# IMPACT OF PLACE BASED LEARNING ON KNOWLEDGE AND ATTITUDE TOWARDS WASTE MANAGEMENT AMONG UNIVERSITY OF BENIN STUDENTS

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**MARCH, 2025**

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**A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF HEALTH, SAFETY AND ENVIRONMENTAL EDUCATION, FACULTY OF EDUCATION, UINIVERSITY OF BENIN, BENIN CITY, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF SCIENCE B.S.c (Ed) DEGREE IN ENVIRONMENTAL EDUCATION, UNIVERSITY OF BENIN.**

**MARCH, 2025**

## CERTIFICATION

We, the undersign certified that this project work was carried out by **OREMEGUE, Efemena** with matriculation number **EDU2009551** as partial fulfilment of the requirement of the award of Bachelor of Science BSc Ed Environmental Education University of Benin.

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## DEDICATION

I dedicate this project work to God Almighty.

## ACKNOWLEDGEMENT

First and foremost, I am grateful to God for giving me the strength to complete this research work. My acknowledgment goes to my project supervisor, Dr Norris Erhabor for his gudiance and direction throughout this research work, Dr. Mrs. Don and also to the entire lecturers in the department of HSE.

I am also grateful to my parents, my Late dad Mr Oremegue Erhirhie Johnson and my mum Mrs Oremegue Nancy and my siblings.

Additionally, I want to thank my friends and my colleagues, who in one way or the other contributed to the success of this work and the completion of my programme in this institution. I appreciate their support and well wishes.

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## ABSTRACT

This study examined the impact of place-based learning on knowledge and attitude towards waste management among university of Benin students. Two research questions were raised to guide the study with two hypotheses formulated

to guide this study as well.

The quasi experimental research design was adopted for this study and the purposive sampling technique was used to select 50 (fifty) undergraduate students in the Department of Health, Safety and Environmental Education. Data was collected from the 50 respondents using an open ended questionnaire with twenty (20) items. The data collected was analyzed and interpreted using descriptive statistics.

Based on the data collected and analyzed, it was discovered that that place-based learning **does** have a significant impact on students' knowledge of waste management at the University of Benin. However, from the hypotheses tested it was further observed that that place-based learning does not have a significant impact on students' attitudes toward waste management at the University of Benin. It was therefore concluded that it is crucial to incorporate experiential learning strategies, like PBL, into environmental education programs in order to enhance students' comprehension of waste management. PBL programs should, however, be maintained over time and supplemented by community involvement, policy backing, and infrastructure advancements in order to produce significant attitudinal change. Long-term therapies, behavioral reinforcement techniques, and outside variables that affect students' attitudes about trash management should all be investigated in future studies. PBL has the ability to support long-term behavioral change in sustainable waste management methods in addition to information development by encouraging ongoing engagement and practical implementation. It was recommended that universities should incorporate sustained PBL activities into their environmental education curricula. Long-term engagement in real-world waste management projects, such as recycling programs and waste audits, can reinforce knowledge and gradually influence students' attitudes. Also partnerships between universities, local

governments, and environmental organizations should be encouraged to provide students with opportunities for active participation in community-based waste management initiatives.

# CHAPTER ONE

# INTRODUCTION

## Background to the Study

Solid waste management, or SWM, has grown to be a significant global concern for the majority of developing nations. The amount of waste produced in urban areas has increased due to Nigeria's fast population growth and ongoing migration of people from rural to urban areas in search of greener pastures (Obed, 2018). In the instance of tertiary institutions, the majority of the areas in which these establishments are located were previously semi-rural settlements; however, the institutions' establishments have transformed these areas into semi-urban populations. This increased the amount of waste that are left behind by students in the community due to their large numbers. The majority of nations are working to find the best solutions for the global problem of waste management, which when done incorrectly endangers both human health and the environment (Omar, Hossain & Parvin, 2018).

Indiscriminate dumping of refuse by the students and improper management of these wastes may adversely affect the health of the people. Students' lack of knowledge and unfavorable attitudes towards the environment, non-residential areas of tertiary institutions leads to the struggle with waste management. Therefore, it's critical to act quickly to encourage students to lead environmentally conscious lives that will contribute to environmental sustainability by helping them to develop the environmental knowledge, skills, and capacities necessary for environmental sustainability achievable through place-based learning. Some students living in private hostels are unable to maintain a clean environment because they do not view it as a necessary component of human existence. Due to their ignorance and their negative attitude, they take a passive part in sanitation activities and won't work with others to clean up halls of residence or residential areas (Kaithery & Karunakaran, 2019). Disregarding the environment, students carelessly discard papers, plastic bags, used clothing, shoes, boxes, sanitary pads, food waste, and other items beside the road, in public spaces, behind their hostels, along bush paths, and near open drains. The practice of open dumping is also prevalent among students in tertiary institutions, raising concerns about the general public's awareness of the potential health and environmental risks associated with their actions.

