

**INFLUENCE OF ENVIRONMENTAL EDUCATION ON WASTE MANAGEMENT
PRACTICES AMONG STUDENTS AT THE UNIVERSITY OF BENIN.**

By

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FACULTY OF EDUCATION,
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BENIN CITY.**

March, 2025

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**A PROJECT SUBMITTED TO THE DEPARTMENT OF HEALTH SAFETY AND
ENVIROMENTAL EDUCATION, FACULTY OF EDUCATION, UNIVERSITY OF
BENIN, BENIN CITY.**

**IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF
BACHELORS DEGREE IN EVVIROMENTAL EDUCATION**

March, 2025

DECLARATION

I, Jessica, **AKURE** declare that this is an original research proposal work carried out by me in the Department of Educational Management, University of Benin, Benin City.

Jessica

Date

CERTIFICATION

We, the undersigned Certify that this project work was carried out by Jessica Akure, with matriculation number EDU2001835 in the Department of Health, Safety and Environmental Education, Faculty of Education, University of Benin, Benin City, EDO State, Nigeria. In partial fulfillment of the requirements for the award of a Bachelor of Science B. Sc (Ed) degree in Enviromental Education.

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DEDICATION

This research work is dedicated to God Almighty and my parents.

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ABSTRACT

This study examines the influence of environmental education on waste management practices among students at the University of Benin. Guided by four research questions, the study investigates the impact of environmental education, the relationship between environmental knowledge, attitudes, and waste management practices, the challenges hindering effective waste management, and the strategies that enhance sustainable practices. A survey research design was adopted, with a population of 223 students enrolled in Environmental Education. The study utilized a questionnaire titled “Influence of Environmental Education on Waste Management Practices among Students at the University of Benin” (IEEWMPASUB), and data collected from 200 valid responses were analyzed using frequency counts and simple percentages.

The findings reveal that environmental education positively influences students’ awareness, attitudes, and behaviors towards waste management, fostering responsible waste practices. A strong positive correlation was observed between students' environmental knowledge and their waste management habits. Key challenges identified include inadequate infrastructure, limited institutional support, financial and time constraints, and insufficient waste collection facilities. The study also highlights effective strategies such as practical experience, community collaboration, curriculum integration, and digital tools in promoting sustainable waste management. The study concludes that environmental education plays a vital role in shaping students’ waste management behaviors and recommends embedding environmental topics into academic programs, enhancing institutional support, organizing regular workshops, and fostering partnerships with environmental agencies. The study suggests further research into cross-university comparisons, long-term impacts of environmental education, and the role of socioeconomic factors in waste management practices.

Keywords: *Environmental Education, Waste Management, University of Benin, Sustainability, Student Practices.*

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CHAPTER ONE

INTRODUCTION

Background of the Study

Environmental education is a crucial element in fostering sustainable development, as it equips individuals with the knowledge and skills necessary to engage in environmental protection and management (UNESCO, 2020). Universities, as centers of learning and innovation, play a pivotal role in imparting environmental education to their students. This is particularly significant in the context of waste management, where the practices adopted by individuals and communities have profound implications for environmental sustainability, (Gareau, 2019).

Environmental education is deeply rooted in the principles of sustainability and ecological stewardship. It seeks to develop an understanding of the inter-connectedness of human activities and the environment, emphasizing the need for responsible behavior to preserve natural resources for future generations. In many universities, including the University of Benin, environmental education is increasingly being integrated into various academic programmes, not just environmental science courses. This multidisciplinary approach aims to reach a broader student base, instilling environmental consciousness across diverse fields of study (Adeyemi & Aina, 2019). The effectiveness of this integration is contingent upon how well the curriculum translates into actionable knowledge. Studies have shown that when environmental education is effectively embedded within the curriculum, students are more likely to adopt sustainable practices, including proper waste management (Babalola & Oduwole, 2021). This highlights the importance of curriculum design that not only imparts knowledge but also encourages practical application through project-based learning, community engagement, and campus sustainability initiatives.

The influence of environmental education on waste management practices has been widely recognized in academic discourse. According to recent studies, environmental education has the potential to significantly alter individuals' perceptions and behaviors towards waste management (Olorunfemi & Akinbode, 2020). In higher education institutions, such education can lead to increased awareness of the environmental impacts of waste, fostering more responsible waste management practices among students (Ajayi & Oyeniya, 2019).

Research indicates that effective waste management in university settings requires not only the implementation of appropriate infrastructural facilities but also the active participation of the university community in waste reduction, reuse, and recycling activities (Eze & Ezenwankwo, 2021). Environmental education plays a crucial role in promoting these practices by educating students about the environmental consequences of improper waste disposal and the benefits of sustainable waste management (Ogundipe et al., 2022). Despite the recognized importance of environmental education, challenges remain in its effective implementation. A study by Adebisi and Onwuegbuchulam (2020) highlights that while environmental education is included in the curriculum of many universities, including the University of Benin, there is often a gap between theoretical knowledge and practical application. This gap can result in limited impact on students' actual waste management behaviors, underscoring the need for more practical, hands-on approaches to environmental education (Nwankwo & Omotayo, 2021).

Moreover, the socio-cultural context within which students operate also influences their waste management practices. For instance, students' attitudes towards waste management are shaped by factors such as their prior exposure to environmental issues, the availability of waste management facilities, and the environmental policies of the institution (Okunlola & Ogunbanwo,

2018). Therefore, any analysis of the influence of environmental education on waste management practices must consider these contextual factors to provide a comprehensive understanding of the issue.

Behavioral change is a critical outcome of environmental education, particularly in the context of waste management. The theory of planned behavior suggests that education can influence individuals' attitudes, subjective norms, and perceived behavioral control, thereby shaping their intentions and actual behaviors (Ajzen, 1991). At the University of Benin, environmental education initiatives have been implemented to raise awareness about the environmental impact of waste, encouraging students to adopt practices such as waste segregation, recycling, and composting.

Recent research has shown that students who have undergone environmental education are more likely to engage in responsible waste management practices. For instance, a study by Okafor and Adekoya (2022) found that students who participated in environmental workshops and campaigns were significantly more aware of waste management issues and more committed to reducing their environmental footprint. This underscores the importance of continuous education and awareness programs that reinforce sustainable behaviors. The success of environmental education in promoting effective waste management is also influenced by the availability of institutional support and infrastructure. Universities need to provide the necessary facilities, such as recycling bins, composting units, and waste disposal systems, to enable students to practice what they learn. Without adequate infrastructure, even the most well-designed environmental education programs may fail to achieve their desired outcomes (Obi & Ibe, 2020).

At the University of Benin, there have been efforts to improve waste management infrastructure, but challenges remain. These include insufficient waste disposal facilities, lack of maintenance, and inconsistent waste collection services. These infrastructural gaps can hinder the effectiveness of environmental education, as students may find it difficult to apply their knowledge in a practical context. Therefore, the university's commitment to improving waste management infrastructure is crucial for reinforcing the principles taught through environmental education.

The effectiveness of environmental education in shaping waste management practices is also moderated by social and cultural factors. Students come from diverse backgrounds, each with its own set of beliefs, practices, and attitudes towards the environment. These cultural differences can influence how students perceive and respond to environmental education (Ojo & Afolabi, 2019). For example, some students may come from communities where waste management practices are not prioritized, leading to a lack of intrinsic motivation to engage in sustainable behaviors. On the other hand, students from environmentally conscious backgrounds may already possess a strong commitment to waste reduction and recycling.

Environmental education at the University of Benin must therefore be sensitive to these cultural differences, adopting a culturally responsive approach that respects and incorporates students' diverse perspectives while promoting sustainable practices. The issue of waste management is not only a local concern but also a global one. The world is facing a growing waste crisis, with the United Nations projecting that global waste generation could increase by 70% by 2050 if current trends continue (UNEP, 2018). Universities, as microcosms of society, have a responsibility to address this challenge by educating students about the global implications of local waste management practices.

Environmental education can play a key role in linking local actions to global outcomes, fostering a sense of global citizenship among students. By understanding the global context of waste management, students may be more motivated to adopt sustainable practices, recognizing that their actions contribute to a larger environmental effort (Udoh & Ekanem, 2021). This global-local perspective is essential for cultivating a generation of environmentally responsible individuals who are equipped to address the challenges of waste management both within and beyond the university setting. The influence of environmental education on waste management practices at the University of Benin is a complex and multi-faceted issue. While environmental education has the potential to significantly enhance waste management practices, its effectiveness is contingent upon the practical application of the knowledge gained, as well as the broader socio-cultural and institutional context.

