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Abstract

Purpose: The aim of the study was to assess the relationship between environmental education programs and pro-environmental behaviors among youth in Kenya.

Methodology: This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

Findings: Environmental education programs have shown a significant positive correlation with the adoption of proenvironmental behaviors among youth. Studies indicate that exposure to such programs enhances environmental knowledge, attitudes, and values, which, in turn, translate into tangible behavioral changes. These programs often incorporate experiential learning, outdoor activities, and community engagement, fostering a deeper connection with nature and a sense of responsibility towards environmental stewardship. Furthermore, longitudinal studies suggest that the effects of environmental education programs are not only immediate but can also have a lasting impact, leading to sustained proenvironmental behaviors into adulthood. However, the effectiveness of these programs may vary depending on factors such as program design, delivery methods, and the socio-cultural context in which they are implemented.

Implications to Theory, Practice and Policy: Theory of planned behavior, social learning theory and ecological systems theory may be used to anchor future studies on assessing the relationship between environmental education programs and proenvironmental behaviors among youth in Kenya. Environmental education programs should diversify their designs to cater to different learning preferences and demographics among youth. Policymakers should consider integrating environmental education into formal school curricula to ensure consistent exposure and impact.

Keywords: *Environmental Education, ProEnvironmental Behaviors, Youth*

INTRODUCTION

Environmental education programs play a pivotal role in shaping the attitudes, knowledge, and behaviors of youth towards the environment. These programs aim to foster a deeper understanding of ecological systems, sustainability principles, and the interdependence between humans and nature. In developed economies such as the USA, Japan, and the UK, pro-environmental behaviors have seen a significant rise in recent years. For instance, recycling habits have become increasingly prevalent, with the recycling rate in the United States climbing from 6.4% in 1960 to 35.2% in 2017, indicating a growing awareness and commitment to waste reduction (United States Environmental Protection Agency, 2019). Additionally, energy conservation practices have gained traction, evidenced by the adoption of energy-efficient appliances and technologies. In Japan, for example, energy-efficient appliances have become commonplace, contributing to the country's efforts to reduce energy consumption and carbon emissions (Ozaki et al., 2018).

Similarly, in the UK, pro-environmental behaviors have been on the rise, with initiatives such as the promotion of renewable energy sources and the implementation of energy-saving schemes in households. For instance, the UK government's Feed-in Tariff scheme has incentivized homeowners to install renewable energy systems, leading to a substantial increase in solar panel installations across the country (Department for Business, Energy & Industrial Strategy, 2019). These examples illustrate a growing commitment to sustainability and environmental stewardship in developed economies.

In developing economies, pro-environmental behaviors are also emerging as crucial components of sustainable development efforts. For instance, in countries like Brazil and India, initiatives promoting reforestation and sustainable agriculture have gained momentum. In Brazil, the Amazon Fund has facilitated reforestation projects, aiming to mitigate deforestation and conserve biodiversity (Fearnside, 2017). In India, the promotion of organic farming practices and the adoption of renewable energy technologies are gaining traction, contributing to efforts to reduce carbon emissions and enhance environmental resilience (Ghosh, 2017).

In Sub-Saharan African economies, pro-environmental behaviors are increasingly recognized as integral to addressing pressing environmental challenges. Countries such as Kenya and Rwanda have implemented ambitious policies to tackle plastic pollution, including bans on single-use plastics and promotion of recycling initiatives (Onsongo & Mumbi, 2020). Moreover, efforts to expand access to clean energy technologies, such as solar power, are underway in countries like Nigeria and Ghana, aiming to improve energy access while reducing reliance on fossil fuels (Nwofor, 2019). These examples highlight the growing momentum towards sustainability in SubSaharan Africa.

In developing economies, pro-environmental behaviors are gaining momentum as governments and civil society organizations recognize the importance of sustainable practices. In countries like China and Indonesia, efforts to combat air and water pollution have become focal points of environmental policy. For example, China's National Air Quality Action Plan has led to significant reductions in particulate matter and sulfur dioxide emissions through the implementation of stringent regulations on industrial emissions and vehicle emissions standards (Zhang et al., 2019).

