	Item Statement	M	SD	Decision
1	Provide direction and guidance for environmental initiatives.	2.54	0.09	A
2	Allocate funds and resources to support sustainability efforts.	2.50	0.09	A
3	Integrate environmental topics into various subjects.	2.61	0.08	A
4	Offer training to educators on environmental education.	2.72	0.07	A
5	Collaborate with local organizations to enhance environmental learning.	2.67	0.08	A
6	Develop policies that promote sustainability within the school.	2.82	0.06	A
7	Lead by example through personal environmental stewardship.	2.65	0.08	A
Cluster Mean		2.64	0.08	A

Result in Table 1 shows the mean ratings and standard deviation of responses on the role of school administrators in promoting environmental education and fostering sustainable behaviours among urban school students. Item 1 – 7 met the criterion mean score of 2.50 and above which indicate acceptance by respondent according to decision rule. Above listed item was accepted as the role of school administrators based on the cluster mean score of 2.64 and standard deviation of 0.08 respectively. The following are the accepted statements: Provide direction and guidance for environmental initiatives; allocate funds and resources to support sustainability efforts; integrate environmental topics into various subjects; offer training to educators on environmental education; collaborate with local organizations to enhance environmental learning, among others.

Research Question Two: What are the challenges that hinder the implementation of effective environmental education initiatives in urban schools?

Table 2: Mean Ratings and Standard Deviation of Responses on the challenges that hinder implementation of effective environmental education initiatives in urban schools

S/N	Item Statement	M	SD	Decision
8	Insufficient budgetary allocations for environmental education programmes and resources.	2.66	0.08	A
9	Pressure to prioritize standardized testing and core academic subjects over environmental education.	2.87	0.06	A
10	Lack of teacher training in environmental education.	2.82	0.06	A
11	Unequal access to environmental learning opportunities due to socio-economic factors among students.	2.79	0.07	A
12	Rigidity in curriculum frameworks that may not allow for the integration of environmental topics across subject areas.	2.78	0.07	A
13	Challenges in engaging community members in supporting environmental education initiatives	2.69	0.08	A
14	Absence of supportive policies or mandates at state level for environmental education integration.	2.68	0.08	A
15	Lack of appropriate facilities for hands-on environmental learning experiences.	2.59	0.08	A
16	Teacher resistance to prioritizing environmental education in their teaching practices.	2.60	0.08	A
<i>Cluster Mean</i>		2.72	0.07	A

Table 2 presented above revealed the mean scores and standard deviations of responses on the challenges that hinder implementation of effective environmental education initiatives in urban schools. Items in the table met the benchmark mean score of 2.50 and beyond which indicate acceptance by respondents. After analyzing the findings in the table, the result was finalized with a cluster mean score of 2.72 and standard deviation of 0.07 correspondingly. The following are accepted challenges that hinder implementation of effective environmental education initiatives in urban schools: Insufficient budgetary allocations for environmental education programmes and resources; pressure to prioritize standardized testing and core academic subjects over environmental education; lack of teacher training in environmental education; unequal access to environmental learning opportunities due to socio-economic factors among students, etc.

Research Question Three: What are the effective strategies to implement environmental education initiatives among urban school students?

Table 3: Mean Ratings and Standard Deviation of Responses on the effective strategies to implement environmental education initiatives among urban school students

S/N	Item Statement	M	SD	Decision
17	Provide hands-on experiences like field trips and outdoor activities to engage students directly with environmental concepts.	2.91	0.06	A
18	Integrate environmental topics across various subjects to reinforce learning and demonstrate real-world applications.	2.89	0.06	A
19	Collaborate with local organizations and community members to provide resources and enhance learning opportunities.	2.90	0.06	A
20	Employ students in inquiry-based projects that promote	2.80	0.07	A

	critical thinking and problem-solving skills.			
21	Offer training and support for educators to enhance their knowledge and skills in delivering effective environmental education.	3.00	0.05	A
22	Incorporate technology tools such as simulations, virtual field trips, and online resources to enhance learning and reach a wider audience.	3.11	0.03	A
23	Empower students to take leadership roles in environmental initiatives, fostering ownership and commitment to sustainability.	2.79	0.07	A
24	Green School Initiatives: Implement sustainable practices within the school environment, such as recycling programs, energy conservation, and green spaces, to model environmental stewardship.	2.84	0.06	A
25	Advocate for policies that support environmental education at the school, district, and state levels to ensure long-term sustainability efforts.	2.99	0.05	A
26	Engage students in inquiry-based projects that address environmental challenges and problem-solving skills.	2.79	0.07	A
	Cluster Mean	2.90	0.06	A

The above table shows the mean ratings and standard deviation of responses on the effective strategies to implement environmental education initiatives among urban school students. The items met the criterion mean score of 2.50 and above which indicates acceptance according to decision rule. Based on the findings of the result in the above table it was accepted based on the cluster mean score of 2.90 and standard deviation of 0.06 respectively. The following statements were accepted as effective strategies to implement environmental education initiatives among urban school students: Provide hands-on experiences like field trips and outdoor activities to engage students directly with environmental concepts; integrate environmental topics across various subjects to reinforce learning and demonstrate real-world applications; collaborate with local organizations and community members to provide resources and enhance learning opportunities; employ students in inquiry-based projects that promote critical thinking and problem-solving skills, among others.