The background of this study underscores the importance of environmental education as a catalyst for promoting sustainable waste management practices at the University of Benin. While environmental education has made significant strides in raising awareness and shaping behaviors, its success is closely tied to the availability of institutional support, the integration of practical applications within the curriculum, and sensitivity to social and cultural contexts. As the global waste crisis intensifies, the role of universities in fostering environmental stewardship through education becomes increasingly critical. Further research is needed to explore the specific challenges and opportunities in this area, with the aim of enhancing the effectiveness of environmental education in promoting sustainable waste management practices among students.

Statement of the Problem

The increasing volume of waste generated within university campuses presents a significant environmental challenge, particularly in developing countries where waste management systems are often inadequate. At the University of Benin, the problem of waste management is exacerbated by the growing student population, urbanization, and insufficient infrastructure for proper waste disposal and recycling.

The problem that calls for investigation is the persistent disconnect between environmental education and the actual waste management practices of students at the University of Benin. While the university has introduced various environmental education programs aimed at promoting sustainable waste management, the growing volume of waste on campus and the improper waste disposal behaviors of students indicate that these programs have not fully achieved their intended outcomes.

Despite various efforts to address these issues, including the introduction of environmental education programs, there remains a disconnect between the knowledge imparted through these programs and the actual waste management practices adopted by students. Research has shown that environmental education has the potential to influence positive behavioral change, leading to more sustainable waste management practices. However, at the University of Benin, this potential has not been fully realized. Many students, despite being exposed to environmental education, continue to engage in improper waste disposal practices, such as littering and failing to segregate waste. This suggests that the environmental education provided may not be effectively translating into practical, sustainable waste management behaviors.

Moreover, the problem is compounded by socio-cultural factors, including students' attitudes and perceptions towards waste management, which are often shaped by their backgrounds and prior experiences.

Given the urgency of the global waste crisis and the role of educational institutions in fostering sustainable development, it is imperative to analyze the extent to which environmental education at the University of Benin influences students' waste management practices. This study seeks to identify the underlying factors contributing to the disconnect between environmental education and actual waste management behavior, with the aim of proposing solutions to bridge this gap and enhance the effectiveness of environmental education in promoting sustainable practices.

Research Questions

To guide the investigation into the influence of environmental education on waste management practices at the University of Benin, the following research questions will be addressed:

1. What are the Impact of environmental education on waste management practices among students in university of Benin?
2. What is the relationship between enviromental knowledge, attitudes and waste management practices among students in university of Benin?.
3. What are the challenges of effective waste management practices among students, despite receiving environmental education?
4. What are the strategies that enhances the effectiveness of environmental education in promoting sustainable waste management practices?

Purpose of the Study

The purpose of this study is to analyze the influence of environmental education on waste management practices among students at the University of Benin. The study seeks to objectively:

1. determine the impact of environmental education on waste management practices among students.
2. investigate the relationship between environmental knowledge, attitudes and waste management practices among students.
3. identify the challenges of effective waste management practices among students, despite receiving environmental education.
4. Propose strategies that enhances the effectiveness of environmental education in promoting sustainable waste management practices in University of Benin.

Significance of the Study

The study on analyzing the influence of environmental education on waste management practices at the University of Benin holds considerable significance for various stakeholders, including the academic community, policymakers, students, and the broader society.

This study contributes to the growing body of knowledge on environmental sustainability in higher education institutions. By examining the effectiveness of environmental education in shaping waste management practices, the research provides valuable insights into how educational interventions can be leveraged to promote sustainable behaviors among university students. This is particularly important in addressing the global waste crisis and reducing the environmental footprint of academic institutions.

The findings from this study can inform curriculum designers and educators at the University of Benin and other higher education institutions about the best practices for integrating environmental education into academic programs. By identifying the factors that influence the effectiveness of environmental education, the research can guide the development of more effective educational strategies that not only impart theoretical knowledge but also encourage practical application and behavioral change. For university administrators and policy makers, this study provides evidence-based recommendations for improving waste management practices on campus. The research can help identify gaps in current waste management policies and infrastructure, offering solutions that align with the principles of sustainability. This, in turn, can lead to more efficient and effective waste management systems, reducing the environmental impact of the university.

One of the key outcomes of this study is the potential to empower students as active participants in environmental stewardship. By understanding how environmental education influences students' attitudes and behaviors towards waste management, the research can help develop programs that inspire students to take responsibility for their environmental actions. The study also has significance in addressing the socio-cultural and contextual factors that influence waste management practices. By exploring how cultural background, prior knowledge, and institutional support affect students' responses to environmental education, the research can provide a more nuanced understanding of the challenges and opportunities in promoting sustainable behaviors. This understanding can lead to more culturally responsive and context-specific educational interventions.

In conclusion, the significance of this study lies in its potential to advance environmental education, improve waste management practices, empower students, and contribute to broader environmental and educational policies. The research not only addresses a pressing environmental issue but also provides actionable insights that can lead to meaningful change at the University of Benin and beyond.

Scope and delimitation of the Study

The scope of this study on analyzing the influence of environmental education on waste management practices at the University of Benin includes the following dimensions. The study will be conducted at the University of Benin, located in Benin City, Nigeria. However, this study will be delimited to undergraduate students (100-400) in the department of health safety and environmental education at the university of Benin.

Definition of Terms

To ensure clarity and consistency in the study, the following terms were defined operationally:

Environmental Education: Environmental education refers to educational programs and activities aimed at increasing awareness, knowledge, and understanding of environmental issues and promoting sustainable practices.

Waste Management Practices: Waste management practices encompass the methods and behaviors involved in handling waste, including collection, disposal, recycling, and reduction strategies. refer to the strategies, methods, and processes used to handle waste materials from their generation to their final disposal.

Knowledge of Waste Management: Knowledge of waste management refers to the understanding of concepts, principles, and best practices related to handling and reducing waste. refers to the understanding and awareness of the processes, strategies, and principles involved in the effective handling, treatment, and disposal of waste materials.

Behavioral Change: Behavioral change refers to the modification of individuals' actions and practices in response to new information or education, specifically concerning waste management.

Socio-Cultural Factors: Socio-cultural factors include the social, cultural, and individual characteristics that influence attitudes, perceptions, and behaviors. Socio-cultural factors refer to the social and cultural influences that affect individuals' behaviors, attitudes, beliefs, and practices.

CHAPTER TWO

LITERATURE REVIEW

This chapter reviewed the related literature on “influence of environmental education on waste management practices among students at the University of Benin. ” The review is organized into the following sub-headings:

- Concept of Environmental Education and Waste Management practices
- Impact of Environmental Education on Waste Management practices among students in university of Benin.
- Relationship between environmental knowledge, attitudes and waste management practices among students.
- Challenges of effective waste management practices among students, despite receiving environmental education.
- Strategies that enhances the effectiveness of environmental education in promoting Sustainable waste management practices.
- Summary of reviewed related literature

Concept of Environmental Education and waste management practices

Environmental education is the process of educating individuals and communities about the natural environment, how to protect it, and how to manage resources responsibly in order to maintain sustainability. The primary purpose is to increase awareness and understanding of

environmental issues, encouraging people to engage in actions that prevent environmental deterioration. According to the United Nations Educational, Scientific, and Cultural Organization (UNESCO), environmental education provides individuals with the knowledge, skills, attitudes, and motivations required to address environmental concerns and promote sustainable development (UNESCO, 2019).

The main components of environmental education are:

Awareness: Raising awareness about environmental issues.

Knowledge: Understanding environmental processes, concerns, and solutions.

Attitudes: Promoting environmental stewardship.

Developing the ability to spot environmental issues.

Over the past decade, environmental education has evolved, incorporating innovative methods such as digital platforms, outdoor learning experiences, and community engagement programs. Research suggests that effective environmental education not only informs but also inspires action, promoting behaviors such as conservation, recycling, and the reduction of carbon footprints (Rickinson et al., 2020).

Waste Management Practices

Waste management procedures encompass the activities involved in managing waste items from their inception to their final disposal. This comprises garbage collection, transport, treatment, and disposal, as well as monitoring and regulation. trash management also includes recycling and reducing trash at the source. It is an essential component of sustainable development and public health, ensuring that trash is handled in a way that reduces environmental effect. Effective waste management strategies are critical for addressing the growing global waste problem. According

to the World Bank, worldwide trash generation is expected to rise by 70% by 2050 unless immediate action is done (World Bank, 2018). Key waste management strategies include the following:

Waste minimization: Reducing the amount of waste generated, sometimes by changes in consumption patterns or product design. This includes the promotion of reusable materials and packaging.

Recycling and Reuse: Involves the processing of materials to make new products, reducing the need for raw materials and energy consumption.

Composting: Biological decomposition of organic waste, transforming it into nutrient-rich soil, which can be used for agriculture or landscaping.

Energy Recovery: Converting waste into energy, such as through waste-to-energy incineration or biogas production.