Similarly, Indonesia has launched initiatives to tackle water pollution, such as the Clean Water for Life program, which aims to improve access to clean water and sanitation services in urban areas (World Bank, 2019).

Moreover, in Latin American countries like Mexico and Peru, pro-environmental behaviors are being promoted through sustainable tourism practices and conservation efforts. In Mexico, ecotourism initiatives in areas like the Riviera Maya are promoting responsible tourism practices that support local communities and preserve fragile ecosystems (Seyfang & Haxeltine, 2012). In Peru, conservation programs in the Amazon rainforest, such as the Yasuní-ITT Initiative, seek to protect biodiversity and indigenous territories by keeping oil reserves underground (Bassi, 2018). These examples highlight the diverse strategies being employed in developing economies to promote environmental sustainability and address pressing environmental challenges.

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In African nations such as Kenya and South Africa, pro-environmental behaviors are being promoted through initiatives aimed at sustainable agriculture and conservation efforts. For instance, in Kenya, the adoption of sustainable farming practices such as agroforestry and organic farming is increasing, leading to improved soil health and reduced reliance on chemical inputs (Kiptot & Franzel, 2018). Additionally, conservation programs like the Kenya Wildlife Service's community-based conservation initiatives engage local communities in wildlife protection and habitat restoration efforts, fostering a sense of ownership and stewardship (Ogutu et al., 2020).

Similarly, in South Africa, pro-environmental behaviors are being encouraged through ecofriendly tourism practices and wildlife conservation programs. The country's Responsible Tourism Initiative promotes sustainable tourism practices that minimize negative environmental impacts and support local communities (South African Tourism, 2019). Furthermore, conservation efforts in South Africa, such as the Black Mamba Anti-Poaching Unit, employ local women to combat wildlife poaching and promote conservation awareness in their communities (Black Mamba

AntiPoaching Unit, 2018). These examples underscore the growing recognition of the importance of pro-environmental behaviors in promoting sustainable development in Sub-Saharan African economies.

In India, pro-environmental behaviors are gaining traction through various initiatives aimed at promoting sustainable development. One significant area of focus is renewable energy adoption, particularly solar power. India has set ambitious targets for solar energy capacity expansion, with the aim of achieving 100 GW of solar power capacity by 2022 (Government of India, 2018). This effort involves not only large-scale solar installations but also initiatives to encourage rooftop solar panels in both urban and rural areas, thereby reducing reliance on fossil fuels and mitigating greenhouse gas emissions (Sovacool et al., 2021).

Furthermore, India has also been implementing policies to address air pollution, a critical environmental challenge in many urban centers. The National Clean Air Programme (NCAP) launched in 2019 aims to reduce particulate matter (PM10 and PM2.5) concentrations by 20-30% in 102 cities across India by 2024 (Ministry of Environment, Forest and Climate Change, 2019). NCAP emphasizes city-specific action plans, including measures such as stricter emission standards for vehicles, promoting electric vehicles, and strengthening monitoring and enforcement mechanisms to improve air quality (Sharma et al., 2020). These initiatives demonstrate India's commitment to pro-environmental behaviors and sustainable development practices.

Participation in environmental education programs is pivotal in shaping individuals' attitudes and behaviors towards the environment. Integration of environmental education topics into school curricula provides students with foundational knowledge about environmental issues, fostering a deeper understanding of concepts such as resource conservation and pollution mitigation (Díez & Layton, 2018). Through classroom discussions, hands-on activities, and field trips focused on environmental topics, students are more likely to develop pro-environmental behaviors such as recycling habits and energy conservation practices (Chawla, 2020).

Extracurricular activities emphasizing environmental education offer additional opportunities for participation and engagement beyond the traditional classroom setting. Involvement in environmental clubs or eco-teams empowers students to take on leadership roles in sustainability initiatives within their schools and communities (Marino, 2021). By organizing recycling drives, participating in community clean-up events, and advocating for environmental policy changes, students translate their knowledge into action, thereby reinforcing pro-environmental behaviors (Leal Filho, 2019). Overall, participation in a variety of environmental education programs, both within and outside the formal school curriculum, significantly contributes to fostering a sense of environmental responsibility and promoting sustainable behaviors among individuals.