Discussion

The findings of the study revealed the role of school administrators in promoting environmental education and fostering sustainable behaviours among urban school students such as to provide direction and guidance for environmental initiatives; to allocate funds and resources to support sustainability efforts; to integrate environmental topics into various subjects; to offer training to educators on environmental education; to collaborate with local organizations to enhance environmental learning, to develop policies that promote sustainability within the school; and lead by example through personal environmental stewardship. The findings of study align with previous research by Chawla (2015), who posited that strong administrative support and leadership are crucial for integrating environmental education into school curricula and fostering sustainable behaviours among students.

The findings of the study revealed that urban schools face significant challenges in implementing effective environmental education initiatives, including limited funding, competing priorities, and standardized testing requirements. The findings of the study are in line with the previous studies of Duerden and Witt (2010) that highlighted limited funding, competing priorities, and standardized testing requirements as significant barriers to the successful implementation of environmental education programs in urban schools. However,

these challenges are consistent with previous research findings highlighting similar barriers to the successful implementation of environmental education programs in urban school settings.

The findings of the study revealed that hands-on learning experiences, such as school gardens and outdoor education programs, are effective strategies for promoting environmental education and fostering sustainable behaviours among urban school students. The findings of the study are in support of the previous studies by Liefländer, Anna, Georg, Franz and Schultz (2013), who demonstrated the effectiveness of hands-on learning experiences, such as school gardens and outdoor education programs, in promoting environmental education and fostering sustainable behaviours among urban school students. The findings are also in agreement with the study of Barthel, Folke, and Colding (2010), who posited that such experiential learning opportunities significantly enhance students' environmental interest, knowledge, and environmentally responsible behavior.

Conclusion

In conclusion, environmental education is vital for fostering sustainable behaviours among urban school students and addressing urban environmental challenges. Prioritizing equitable access and innovative approaches in environmental education initiatives, alongside collaboration between schools and communities, is essential. By empowering students to become responsible stewards of the environment, environmental education contributes to building a more sustainable future for urban communities.

Educational Implication for Social Psychologists

Social psychologists have a crucial role to play in informing educational practices and policies. By applying insights from social psychology, educators can create more effective learning environments and promote positive social outcomes among students. For example, understanding social influence processes allows social psychologists to develop interventions that encourage pro-social behaviours and discourage negative peer influences such as bullying. Additionally, social psychologists can contribute to the design of educational curricula that promote diversity, equity, and inclusion by addressing issues such as prejudice, stereotyping, and discrimination. Communication skills are another area where social psychologists can make significant contributions, providing educators with evidence-based strategies for enhancing interpersonal communication and conflict resolution among students. Moreover, social psychologists can help educators develop instructional methods that cater to the diverse needs and preferences of students, optimizing engagement and learning outcomes. By conducting research and disseminating evidence-based practices, social psychologists can play a vital role in improving educational outcomes and promoting positive social development among students.

Contribution to Knowledge

Research on environmental education and sustainable behaviours among urban school students enhances our understanding of how education can address environmental challenges in cities. By investigating the effectiveness of environmental education initiatives, scholars identify strategies and barriers for promoting sustainable behaviours. This research highlights socio-economic factors influencing access to environmental education and contributes to interdisciplinary approaches integrating environmental science, education, and psychology. Furthermore, findings inform evidence-based practices and policy recommendations to promote environmental sustainability in urban communities.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. School administrators should prioritize environmental education by providing strong leadership, allocating resources, and integrating sustainability principles into school policies and practices.

2. Curriculum developers should integrate environmental education across subject areas, embedding sustainability concepts and experiential learning opportunities into existing curriculum frameworks.
3. Education agencies and institutions should offer professional development opportunities for teachers to enhance their capacity to deliver effective environmental education, incorporating pedagogical approaches that promote active learning and critical thinking.
4. Schools should collaborate with community organizations, environmental agencies, and local businesses to expand students' exposure to environmental learning opportunities beyond the classroom, providing real-world experiences and mentorship opportunities.
5. Researchers, educators, and policymakers should conduct evaluations to inform future program development and implementation.

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