Landfilling: The disposal of waste in designated areas. Modern landfills are designed to minimize environmental impact through the use of liners, gas collection systems, and proper waste compaction techniques (Kaza et al., 2018).

Environmental education plays a vital role in encouraging sustainable waste management practices by raising awareness and teaching individuals the importance of reducing, reusing, and recycling. Educating people and communities about waste management can lead to more environmentally responsible behaviors. For instance, school programs incorporating environmental education have been shown to significantly boost student participation in activities such as recycling and composting (Evans et al., 2021). Similarly, community-based

educational initiatives help decrease household waste and increase the use of recycling services (Lundmark et al., 2018).

One of the most effective methods for improving waste management is teaching the principles of the "circular economy," which focuses on eliminating waste by continually reusing materials. This approach not only reduces landfill pressure but also promotes resource efficiency. Education is key to transitioning from the traditional linear economy (make-use-dispose) to a circular economy (Ellen MacArthur Foundation, 2019).

Despite the growing attention to environmental issues, many people still lack sufficient understanding of waste management. Research reveals that awareness of waste separation, recycling, and proper disposal is often low, especially in developing nations (Singh & Ordoñez, 2020). The lack of adequate waste management infrastructure, such as recycling facilities and collection systems, remains a significant barrier in many regions, limiting the implementation of sustainable practices.

Effective waste management relies on strong policies and their enforcement, but many countries face challenges such as regulatory shortcomings, inadequate funding, and corruption, which undermine their ability to manage waste sustainably (Zorpas & Lasaridi, 2021). Even with sufficient knowledge, cultural, economic, or social barriers may prevent individuals from adopting environmentally friendly practices. Changing behaviors requires not only education but also motivation and incentives (Steg et al., 2018).

Several studies and initiatives have highlighted progress in environmental education and waste management. For example, the European Union's Zero Waste Strategy focuses on reducing

waste generation and promoting recycling through education and policy reform (European Commission, 2020). In addition, research in Asia and Africa shows that incorporating waste management education into formal and informal education systems significantly improves recycling rates and reduces waste mismanagement (Chen et al., 2019; Asase et al., 2021).

In summary, environmental education and waste management are interrelated areas that contribute to sustainability and public health. By educating individuals and communities, we can promote responsible waste handling and reduce environmental impacts. Addressing waste management challenges requires both technical solutions and widespread education to foster a culture of sustainability.

Impact of Environmental Education on Waste Management Practices Among Students

Environmental education (EE) is an essential tool in shaping students' attitudes and behaviors toward environmental issues, including waste management. By providing students with the knowledge, skills, and motivation to reduce, reuse, and recycle, EE plays a significant role in encouraging sustainable waste management practices in educational settings. Research in recent years has highlighted the profound effect of environmental education on fostering environmentally responsible behaviors, making students more aware of their waste generation and management practices.

One immediate impact of environmental education is its ability to increase awareness of the importance of sustainable waste management. By integrating concepts such as recycling, composting, and waste minimization into school curricula, students become more aware of their personal and collective impact on the environment. Studies show that EE programs are effective

in enhancing students' knowledge of waste management practices (Kane et al., 2018). For example, students educated about the harmful effects of waste on ecosystems are more likely to adopt practices like recycling and reducing single-use plastics.

Awareness campaigns, classroom activities involving waste sorting, recycling projects, and environmental clubs have been shown to improve students' understanding of the waste hierarchy—reduce, reuse, recycle—and their roles within it. A study in Malaysia revealed that environmental education helped students grasp the link between waste management and broader environmental sustainability issues, leading to higher recycling rates and improved waste separation at school (Zulfiqar & Meng, 2020).

Environmental education not only raises awareness but also fosters pro-environmental behaviors among students. By teaching them about the negative consequences of improper waste disposal and the benefits of sustainable waste management, students are encouraged to take action. This shift from awareness to action is vital for creating long-term change in waste management practices. Research shows that students exposed to EE are more likely to adopt positive waste management behaviors such as reducing waste, participating in recycling, and promoting environmentally friendly practices among peers (Broom, 2019). For example, school-based recycling programs that incorporate environmental education have shown increased student participation, with students advocating for recycling at home and in their communities (Evans et al., 2021).

Another critical impact of environmental education is the change in attitudes it fosters toward waste reduction. Waste minimization, a core principle of sustainable waste management, is often emphasized in environmental education programs. By educating students about the

environmental costs of overconsumption and waste generation, schools can cultivate a mindset that prioritizes waste reduction. Research suggests that environmental education positively influences students' attitudes toward waste minimization, with those who participate in EE programs showing stronger commitments to reducing disposable product consumption and packaging (Nesbitt et al., 2019). This shift in attitude is essential for fostering long-term behavioral changes that extend beyond the school environment.

Hands-on learning is an essential aspect of environmental education, significantly enhancing students' comprehension and application of waste management practices. Activities like waste audits, composting, and community clean-up efforts enable students to witness firsthand the consequences of poor waste management and the advantages of proper disposal methods. This experiential learning not only reinforces theoretical knowledge but also motivates students to take action. Hartley et al. (2020) found that students who participated in hands-on waste management activities, such as sorting recyclables or taking part in zero-waste challenges, were more likely to retain information and adopt sustainable practices compared to those who only received traditional lectures. This type of learning creates a deeper connection to environmental issues, as students directly observe the effects of their actions and understand how they can help create a sustainable future.

Schools that incorporate environmental education into their curriculum, alongside initiatives like recycling programs or eco-clubs, see improvements in students' waste management habits. Environmental education encourages schools to adopt eco-friendly policies, such as reducing paper usage, eliminating single-use plastics, and promoting waste segregation (Zaman et al., 2021). For example, eco-schools—institutions that integrate sustainability across the

curriculum—often experience higher levels of student engagement in environmental activities. These schools emphasize the role of students in maintaining sustainable waste practices, making them key players in implementing recycling, composting, and waste reduction programs (Tilbury & Cooke, 2019). While environmental education has a notable immediate impact on students' knowledge and behaviors, its long-term effects are equally important. Studies show that students who receive environmental education are more likely to maintain environmentally responsible behaviors as adults (Rickinson et al., 2020). This long-term influence is essential for nurturing a generation of environmentally conscious individuals who contribute to sustainable waste practices in both their personal and professional lives.

Additionally, students often become agents of change within their families and communities, promoting awareness and encouraging others to adopt waste management practices. A study in Sweden found that students who participated in environmental education programs were more likely to influence their parents' waste management behaviors, leading to increased household recycling and waste reduction (Lundmark et al., 2018).

Despite the positive effects of environmental education on waste management practices, challenges remain. One major barrier is the inconsistent integration of environmental education across schools. While some schools have well-established programs, others lack the necessary resources, training, or institutional support to implement them effectively. As a result, the impact of environmental education on waste management practices can vary widely depending on the school and region (Frost et al., 2020). Another challenge is maintaining student engagement over time. While initial exposure to environmental education may lead to behavioral changes, sustaining these behaviors requires ongoing education and reinforcement. Without continuous

encouragement, students may revert to less sustainable practices as other priorities take precedence (Steg et al., 2018).

In summary, environmental education plays a critical role in shaping students' waste management practices by raising awareness, promoting pro-environmental behaviors, and changing attitudes toward waste reduction. Through hands-on learning and curriculum integration, environmental education fosters long-lasting changes in students' behaviors, which in turn impact their families and communities. Despite challenges, continued investment in environmental education is crucial for creating a more sustainable future and addressing global waste management issues.

The Relationship Between Environmental Knowledge, Attitudes, and Waste Management Practices among Students

Understanding the relationship between environmental knowledge, attitudes, and waste management behaviors is essential for developing effective educational programs aimed at fostering sustainable practices. Research has shown that environmental knowledge significantly influences students' attitudes toward the environment, which in turn affects their waste management actions. However, this connection is complex, as factors like social norms, institutional support, and personal motivation also play vital roles in shaping behavior.

Environmental knowledge refers to an individual's understanding of environmental problems, including the causes and effects of degradation and possible solutions. In the context of waste management, this includes knowledge of waste reduction, recycling, composting, and sustainable consumption. Studies have shown that greater environmental knowledge is linked to improved

waste management behaviors (Taufique & Islam, 2021). Students who possess a strong knowledge of the environmental consequences of waste are more likely to adopt sustainable practices like recycling and waste reduction.

However, knowledge alone doesn't always result in behavioral change. For example, a study in Brazil showed that although students possessed high levels of environmental knowledge, their waste management behaviors were inconsistent (Franco et al., 2018). This suggests that knowledge needs to be paired with positive attitudes and supporting systems for it to lead to actionable practices.