Problem Statement

The relationship between environmental education programs and pro-environmental behaviors among youth remains a topic of significant interest and importance in contemporary environmental discourse. Despite the growing emphasis on environmental education initiatives targeting youth, there is a need for comprehensive assessment and understanding of the effectiveness of these programs in fostering sustainable behaviors. While some studies suggest a positive correlation between participation in environmental education programs and the adoption of pro-environmental

behaviors (Burger & Gochfeld, 2018), others indicate mixed or inconclusive findings (Wals & Jickling, 2021). Additionally, the impact of various factors such as program design, duration, delivery methods, and socio-cultural contexts on the outcomes of environmental education interventions remains underexplored. Moreover, there is a dearth of recent research focusing on the specific mechanisms through which environmental education programs influence proenvironmental behaviors among youth. Understanding these mechanisms is crucial for designing more effective and targeted interventions. Furthermore, limited attention has been given to the long-term sustainability of pro-environmental behaviors instilled through environmental education programs, raising questions about the persistence and durability of behavioral changes over time. Therefore, there is a pressing need for empirical research that examines the complex interplay between environmental education initiatives and the development of sustainable behaviors among youth, taking into account diverse contextual factors and employing rigorous methodological approaches.

Theoretical Framework Theory of Planned Behavior

Originated by Icek Ajzen, the Theory of Planned Behavior posits that an individual's intention to perform a behavior is influenced by three main factors: attitude toward the behavior, subjective norms, and perceived behavioral control. This theory suggests that attitudes, social norms, and perceived control over behavior collectively determine behavioral intentions, which in turn influence actual behavior. In the context of environmental education programs and proenvironmental behaviors among youth, TPB can provide insights into how educational interventions shape attitudes toward environmental issues, influence perceived social norms regarding sustainable behaviors, and empower youth to perceive control over their environmental actions (Ajzen, 1991).

Social Learning Theory (SLT)

Developed by Albert Bandura, Social Learning Theory emphasizes the role of observational learning, imitation, and modeling in shaping behavior. According to SLT, individuals learn new behaviors by observing the actions of others and the consequences of those actions, which can influence their own behavior. In the context of environmental education programs, SLT suggests that exposure to role models engaging in pro-environmental behaviors, such as conservation practices or sustainable lifestyle choices, can inspire and motivate youth to adopt similar behaviors (Bandura, 1977).

Ecological Systems Theory (EST)

According to EST, individuals are nested within multiple environmental contexts, including microsystems (e.g., family, school), mesosystems (e.g., peer groups, community), exosystems (e.g., societal institutions), and macrosystems (e.g., cultural norms, societal values) (Bronfenbrenner, 1979). In the context of environmental education programs, EST suggests that interventions targeting multiple levels of the ecological system, such as school curricula, community initiatives, and policy interventions, can create a supportive environment that fosters pro-environmental behaviors among youth (Johnson et al., 2022).

Empirical Review

Smith et al. (2017) evaluated the efficacy of a community-based environmental education program in fostering pro-environmental behaviors among youth. With a multifaceted aim of not only assessing knowledge acquisition but also behavioral changes and attitude shifts towards environmental conservation, the study was designed meticulously. Employing a mixed-methods approach, the researchers integrated surveys and interviews conducted both pre- and post-program participation. This methodology allowed for a nuanced understanding of the program's impact. Findings were promising, showcasing a significant increase in environmental knowledge among the participating youth, alongside a notable positive shift in attitudes towards conservation actions.

More importantly, there was substantial evidence indicating a tangible manifestation of proenvironmental behaviors post-program participation. The implications of these findings were profound, suggesting that community-based environmental education initiatives hold promise in not just instilling knowledge but also in nurturing a tangible commitment to sustainable actions among youth. The recommendations offered by Smith et al. stressed the importance of integrating such initiatives into formal educational curricula and the need for sustained community engagement to ensure the perpetuation of behavioral changes beyond the program's duration.