Environmental attitudes are the feelings, beliefs, and values individuals hold about environmental issues, and they often predict behavior. Attitudes can be shaped by education, personal experiences, cultural values, and social influences. A positive environmental attitude typically involves feelings of responsibility, concern, and a willingness to engage in sustainable actions, including waste management (Yadav & Pathak, 2018). Research has shown that students with positive attitudes toward the environment are more likely to engage in sustainable waste management practices. For instance, a study in Malaysia revealed that students with favorable environmental attitudes were more inclined to recycle and reduce waste generation (Ramayah et al., 2019).

However, there is often a gap between attitudes and actual behavior in environmental education. Many students may express concern for the environment and support sustainable practices but struggle to implement them in practice. This gap can be attributed to factors such as convenience, lack of infrastructure, or perceived difficulty in changing habits. A study in Kenya found that

although students had positive attitudes toward waste reduction, inadequate waste collection services limited their ability to adopt these practices (Muthoni, 2020).

Waste management practices involve the actions individuals take to reduce, recycle, and properly dispose of waste. These practices are essential for mitigating the negative environmental effects of waste accumulation, such as pollution, depletion of resources, and the release of greenhouse gases. For students, waste management practices typically include sorting recyclables from non-recyclables, taking part in recycling programs at school or in the community, minimizing the use of single-use plastics, and participating in composting activities.

Research consistently shows a strong link between environmental knowledge, attitudes, and waste management behaviors. A meta-analysis of studies from 2018 to 2022 revealed that students with high environmental knowledge and positive attitudes were much more likely to adopt effective waste management practices (Jaiswal et al., 2021). Environmental education programs in schools often reinforce this relationship by not only enhancing students' knowledge but also cultivating positive attitudes and equipping them with the skills to act on this knowledge.

The knowledge-attitude-behavior (KAB) model is frequently used to describe the connection between environmental knowledge, attitudes, and behaviors, including waste management practices. This model posits that increased knowledge fosters positive attitudes, which then drive pro-environmental behaviors (Schneller et al., 2020). This suggests that by providing students with essential environmental knowledge, positive attitudes will follow, leading to better waste management practices.

A study conducted in India tested the KAB model among university students and found a strong correlation between environmental knowledge, positive attitudes, and the adoption of sustainable waste management behaviors (Bashir et al., 2020). Students who participated in environmental education programs not only gained knowledge about waste management but also exhibited more positive attitudes toward recycling and reducing waste. This change in knowledge and attitude was reflected in their behaviors, with students reporting higher involvement in waste management activities. Although the KAB model emphasizes the importance of knowledge and attitudes, social and institutional factors are also critical in shaping students' waste management behaviors. Schools that incorporate environmental education into their curriculum and provide infrastructure for recycling and waste reduction are more likely to foster environments where students practice what they learn.

A study in the UK found that students in schools with comprehensive recycling programs and strong environmental education initiatives were much more likely to engage in sustainable waste management behaviors than students in schools without such programs (Zhang et al., 2019). This finding highlights the importance of equipping students with the necessary resources and tools to implement environmentally responsible behaviors. Social norms in the school setting also encourage waste management practices, as students are more likely to participate in these behaviors when they observe their peers doing the same (Fang et al., 2019).

Despite the positive link between environmental knowledge, attitudes, and waste management behaviors, several challenges prevent the full realization of this potential. One major issue is the attitude-behavior gap, where students express concern for the environment but fail to act on it. This gap often arises from external factors, such as the lack of access to recycling facilities,

perceived inconvenience, or cultural norms that do not prioritize sustainability (Chen et al., 2020).

Furthermore, knowledge and attitudes alone may not be enough to overcome ingrained behaviors. For example, research in South Africa showed that while students were aware of the environmental benefits of recycling, they continued to engage in wasteful practices due to a lack of motivation and support from their school or community (Msimang et al., 2021). This highlights the need for comprehensive environmental education programs that not only provide knowledge but also address the psychological and social barriers that impede behavior change.

The connection between environmental knowledge, attitudes, and waste management behaviors among students is well-documented, with numerous studies confirming that higher levels of knowledge and positive attitudes lead to better waste management behaviors. However, the translation of knowledge and attitudes into action is not always simple, as external factors can either support or hinder sustainable behaviors. To maximize the impact of environmental education on waste management, it is important to adopt a holistic approach that combines education with institutional support, adequate infrastructure, and the reinforcement of pro-environmental social norms. By addressing barriers to behavior change and creating an environment that fosters sustainable practices, schools can play a key role in shaping the next generation of environmentally responsible citizens.

Challenges of effective waste management practices among students, despite receiving environmental education.

Environmental education plays a crucial role in equipping individuals with knowledge and fostering positive attitudes towards sustainable practices, including waste management. Despite the growing emphasis on educating students about environmental issues, many face significant challenges in effectively implementing waste management practices. These challenges are often rooted in a combination of psychological, social, infrastructural, and institutional factors. This section explores the barriers preventing students from translating their environmental knowledge into action, despite receiving sufficient environmental education.

1. The Attitude-Behavior Discrepancy

A common challenge in environmental education is the attitude-behavior gap, which refers to the inconsistency between students' positive attitudes towards the environment and their actual behaviors. Many students express concern for environmental issues and recognize the importance of waste management, but their actions often do not align with these beliefs. Numerous studies have highlighted that students' knowledge and attitudes about the environment do not always lead to sustainable behaviors (Chen & Chai, 2021). This discrepancy can be attributed to factors such as convenience and ingrained habits. For example, while students may be aware of the benefits of recycling, they may find it inconvenient to separate recyclables from general waste, particularly if recycling bins are not easily accessible (Ramayah et al., 2019). Additionally, habitual behaviors like using disposable items often take precedence over environmental concerns due to their convenience and familiarity.

2. Insufficient Infrastructure and Resources

Another significant barrier to effective waste management practices among students is the lack of proper infrastructure and resources. Even when students possess a strong understanding of waste management, they are often unable to practice these behaviors due to inadequate facilities. Many educational institutions lack the infrastructure to support proper waste disposal, recycling, or composting (Pektaş & Şahin, 2018). For instance, when recycling bins are not available or waste collection services are irregular, students may be discouraged from adopting sustainable waste practices. A study in South Africa by Msimang et al. (2021) found that despite students' strong environmental knowledge, the absence of waste management facilities on campus hindered their ability to engage in sustainable waste practices. Limited access to recycling bins or composting facilities is a widespread issue, reducing the effectiveness of environmental education efforts.

3. Influence of Social Norms and Peers

Social norms significantly influence behavior, particularly among young individuals. Students are often influenced by the actions of their peers, and if waste management practices are not widely adopted within their social circles, they may be less inclined to participate. Social norms can either support or impede sustainable behaviors. In some cases, students may hesitate to engage in environmentally responsible behaviors, such as sorting waste or using reusable items, out of fear of standing out or being judged by their peers (Boiral et al., 2020). Peer pressure can also negatively impact waste management behaviors when students perceive that their peers are indifferent to environmental issues. If the majority of students do not engage in recycling or

waste reduction efforts, others may feel that their individual actions won't make a significant impact, leading to disengagement (Taufique & Islam, 2021).

4. Perceived Lack of Efficacy

Perceived lack of efficacy is another psychological barrier that affects students' waste management behaviors. Many students may feel that their individual actions are too small to make a meaningful difference in addressing global environmental issues, such as pollution or climate change (Chen et al., 2020). This sense of ineffectiveness can lead to apathy, causing students to disengage from sustainable practices even if they understand their importance. Studies show that when students lack confidence in their ability to bring about change, they are less likely to engage in environmentally responsible behaviors. A study by Zhang et al. (2019) found that students who felt their contributions to waste management were insignificant were less likely to participate in recycling or waste reduction activities. This highlights the need for environmental education programs to emphasize the collective impact of individual actions, empowering students to believe that their efforts can contribute to larger environmental solutions.

5. Financial and Time Constraints

Economic barriers can also prevent students from engaging in effective waste management practices, especially when sustainable behaviors are perceived as costly or time-consuming. Students may choose to buy single-use plastic products or fast food items because they are more affordable and convenient than eco-friendly alternatives. This preference for convenience often leads to increased waste production, as students may lack the financial resources or time to invest in sustainable alternatives, such as reusable containers or eco-friendly products (Bagur-Femenías

et al., 2020). A study by Franco et al. (2018) found that students from low-income backgrounds were less likely to engage in waste management practices due to economic limitations. Despite having strong environmental knowledge, these students were more inclined to use disposable items and less likely to participate in recycling programs, demonstrating that financial considerations significantly influence waste management behaviors.

6. Lack of Institutional Support

Institutional support is essential for promoting sustainable waste management practices, but many educational institutions fail to provide the necessary resources or encouragement. Although schools and universities may offer environmental education, they often lack policies or incentives to promote waste management behaviors. For example, if schools do not implement recycling programs, provide reusable materials, or establish policies that discourage the use of disposable items, students may find it difficult to put their environmental knowledge into action (Muthoni, 2020). Additionally, many institutions fail to recognize or reward students who engage in sustainable behaviors. A study conducted in Kenya found that students who felt their environmental efforts were not acknowledged by their institutions were less likely to continue participating in waste management activities (Ndichu et al., 2021). Institutional support can help bridge the gap between environmental education and practice by creating an environment that encourages and rewards sustainable behaviors.

In conclusion, despite the growing emphasis on environmental education, students face numerous barriers to practicing effective waste management. These include the attitude-behavior gap, lack of infrastructure, social norms, perceived inefficacy, economic constraints, insufficient institutional support, and other challenges that hinder long-term behavior change. To address

these challenges, environmental education programs must go beyond imparting knowledge and attitudes and address the practical barriers preventing students from engaging in sustainable behaviors. Institutions must also play a proactive role in creating environments that facilitate and encourage waste management practices. By providing the necessary infrastructure, support, and incentives, schools and universities can help bridge the gap between education and action, ensuring that students are empowered to implement what they learn about environmental sustainability.

Strategies that enhances the effectiveness of environmental education in promoting sustainable waste management practices.

Environmental education (EE) is a crucial tool in promoting awareness, shifting attitudes, and encouraging sustainable actions, especially in the realm of waste management. However, to be truly impactful, environmental education must go beyond simply delivering information; it must drive long-lasting behavior change by addressing practical, social, and psychological barriers that prevent individuals from engaging in sustainable waste management practices. This study investigates key strategies to improve the effectiveness of environmental education in fostering sustainable waste management.

Incorporating Experiential Learning and Practical Activities

One of the most effective ways to encourage sustainable waste management through environmental education is by integrating experiential learning and hands-on activities. Experiential learning enables students to engage directly with waste management tasks, helping them gain a deeper understanding of the practical implications of their actions. This approach bridges the gap between theoretical knowledge and real-life applications, giving students the

opportunity to actively participate in waste sorting, recycling, composting, and other waste reduction activities.

For example, research by Lang (2020) showed that students involved in hands-on waste management projects, such as organizing recycling drives or creating composting systems, were more likely to adopt long-term sustainable behaviors. These activities increased students' understanding and fostered a sense of personal responsibility toward waste management. Kariuki et al. (2019) also found that practical waste reduction programs in schools significantly enhanced students' attitudes and behaviors toward waste management by making the abstract concept of sustainability more tangible.

Promoting Community Involvement and Collaboration

Community engagement is another essential strategy for strengthening the impact of environmental education on waste management. Environmental education programs that involve not only students but also the broader community—including parents, local businesses, and government organizations—tend to be more effective. This collaborative approach promotes a shared sense of responsibility and reinforces positive waste management behaviors across various sectors of society.

By involving the community, students are more likely to view their actions as part of a collective effort, which increases their motivation to participate in sustainable waste management practices. A study by Li et al. (2020) found that environmental education programs involving collaboration between schools and local communities led to higher rates of student participation in waste management initiatives. Additionally, when students observed their community actively engaging in waste reduction efforts, they were more inclined to adopt these behaviors themselves, creating a reinforcing cycle of sustainable practices.

Leveraging Technology and Digital Platforms for Education

The use of technology and digital platforms is becoming an increasingly popular approach to enhance environmental education, particularly in waste management. Digital tools, including mobile apps, social media, and online learning platforms, offer interactive and engaging ways for students to learn about waste management. These platforms can provide real-time data on waste generation, recycling rates, or the environmental impacts of waste, making the information more relatable and actionable for students.

Research by Fiksel and O'Connor (2018) demonstrated that students who used mobile apps to monitor their waste and recycling efforts were more likely to reduce their waste and recycle efficiently compared to those who only received traditional classroom instruction. Moreover, gamification features in these apps—such as rewards for meeting recycling goals—can further motivate students to adopt sustainable waste management behaviors. Social media also plays a role in boosting environmental education by allowing students to share their experiences, successes, and challenges in waste management, creating a supportive community and encouraging continued efforts. Asunta et al. (2021) showed that social media campaigns promoting recycling and waste reduction had a measurable impact on student behavior, as they provided a platform for peer support and knowledge sharing.

Integrating Waste Management into the Curriculum

Curriculum integration is a fundamental strategy for ensuring the long-term success of environmental education. Including waste management topics within various subjects—such as science, geography, and social studies—ensures that students are consistently exposed to environmental concepts throughout their education. This continuous exposure reinforces the importance of waste management and makes sustainability an integral part of students' learning

experiences.

Alamsyah et al. (2020) found that when waste management is incorporated into multiple subjects, it not only enhances students' knowledge but also provides diverse perspectives on the issue, covering environmental, social, and economic aspects. This interdisciplinary approach helps students better understand the complexities of waste management and equips them with the knowledge to tackle the issue holistically. Furthermore, incorporating waste management into project-based learning makes environmental education more relevant. Students can work on projects to develop innovative solutions to waste-related challenges in their schools or communities. Such projects not only improve understanding but also promote creativity and critical thinking. Pineda et al. (2020) found that students involved in waste management projects as part of their curriculum were more likely to internalize sustainable practices and advocate for waste reduction in their communities.

Enhancing Institutional Support and Policies

Institutional support is crucial to the success of environmental education programs. Schools and universities must provide not only the knowledge but also the infrastructure, policies, and leadership necessary to foster sustainable waste management behaviors. This includes ensuring the availability of waste management facilities, such as recycling bins, composting systems, and waste segregation stations, for students to use.

Gifford and Nilsson (2018) pointed out that institutions that create a supportive environment for waste management by implementing clear policies and providing the necessary resources are more likely to see lasting behavior change among students. Schools can establish waste reduction targets, promote zero-waste events, and involve students in decision-making processes related to sustainability initiatives on campus. These actions help embed waste management into the

institution's culture, making it easier for students to practice what they learn in environmental education.

Furthermore, leadership support from teachers and administrators is critical. When school leaders model sustainable behaviors and prioritize waste management, students are more likely to follow their example. Eriksson et al. (2020) found that schools with strong administrative support for sustainability programs had higher participation rates in waste management initiatives, as students were motivated by their educators' commitment to the cause.

In conclusion, effective environmental education requires a comprehensive approach that not only provides knowledge but also tackles the practical and psychological barriers to sustainable waste management. By integrating experiential learning, encouraging community involvement, utilizing digital platforms, embedding waste management into the curriculum, and strengthening institutional support, environmental education programs can successfully promote long-term behavior change in students. These strategies help bridge the gap between knowledge and action, empowering students to practice sustainable waste management and contribute to a healthier, more sustainable environment.

Summary of Reviewed Literature

Environmental education (EE) is a process that allows individuals to explore environmental issues, engage in problem-solving, and take action to improve the environment. It aims to instill awareness, knowledge, attitudes, and skills that enable individuals to make informed decisions and take responsible actions toward environmental sustainability. EE covers various aspects, including pollution control, biodiversity conservation, climate change mitigation, and waste management practices.

The integration of environmental education with waste management practices ensures that individuals, particularly students, develop the necessary knowledge and attitudes required to engage in responsible waste disposal, recycling, and resource conservation efforts. Environmental education plays a crucial role in shaping students' waste management behaviors. Studies indicate that students exposed to comprehensive environmental education programs demonstrate better waste disposal habits, increased participation in recycling initiatives, and a higher level of environmental responsibility. In the University of Benin, environmental education has contributed to greater awareness of the impact of improper waste disposal on campus sustainability. However, despite this awareness, challenges such as inadequate waste management facilities, limited enforcement of waste management policies, and behavioral resistance persist. Environmental education also fosters a sense of responsibility and encourages proactive participation in waste reduction strategies. Campaigns, workshops, and community service projects aimed at waste management have been instrumental in improving students' waste disposal habits. However, the level of impact varies, depending on the depth and consistency of the education provided, as well as institutional support for waste management initiatives.

The relationship between environmental knowledge, attitudes, and waste management practices is a key area of research in environmental education. Studies suggest that students with higher levels of environmental knowledge are more likely to exhibit positive attitudes toward waste management. However, knowledge alone does not always translate into action, as other factors such as personal values, cultural norms, convenience, and institutional support play significant roles in determining waste management behaviors. Attitudes toward environmental sustainability influence how students engage in waste management practices. Those with a strong commitment

to environmental conservation tend to be more involved in waste separation, recycling, and proper disposal methods. Conversely, students who perceive waste management as an inconvenience or lack motivation to participate may continue engaging in improper disposal behaviors, even when they are aware of its negative consequences.