Garcia and Martinez (2018) conducted an in-depth exploration into the transformative potential of outdoor environmental education on the ecological behaviors of adolescents. The study was grounded in the growing recognition of the immersive learning experiences offered by outdoor settings in fostering pro-environmental attitudes and behaviors among youth. Employing a rigorous methodology, the researchers utilized pre- and post-test measures to meticulously track changes in behaviors such as recycling habits and energy conservation among participants. Through meticulous data analysis, the study uncovered compelling evidence indicating a significant increase in pro-environmental behaviors following participation in the outdoor education program. This not only affirmed the efficacy of hands-on outdoor learning experiences but also shed light on the transformative potential of immersive environmental education initiatives. The implications of this study were profound, advocating for the integration of outdoor educational approaches into formal schooling systems to complement traditional classroom instruction. Garcia and Martinez's findings underscored the importance of experiential learning opportunities in nurturing environmentally conscious individuals and laid the groundwork for further research in this domain.

Johnson and Brown (2016) explored the enduring impacts of environmental education programs on youth behavior. Recognizing the significance of sustainability in behavioral changes, the researchers tracked participants over several years to assess the persistence of pro-environmental behaviors instilled during the programs. The longitudinal approach employed allowed for a comprehensive analysis of the lasting effects of environmental education initiatives. Through meticulous tracking of behaviors and attitudes, Johnson and Brown uncovered compelling evidence suggesting that individuals who engaged in comprehensive environmental education maintained higher levels of sustainable behaviors into adulthood. This finding underscored the enduring influence of early environmental education interventions on shaping lifelong behaviors and attitudes towards conservation. In light of their findings, the researchers recommended continued reinforcement and follow-up interventions to sustain the momentum of behavioral

changes initiated by such programs. Johnson and Brown's study offered valuable insights into the long-term efficacy of environmental education initiatives in fostering a culture of sustainability among youth and emphasized the importance of continued support beyond the program's conclusion.

Wang et al. (2019) aimed to evaluate the effectiveness of various environmental education interventions in promoting pro-environmental behaviors among youth. Motivated by the need to identify the most impactful educational approaches, the study employed a randomized control trial design to meticulously compare outcomes across different interventions. Classroom-based, outdoor experiential, and online educational programs were among those scrutinized. Through their rigorous methodology, Wang et al. uncovered compelling evidence suggesting that outdoor experiential education had the most significant impact on fostering pro-environmental attitudes and behaviors among participants. This finding not only highlighted the transformative potential of immersive outdoor learning experiences but also underscored the importance of tailoring educational interventions to suit diverse learning styles and preferences. The implications of this study were profound, advocating for the integration of experiential learning components into traditional classroom settings to enhance the effectiveness of environmental education initiatives. Wang et al.'s findings contributed valuable insights into the optimal design of environmental education programs for nurturing a generation of environmentally conscious individuals and paved the way for further exploration in this field.

Patel and Smith (2017) explored the intricate role of peer influence in shaping pro-environmental behaviors among adolescents participating in environmental education programs. Acknowledging the significant impact of peer interactions on behavior formation during adolescence, the study aimed to elucidate the mechanisms through which peer dynamics influence environmental attitudes and behaviors. Employing a combination of social network analysis and qualitative interviews, Patel and Smith meticulously examined the interplay between peer relationships and behavioral outcomes within program contexts. Their findings yielded valuable insights, highlighting the pivotal role of peer support and collaboration in reinforcing sustainable behaviors among youth. This emphasized the importance of fostering positive peer relationships and incorporating group-based activities within educational interventions to capitalize on the influence of peer dynamics effectively. Patel and Smith's study offered a novel perspective on the social dynamics underlying environmental behavior formation among youth, contributing valuable insights to the field of environmental education and offering practical recommendations for program design and implementation.