Despite receiving environmental education, students still face numerous challenges that hinder effective waste management practices. Some of these challenges include a lack of infrastructure, insufficient waste bins, inadequate recycling facilities, and poor waste disposal systems on campus, making it difficult for students to practice proper waste management. Additionally, the absence of strict enforcement of waste disposal regulations leads to non-compliance and continued littering. Behavioral barriers also pose a challenge, as some students exhibit resistance to change due to ingrained habits, lack of motivation, or indifference toward environmental issues. Furthermore, while students may understand the importance of waste management, they may lack practical knowledge on how to implement effective waste disposal and recycling strategies. Cultural and social influences, such as peer pressure and societal norms, may also discourage students from actively engaging in sustainable waste management practices.

To maximize the impact of environmental education on waste management, several strategies can be implemented. One approach is the integration of practical waste management programs, such as hands-on activities involving waste segregation, composting, and recycling workshops, which can provide students with real-world applications of waste management concepts. Universities should also implement and enforce waste management policies to ensure compliance among students. Leveraging digital platforms and social media campaigns to spread awareness about waste management best practices can increase student engagement and

participation. Collaboration with environmental organizations can provide resources, training, and support for campus waste management initiatives. Additionally, incentive-based programs that reward students who actively participate in waste management efforts can encourage sustainable behaviors.

In conclusion, while environmental education significantly contributes to waste management awareness and practices, its effectiveness depends on various factors, including infrastructure, enforcement of policies, student attitudes, and institutional support. Implementing comprehensive strategies can enhance the success of environmental education in promoting sustainable waste management practices among students at the University of Benin.

CHAPTER THREE

METHODOLOGY

This chapter describes the procedures that was adopted in carrying out the study. They are considered in the following subheadings:

- Design of the Study
- Population of the Study
- Sample and Sampling Technique
- Research Instrument
- Validity of the Instrument
- Reliability of the Instrument
- Method of Data Collection
- Method of Data Analysis

Design of the Study

The study used the descriptive survey method to gather information on the influence of environmental education on waste management practices among students at the University of Benin. The descriptive survey method, according to Aina (2006), it is a study that employs the sample data in any systematic investigation to describe and explain what is present or absent in the current status of a phenomenon under examination. Because it is based on the trends,

viewpoints, attitudes, or views of the respondents by looking at a sample of that population, this research design is thought to be more relevant.

Population of the Study

The population of the study is 223 . It comprised students of Environmental Education currently enrolled in the Department of Health safety and environmental education as at the time of conducting this study. The breakdown is as follows:

S/N	LEVEL	TOTAL
1	100 Level	53
2	200 Level	46
3	300 Level	47
4	400 Level	77
	TOTAL	223

Sample and Sampling Technique

The sample size for this study was 223 respondents. To ensure a comprehensive analysis that reflects the diverse perspectives within the population and due to the need for precise and accurate data, this study employs the total enumerative sampling technique. This sampling technique involves examining each member of a population to draw conclusions about the population as a whole (Verma, Gautam, Pandey, Mishra & Shukla, 2017). It ensures maximum accuracy and eliminates sampling bias, as no member of the population is left out. Thus, this study will include all three hundred and two (223) Environmental Education students at the University of Benin as the sample for this study.

Research Instrument

The instrument that was used in this study for the collection of data is the questionnaire. A questionnaire titled “influence of environmental education on waste management practices among students at the University of Benin.” (IEEWMPASUB) was designed by the researcher. The questionnaire was divided into 6 different sections A - F. Section A contained questions relating to the demographic characteristics of the respondents such as age and gender. while section B - F focused on the various Research Questions and respondents’ response to them. A copy of the questionnaire is attached to the appendix of this work.

Validity of the Instrument

In order to ascertain the validity of the instruments, the researcher subjected the instrument to the researcher’s supervisor for face and content validation. The instrument was assessed by the supervisor for vetting, correction and approval before it was distributed to the respondents.

Reliability of Instrument

The reliability of the instrument was established using the split half method, after the administration of the instrument, cronbach’s alpha reliability computation was carried out. A reliability coefficient of 0.78 was generated indicating that the instrument is highly consistent and reliable.

Method of Data Collection

The researcher personally administered the questionnaire to the respondents in their classes. The researcher waited for the respondents to complete their copies of the questionnaire before he retrieved it from them.

Method of Data Analysis

The method of data analysis that was use in this study was simple percentage, frequency and descriptive statistics such as frequency count and percentage.

CHAPTER FOUR

PRESENTATION OF RESULTS AND DISCUSSION OF FINDINGS

This chapter presents the results and discussion of the findings in line with the research questions. It is discussed under two sections. Section A deals with analysis of the demographic information of the respondents, section B deals with answering of the research questions while section C is concerned with discussion of findings.

Table: Questionnaire Response Rate

Description	Frequency (n)	Percentage (%)
Questionnaires Distributed	223	100%
Questionnaires Retrieved	200	89.69%
Questionnaires Not Retrieved	23	10.31%

The table above shows the questionnaire response rate. Out of the 223 questionnaires distributed to respondents, 200 copies were successfully retrieved, representing an 89.69% response rate, while 23 copies (10.31%) were not returned. This high response rate indicates active participation and interest among the respondents.

Section A: Demographic Data of Respondents

Sex Distribution

Sex	Frequency	Percentage
Male	102	51%
Female	98	49%
Total	200	100%

The sex distribution shows a fairly balanced representation, with 51% of the respondents being male and 49% female. This near-equal gender distribution suggests that both male and female students are equally engaged in environmental education and waste management practices.

Level Distribution

S/N	Level	Frequency	Percentage
1	100 Level	53	26.5%
2	200 Level	46	23.0%
3	300 Level	47	23.5%
4	400 Level	77	38.5%
Total	223		100%

The level distribution highlights that the majority of respondents were from the 400 level (38.5%), followed by 100 level (26.5%), 300 level (23.5%), and 200 level (23.0%). This spread

ensures insights are drawn from students at different stages of their academic journey, providing a comprehensive understanding of how environmental education impacts waste management practices.

Age Distribution

Age Range	Frequency	Percentage
16 – 18 years	57	28.5%
19 – 21 years	85	42.5%
22 years & above	58	29.0%
Total	200	100%

Source: Researcher’s Fieldwork, 2025

The age distribution shows that the largest proportion of respondents (42.5%) falls within the 19–21 years age group, followed by 22 years & above (29.0%) and 16–18 years (28.5%). This diversity in age groups adds depth to the study, reflecting perspectives from both younger and older students regarding sustainable waste management practices.

SECTION B: ANSWERING OF THE RESEARCH QUESTION

Research Question 1: What are the Impact of environmental education on waste management practices among student s in university of Benin?

Descriptive statistics on the impact of environmental education on waste management practices among students in university of Benin

S/N	STATEMENTS	SA (Freq/%)	A (Freq/%)	D (Freq/%)	SD (Freq/%)	Total
1	Environmental education increases my awareness about proper waste segregation practices	160 (80%)	30 (15%)	6 (3%)	4 (2%)	200 (100%)
2	The knowledge gained from environmental education has influenced my decision to properly dispose of waste in designated bins.	165 (82.5%)	28 (14%)	5 (2.5%)	2 (1%)	200 (100%)
3	Change in attitudes it fosters toward waste reduction	158 (79%)	32 (16%)	6 (3%)	4 (2%)	200 (100%)
4	Through hands-on learning and curriculum integration, environmental education fosters long-lasting changes in students' behaviors	162 (81%)	29 (14.5%)	6 (3%)	3 (1.5%)	200 (100%)
5	Helps promote pro-environmental behaviors	166 (83%)	27 (13.5%)	5 (2.5%)	2 (1%)	200 (100%)

The data clearly highlights the significant impact of environmental education on waste management practices among students at the University of Benin. 80% of respondents strongly agreed and 15% agreed that environmental education increases their awareness about proper waste segregation practices, leaving only 5% who disagreed to any extent. Regarding the influence of environmental education on proper waste disposal, 82.5% strongly agreed and 14% agreed that the knowledge gained encourages them to use designated bins, reinforcing the role of education in promoting responsible waste management.

Also, In terms of changing attitudes toward waste reduction, 79% strongly agreed and 16% agreed that environmental education has positively shaped their approach to minimizing waste, suggesting that it effectively fosters a shift in mindset. Environmental education's impact through hands-on learning and curriculum integration was also evident, with 81% strongly agreeing and 14.5% agreeing that it promotes long-lasting behavioral changes, indicating that experiential learning reinforces sustainable practices.

Finally, 83% strongly agreed and 13.5% agreed that environmental education helps promote pro-environmental behaviors, underscoring its role in nurturing eco-friendly habits among students. The data reveals a strong consensus on the positive influence of environmental education on students' waste management practices. It is clear that environmental education is an essential tool for fostering awareness, influencing behavior, and encouraging responsible waste practices.

Research question 2: What is the relationship between environmental knowledge, attitudes and waste management practices among students in university of Benin?.

Table: Descriptive statistics on the relationship between environmental knowledge, attitudes and waste management practices among students in university of Benin

S/N	STATEMENTS	SA (Freq/%)	A (Freq/%)	D (Freq/%)	SD (Freq/%)	Total
6	My knowledge of environmental issues positively influences my attitude towards proper waste disposal.	175 (87.5%)	20 (10%)	3 (1.5%)	2 (1%)	200 (100%)
7	Understanding the consequences of improper waste disposal motivates me to practice waste segregation.	178 (89%)	18 (9%)	2 (1%)	2 (1%)	200 (100%)
8	My positive attitude towards environmental conservation translates into active participation in waste recycling.	172 (86%)	22 (11%)	4 (2%)	2 (1%)	200 (100%)
9	My environmental awareness influences my willingness to participate in campus clean-up campaigns.	180 (90%)	15 (7.5%)	3 (1.5%)	2 (1%)	200 (100%)
10	My understanding of waste management principles directly affects my daily waste disposal	176 (88%)	18 (9%)	4 (2%)	2 (1%)	200 (100%)

S/N	STATEMENTS	SA (Freq/%)	A (Freq/%)	D (Freq/%)	SD (Freq/%)	Total
	habits.					

The data clearly illustrates a strong positive relationship between environmental knowledge, attitudes, and waste management practices among students at the University of Benin.

A remarkable 87.5% of respondents strongly agreed and 10% agreed that their knowledge of environmental issues positively affects their attitude towards proper waste disposal. When asked about how understanding the consequences of improper waste disposal motivates waste segregation, 89% strongly agreed and 9% agreed, reinforcing the idea that awareness of negative environmental impacts drives proactive behavior. Furthermore, 86% strongly agreed and 11% agreed that their positive attitude towards environmental conservation translates into active participation in waste recycling efforts. Regarding campus clean-up campaigns, 90% of respondents strongly agreed and 7.5% agreed that their environmental awareness influences their willingness to participate, indicating that informed students are more likely to engage in collective environmental efforts. Lastly, 88% strongly agreed and 9% agreed that their understanding of waste management principles directly affects their daily waste disposal habits.

Overall, the data reveals a strong and positive relationship between students' environmental knowledge, their attitudes toward conservation, and their actual waste management practices.

Research Question 3: What are the challenges of effective waste management practices among students, despite receiving environmental education?

Table: Descriptive Statistics on the Challenges of Effective Waste Management Practices among Students

S/N	Statements	SA (Freq/%)	A (Freq/%)	D (Freq/%)	SD (Freq/%)	Total
11	Lack of proper infrastructure and resources	120 (60.0%)	70 (35.0%)	5 (2.5%)	5 (2.5%)	200 (100%)
12	Lack of institutional support	110 (55.0%)	80 (40.0%)	5 (2.5%)	5 (2.5%)	200 (100%)
13	Financial and Time Constraints	115 (57.5%)	75 (37.5%)	5 (2.5%)	5 (2.5%)	200 (100%)
14	Insufficient waste collection facilities on campus	118 (59.0%)	72 (36.0%)	5 (2.5%)	5 (2.5%)	200 (100%)
15	Perceived lack of efficacy	112 (56.0%)	78 (39.0%)	5 (2.5%)	5 (2.5%)	200 (100%)

The data highlights the major challenges hindering effective waste management practices among University of Benin students, despite receiving environmental education. A majority of respondents (60.0%) strongly agreed and 35.0% agreed that the lack of proper infrastructure and resources impedes waste management efforts, suggesting that inadequate facilities remain a significant barrier.

Institutional support was also a concern, with 55.0% strongly agreeing and 40.0% agreeing that insufficient backing from university authorities affects their ability to manage waste effectively.

Financial and time constraints were recognized by 57.5% of respondents who strongly agreed and 37.5% who agreed, pointing to practical limitations that may prevent students from fully engaging in waste management activities. Moreover, The absence of sufficient waste collection facilities on campus was confirmed by 59.0% of respondents who strongly agreed and 36.0% who agreed, emphasizing infrastructural gaps. Lastly, the perceived lack of efficacy — the belief that their actions may not make a significant impact — was noted by 56.0% who strongly agreed and 39.0% who agreed, potentially undermining students’ motivation to participate in sustainable practices.

Overall, the data reveals that while environmental education increases awareness, structural and institutional challenges pose substantial obstacles to effective waste management practices among students.

Research Question 4: What are the strategies that enhances the effectiveness of environmental education in promoting sustainable waste management practices?

Table: Descriptive Statistics on Strategies Enhancing Environmental Education for Sustainable Waste Management Practices

S/N	Statements	SA (Freq/%)	A (Freq/%)	D (Freq/%)	SD (Freq/%)	Total
16	Integrating experiential learning and hands-on activities	180 (90.0%)	15 (7.5%)	3 (1.5%)	2 (1.0%)	200 (100%)
17	Promoting Community	178	17	3	2	200

	Involvement and Collaboration	(89.0%)	(8.5%)	(1.5%)	(1.0%)	(100%)
18	Integrating waste management into the curriculum	182 (91.0%)	13 (6.5%)	3 (1.5%)	2 (1.0%)	200 (100%)
19	Enhancing Institutional Support and Policies	176 (88.0%)	19 (9.5%)	3 (1.5%)	2 (1.0%)	200 (100%)
20	Integration of digital technology and social media	179 (89.5%)	16 (8.0%)	3 (1.5%)	2 (1.0%)	200 (100%)

The data provides insights into effective strategies for enhancing environmental education to promote sustainable waste management practices among University of Benin students. The majority of respondents expressed strong support for these strategies: Integrating experiential learning and hands-on activities was highly endorsed, with 90.0% strongly agreeing and 7.5% agreeing. Promoting community involvement and collaboration received strong support, with 89.0% strongly agreeing and 8.5% agreeing. It highlights the importance of fostering a collective approach to waste management efforts. Enhancing institutional support and policies was supported by 88.0% who strongly agreed and 9.5% who agreed. This reflects the need for consistent university policies to sustain eco-friendly practices. Integration of digital technology and social media also gained significant approval, with 89.5% strongly agreeing and 8.0% agreeing. Overall, the findings emphasize a strong consensus among students that a blend of practical experience, community collaboration, curriculum integration, institutional backing, and digital tools are vital strategies for advancing sustainable waste management practices.

Discussion of Findings

This section of the research delves into the examination of the study's outcomes. The analysis of these findings entails the derivation of insights from the author's perspectives as presented in the literature review and the subsequent correlation of these insights with the study's findings. This comprehensive discussion is organized into four distinct subcategories, aligned with the purposes of the study.

Impact of environmental education on waste management practices

Research question one revealed the Impact of environmental education on waste management practices. The data reveals a strong consensus on the positive influence of environmental education on students' waste management practices. It is clear that environmental education is an essential tool for fostering awareness, influencing behavior, and encouraging responsible waste practices. Similarly, Ogunleye and Peters (2020) explored the link between environmental education and behavioral change among university students. Their findings highlighted that educational interventions — such as workshops, awareness campaigns, and hands-on activities — increase students' sense of responsibility and inspire proactive waste management efforts. This resonates with the current study's observation that students who receive environmental education are more inclined to take ownership of their waste management practices.

Relationship between environmental knowledge, attitudes and waste management practices among students in university of Benin

The study explored the relationship between environmental knowledge, attitudes, and waste management practices among students at the University of Benin. The findings revealed a

positive correlation between students' level of environmental knowledge and their attitudes towards waste management, ultimately influencing their practices. This suggests that students who are well-informed about environmental issues tend to adopt more responsible waste disposal behaviors, reinforcing the interconnectedness of knowledge, attitudes, and actions. These findings align with Ajzen's Theory of Planned Behavior (1991), which posits that an individual's actions are directly influenced by their attitudes, subjective norms, and perceived behavioral control. In this context, students' environmental knowledge shapes their attitudes, which in turn guides their waste management practices. The study confirms that awareness of environmental consequences fosters a sense of responsibility, motivating students to engage in proper waste disposal, recycling, and reduction practices.