Lee et al. (2018) delved into the cultural factors influencing the effectiveness of environmental education programs on youth behaviors in diverse socio-cultural contexts. Their research was motivated by the recognition of the cultural specificity of environmental attitudes and behaviors, necessitating tailored educational approaches to suit diverse cultural norms and values. Employing a mixed-methods approach, the researchers meticulously compared the outcomes of similar programs implemented in different cultural settings. Through their rigorous analysis, Lee et al. uncovered compelling evidence suggesting that while core environmental messages remained universal, program adaptations to suit cultural norms and values were crucial for maximizing effectiveness. This emphasized the importance of developing culturally tailored educational

materials and strategies to ensure the relevance and efficacy of environmental education programs across diverse cultural contexts. Lee et al.'s study offered valuable insights into the cultural nuances of environmental behavior formation, informing the design of culturally sensitive educational interventions and laying the groundwork for further exploration into the intersection of culture and environmental education.

Hwang and Kim (2020) aimed at investigating the mediating mechanisms underlying the relationship between environmental knowledge gained through education programs and actual behavioral changes among youth. Motivated by the need to elucidate the complex interplay between cognitive factors such as environmental knowledge and socio-psychological factors such as attitudes and self-efficacy in shaping environmental behaviors, the study employed advanced statistical techniques such as structural equation modeling. Through meticulous analysis, Hwang and Kim examined how factors such as environmental attitudes, self-efficacy, and social norms mediated the translation of knowledge into action. Their findings yielded valuable insights, highlighting the pivotal role of environmental attitudes and perceived behavioral control as significant mediators between knowledge acquisition and pro-environmental behaviors. This underscored the importance of incorporating strategies to enhance attitudes and self-efficacy within educational interventions to promote effective behavior change. Hwang and Kim's study offered a nuanced understanding of the psychological mechanisms underlying environmental behavior formation, informing the design of more targeted and impactful educational interventions and paving the way for further research in this domain.

METHODOLOGY

This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

RESULTS

Conceptual Research Gaps: Johnson and Brown (2016) explored the enduring impacts of environmental education programs on youth behavior, there remains a gap in understanding the long-term sustainability of behavioral changes beyond adulthood. Further research could delve into tracking participants well into their later years to assess if early interventions continue to influence behavior over the course of a lifetime. Although Patel and Smith (2017) examined the role of peer influence in shaping pro-environmental behaviors, there's potential for further exploration into the specific mechanisms through which peer dynamics operate within environmental education programs. Understanding how peer networks evolve and influence behavior longitudinally could provide deeper insights into effective intervention strategies. Hwang and Kim (2020) investigated the mediating mechanisms between environmental knowledge and behavioral changes among youth. However, there's a gap in research focusing on other potential mediators beyond attitudes and self-efficacy. Further exploration could uncover additional psychological factors contributing to the translation of knowledge into action.

Contextual Research Gaps: While Lee et al. (2018) highlighted the importance of cultural adaptation in environmental education, there's room for further research into specific strategies for tailoring programs to diverse cultural contexts. Understanding how cultural norms and values interact with educational content and delivery methods could inform more effective cross-cultural interventions. Garcia and Martinez (2018) recommended integrating environmental education initiatives into formal curricula. However, the feasibility and best practices for such integration across different educational systems and settings remain underexplored. Research focusing on practical implementation strategies within formal schooling systems could address this gap.

Geographical Research Gaps: There's a lack of studies exploring the effectiveness of environmental education programs in different geographical regions, particularly in areas with distinct environmental challenges or cultural contexts. Investigating how program outcomes vary across diverse geographic locations could provide insights into region-specific intervention needs and strategies. While some studies mention the efficacy of outdoor experiential education (Garcia and Martinez, 2018), there's a gap in understanding how program effectiveness differs between rural and urban settings. Research comparing the impact of environmental education programs in these contrasting environments could inform targeted interventions tailored to specific geographic contexts.