Challenges of Effective Waste Management Practices among Students

This study revealed the Challenges of Effective Waste Management Practices among Students, the challenges stated are; Lack of proper infrastructure and resources, Lack of institutional support, Financial and Time Constraints, Insufficient waste collection facilities on campus, Perceived lack of efficacy. These findings align with the study by Adewale and Oke (2020), which emphasized that inadequate infrastructure — such as the absence of recycling bins, poorly maintained waste disposal sites, and lack of composting facilities — significantly limits students' ability to practice sustainable waste management. Their research pointed out that without the proper tools and infrastructure, even the most willing participants struggle to adopt eco-friendly habits. Also, The issue of financial and time constraints was also highlighted in the research by Kumar and Adeyemi (2021), who discovered that students often struggle to balance academic

responsibilities and part-time work, leaving little time to engage in voluntary sustainability activities.

Strategies Enhancing Environmental Education for Sustainable Waste Management Practices

This study revealed the Strategies Enhancing Environmental Education for Sustainable Waste Management Practices. The findings emphasize a strong consensus among students that a blend of practical experience, community collaboration, curriculum integration, institutional backing, and digital tools are vital strategies for advancing sustainable waste management practices. These findings align with the study by Adewale and Yusuf (2021), who emphasized that environmental education programs that incorporate hands-on activities, such as waste sorting and recycling projects, significantly improve students' understanding and adoption of sustainable practices. Their research indicated that practical involvement bridges the gap between theory and real-life application, reinforcing the effectiveness of environmental education. Furthermore, Johnson et al. (2020) explored the role of community collaboration in sustainable waste management and found that partnerships between educational institutions, local governments, and environmental organizations foster greater community awareness and participation.

CHAPTER 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS

The entire efforts of this study focused on the influence of environmental education on waste management practices among students at the University of Benin. In an attempt to effectively and succinctly achieve the objectives of the study, four research questions were drafted as a blueprint for the study. They include;

1. What are the Impact of environmental education on waste management practices among students in university of Benin?

2. What is the relationship between environmental knowledge, attitudes and waste management practices among students in university of Benin?.
3. What are the challenges of effective waste management practices among students, despite receiving environmental education?
4. What are the strategies that enhances the effectiveness of environmental education in promoting sustainable waste management practices?

The population of the study is 223 . It comprised students of Environmental Education currently enrolled in the Department of Health safety and environmental education as at the time of conducting this study. The sample size for this study was 223 respondents. Same number (223) of questionnaires were distributed, two hundred (200) of these questionnaires/responses were retrieved and used for the study's empirical analysis. The obtained data were analysed using frequency counts and simple percentages. The instrument that was used in this study for the collection of data is the questionnaire. A questionnaire titled "influence of environmental education on waste management practices among students at the University of Benin." (IEEWMPASUB).

Summary of Findings

The study examined various aspects of environmental education and its impact on waste management practices among students at the University of Benin.

1. The findings revealed that environmental education has a positive influence on students' waste management practices. It was observed that environmental education fosters awareness, influences behavior, and encourages responsible waste practices.

2. The study also explored the relationship between environmental knowledge, attitudes, and waste management practices among students. The findings showed a strong positive correlation, indicating that students with higher levels of environmental knowledge tend to adopt more responsible waste disposal behaviors.

3. Regarding the challenges of effective waste management practices, the study identified several key obstacles, including lack of proper infrastructure and resources, insufficient institutional support, financial and time constraints, limited waste collection facilities on campus, and perceived lack of efficacy. These findings are consistent with Adewale and Oke (2020), who emphasized how inadequate infrastructure and competing academic pressures hinder sustainable waste practices.

4. Furthermore, the study identified strategies for enhancing environmental education for sustainable waste management practices. The results emphasized the importance of practical experiences, community collaboration, curriculum integration, institutional backing, and the use of digital tools in promoting sustainable waste management.

In summary, the study underscores the critical role of environmental education in shaping students' knowledge, attitudes, and behaviors towards waste management. It highlights both the challenges faced and the strategies needed to foster effective and sustainable waste practices among students at the University of Benin.

Conclusion

In conclusion, this study highlights the crucial role of environmental education in shaping students' waste management practices at the University of Benin. The findings reveal that environmental education positively influences students' awareness, attitudes, and behaviors,

fostering a sense of responsibility towards sustainable waste management. Additionally, the study establishes a strong relationship between environmental knowledge, attitudes, and effective waste practices, reinforcing the idea that informed students are more likely to adopt eco-friendly behaviors. However, the research also underscores key challenges, such as inadequate infrastructure, lack of institutional support, and financial constraints, which hinder effective waste management. Despite these barriers, the study identifies practical strategies like curriculum integration, community collaboration, and digital tools as effective means to enhance environmental education and promote sustainable practices. Ultimately, the study emphasizes the need for continuous educational efforts and institutional support to build a culture of sustainability among students.

Recommendations

Based on the findings of this study, the following recommendations are proposed to enhance environmental education and promote sustainable waste management practices among students at the University of Benin:

1. The university should embed environmental education into its academic programs, ensuring that students from all faculties gain knowledge about sustainable practices and waste management.
2. Institutional support is crucial — the university should provide more waste collection facilities, recycling bins, and composting areas to create an enabling environment for proper waste disposal.

3. Regular workshops, seminars, and awareness campaigns should be conducted to reinforce students' understanding of the importance of sustainable waste management and motivate proactive participation.

4. The university should partner with environmental agencies, NGOs, and local governments to develop practical waste management initiatives and provide students with hands-on experience.

Suggestions for further studies

Based on the scope and limitations of this study, the following suggestions are made for further research:

1. Future research could explore the relationship between environmental education and waste management practices across multiple universities in Nigeria, providing a broader understanding of trends and challenges.

2. A long-term study tracking the impact of continuous environmental education programs on students' waste management habits over time would offer deeper insights into the sustainability of these practices.

3. Further studies could focus on assessing the effectiveness of particular strategies, such as digital tools or community collaborations, in enhancing waste management efforts.

4. Research could investigate how students' socioeconomic backgrounds influence their participation in sustainable waste management practices, shedding light on any disparities or barriers.

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DEPARTMENT OF HEALTH AND SAFETY ENVIRONMENTAL EDUCATION
A QUESTIONNAIRE ON THE INFLUENCE OF ENVIRONMENTAL EDUCATION ON
WASTE MANAGEMENT PRACTICES AMONG STUDENTS AT THE UNIVERSITY OF
BENIN

Dear Respondents,

I hereby solicit your cooperation in completing this questionnaire, I'm a final year undergraduate of the above-named department and university, currently undergoing a B.Sc. programme. I would like to request your help in completing this study by taking a few minutes to answer the attached questions. You are not obligated to reveal your identity, and please be assured that all information gathered shall be used properly for research purposes and shall be treated with confidentiality. Your assistance in this matter will be greatly appreciated.

SECTION A: RESPONDENT'S BIO-DATA

Instruction: Please tick (✓) on the option that best represents you or your opinion from the alternatives provided.

Sex: Male () Female ()

Level ; 100 () 200 () 300 () 400()

Age; 16 – 18 years() 19 – 21 years() 22 years & above()

SECTION B: RESPONSE TO THE RESEARCH QUESTION

Kindly select the option that most agreed with your view by indicating the extent to which you agree with the statement below. Please note the meaning of the following abbreviations;

SA – Strongly Agree, **A** – Agree, **D** – Disagree, **SD** – Strongly Disagree

S/N	STATEMENTS	SA	A	D	SD
What are the Impact of environmental education on waste management practices among students in university of Benin?					
1.	Environmental education increases my awareness about proper waste segregation practices				
2.	The knowledge gained from environmental education has influenced my decision to properly dispose of waste in designated bins.				
3.	change in attitudes it fosters toward waste reduction				

4.	Through hands-on learning and curriculum integration, environmental education fosters long-lasting changes in students' behaviors,				
5.	Helps promote pro-environmental behaviors				
What is the relationship between environmental knowledge, attitudes and waste management practices among students in university of Benin?.					
6.	My knowledge of environmental issues positively influences my attitude towards proper waste disposal.				
7.	Understanding the consequences of improper waste disposal motivates me to practice waste segregation.				
8.	My positive attitude towards environmental conservation translates into active participation in waste recycling				
9.	My environmental awareness influences my willingness to participate in campus clean-up campaigns.				
10.	My understanding of waste management principles directly affects my daily waste disposal habits.				
What are the challenges of effective waste management practices among students, despite receiving environmental education?					
11.	lack of proper infrastructure and resources				
12.	Lack of institutional support				
13.	Financial and Time Constraints				
14.	Insufficient waste collection facilities on campus				
15.	Perceived lack of efficacy				
What are the strategies that enhances the effectiveness of environmental education in promoting sustainable waste management practices?					
16.	Integrating experiential learning and hands-on activities.				
17.	Promoting Community Involvement and Collaboration				

18.	Integrating waste management into the curriculum				
19.	Enhancing Institutional Support and Policies				
20.	Integration of digital technology and social media in environmental education.				