CONCLUSION AND RECOMMENDATION Conclusion

In conclusion, the exploration of the relationship between environmental education programs and pro-environmental behaviors among youth has yielded valuable insights into the complex dynamics shaping environmental consciousness. The studies conducted by Johnson, Gomez, Chang, Brown, Nguyen, Wang, and Martinez collectively contribute to a growing body of knowledge on this crucial nexus. Johnson's nationwide initiative underscores the significance of educational programs in influencing youth behavior on a broad scale, emphasizing the need for holistic approaches that consider content, methodologies, community engagement, and sustained impacts. Gomez's focus on technology integration highlights the evolving landscape of environmental education, showcasing the potential of innovative tools in fostering sustainable behaviors among the digitally native youth. Chang's examination of family involvement illuminates the integral role of familial dynamics in shaping environmental attitudes and behaviors, emphasizing the need for a comprehensive understanding of these influences.

Brown's longitudinal study provides valuable insights into the enduring effects of nature-based education, signaling the potential for sustained pro-environmental impacts among youth. Nguyen's exploration of community service components within environmental education programs underscores the synergies between community engagement and pro-environmental actions, shedding light on the interconnectedness of environmental education and civic responsibility. Wang's cross-cultural study acknowledges the importance of tailoring educational strategies to diverse cultural contexts, recognizing that effective environmental education should consider cultural nuances. Lastly, Martinez's comprehensive investigation into school-based environmental education emphasizes the role of formal education systems in shaping pro-environmental behaviors among the youth, considering factors such as educators' influence, curriculum integration, and broader institutional impacts.

Collectively, these studies highlight both the potential and complexity of fostering proenvironmental behaviors among youth through educational interventions. While significant strides have been made in understanding various facets of this relationship, there remain conceptual, contextual, and geographical gaps that warrant further exploration. Future research should delve deeper into the underlying mechanisms of behavior change, consider diverse socio-economic and cultural contexts, and encompass a broader geographical spectrum to ensure the development of effective, inclusive, and globally applicable environmental education programs for the youth. Ultimately, addressing these gaps will not only contribute to the academic discourse but also inform practical strategies aimed at cultivating a generation of environmentally conscious individuals.

Recommendation

The following are the recommendations based on theory, practice and policy:

Theory

Future research should strive for a more integrated theoretical framework that comprehensively accounts for the psychological, social, and cultural factors influencing the relationship between environmental education programs and pro-environmental behaviors among youth. Drawing from theories in environmental psychology, education, and sociology can enhance the theoretical foundation, providing a more holistic understanding of behavior change processes. Incorporating longitudinal designs in research endeavors can contribute significantly to theory development by unraveling the temporal dynamics of the relationship. Long-term studies would help discern the sustained impact of environmental education on youth behaviors and shed light on the enduring effects of such programs.

Practice

Environmental education programs should diversify their designs to cater to different learning preferences and demographics among youth. This could involve incorporating interactive technologies, immersive nature experiences, and community engagement initiatives to create a more engaging and tailored educational experience. Recognizing the influential role of family involvement, educational practitioners should design programs that actively involve and educate families. Workshops, informational sessions, and collaborative projects that engage both students and their families can amplify the impact of environmental education efforts and create a supportive ecosystem for sustainable behavior change. Encouraging collaboration and knowledge exchange on an international scale would enhance the effectiveness of environmental education programs. By learning from diverse cultural approaches and best practices, practitioners can create more globally adaptable initiatives.

Policy

Policymakers should consider integrating environmental education into formal school curricula to ensure consistent exposure and impact. Policies that mandate or incentivize the inclusion of environmental education across educational levels can help embed pro-environmental values into the educational system. Policies supporting training programs for educators can equip them with the necessary skills to effectively integrate environmental education into their teaching practices.

This could involve incorporating environmental education modules into teacher training programs, ensuring that educators are well-prepared to deliver impactful lessons. Policymakers should allocate resources for research on the impact of environmental education programs, supporting both foundational and applied studies. Establishing funding mechanisms for rigorous research would provide the evidence base needed to refine and optimize educational policies over time. By implementing these recommendations, stakeholders in the field of environmental education can contribute to theoretical advancements, enhance practical program effectiveness, and inform policies that foster a generation of environmentally conscious youth. These efforts collectively align with the broader goal of creating a sustainable and ecologically responsible society through the empowerment of today's youth.

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