According to Omar, Hossain, and Parvin (2018), waste is defined as undesired remnants, residues thrown away, and materials or products that are no

longer of need. These materials are the result of human endeavors including mining operations, building renovations, packing, repackaging, unpacking, and preparation for manufacturing. According to Muaaz (2017), solid waste is any material that is considered unwanted by its owners and originates from residential, commercial, industrial, agricultural, and demolition activities. Waste management refers to a wide range of organized tasks involving the correct handling and disposal of waste from the point of generation to the point of ultimate disposal. The extraction of raw materials, their conversion into intermediate and finished products, the consumption of those products, and other human activities within society all result in waste (Sankoh, Yan & Tran, 2013). The waste management industry faces many challenges on a global scale. Human activity produces vast amounts of municipal and industrial wastes every day; approximately 3.4–4 billion tons of solid waste and up to 300 million tons of hazardous waste are produced annually worldwide (Edwin, 2020). As solid waste volume and complexity increase, so do the environmental risks posed by the waste products, which include risks to human health, ecosystem degradation, soil and water contamination, greenhouse gas emissions, global warming, and climate change (United Nations Environmental Programme, 2011).

Due to higher industrial material consumption and a higher proportion of antiquated and obsolete technological products than in developed nations, these risks are more apparent in developing nations. This is partly because of the waste

products that are being sent to developing nations, including hazardous industrial waste, used refrigerators, and used automobiles, shoes, and clothing (Ayodeji, 2010). Due to the extraordinary increases in both waste generation and population, the majority of Nigerian cities have faced difficulties in managing their solid waste over the last ten years. According to data from the Nigerian Population Census (NPC, 2008), this is caused by an annual increase in socioeconomic indicators and the population. According to reports, some States and Local Government areas are experiencing annual population growth of up to 20–30% (World Bank, 2020; Ezeah, 2021). Nigeria, being a developing country, has made significant efforts to manage solid waste, including the creation of environmental agencies at all three levels of government. In reaction to the severe problems brought about by the destructive impacts of pollution, deforestation, desertification, erosion, solid waste management, and other manifestations, for example.

In Nigeria, efficient waste management is essential, especially in urban and institutional settings where waste generation is high and waste handling infrastructure is frequently insufficient. Because of the enormous number of students and employees on university campuses, including the University of Benin, there are significant waste management challenges that have an impact on the campus environment when it comes to waste disposal. In order to solve this issue, schools' understanding of and attitudes toward sustainable waste

management techniques must change, in addition to providing sufficient facilities for waste management. Place-based learning (PBL), which combines environmental education with practical experiences, presents a viable strategy for promoting this change. PBL places a strong emphasis on experiential learning in the local setting, giving students the chance to interact with environmental issues in their communities (Ezinne, 2013). Under this instructional approach, students gain knowledge through engaging with their environment and taking part in projects that deal with regional environmental problems, like waste management. Pascal (2016) asserts that PBL strengthens students' ties to the environment, instilling in them a sense of accountability and motivating them to take proactive steps toward ecological sustainability.

PBL has the potential to greatly enhance students' comprehension of the effects of waste on the environment and foster favorable attitudes toward sustainable practices in the context of waste management. Experiential learning like PBL helps students internalize difficult environmental concepts and inspires them to act responsibly (Braden, 2013). Students who actively participate in campus recycling programs or waste audits, for example, are more likely to feel a sense of responsibility for and concern for waste management procedures. Because students can see the results of their actions and understand the advantages of appropriate waste disposal and management practices, this approach has been shown to be effective in changing students' attitudes (Sobel,

2005). Place-based learning is especially pertinent in Nigeria, where local and cultural influences greatly influence how people behave in their surroundings. Adewale (2019) posited that because Nigerian students have had little exposure to hands-on environmental education, they frequently display a lack of awareness of and engagement with waste management practices. PBL bridges the gap between theory and practice by immersing students in local environmental challenges and allowing them to observe the effects of waste mismanagement firsthand. Implementing PBL programs centered on waste management at the University of Benin may help to create a sustainable campus culture. Students are more likely to acquire the skills and mindset needed for long-term behavioral change when they work on projects that specifically address the waste-related problems they face on a daily basis. According to Gruenewald (2003), PBL gives students the tools they need to become active contributors to the development of sustainable communities by empowering them as well as educators.

**Statement of the Problem**

In many Nigerian universities, including the University of Benin, waste management is still a major challenge despite growing awareness of environmental sustainability. This problem, which leads to pollution on campuses, health risks, and environmental degradation, is exacerbated by rapidly expanding student populations and inadequate waste disposal infrastructure. More than simply better infrastructure is needed to address these issues; students' attitudes

and knowledge of waste management techniques must change. But traditional teaching approaches frequently fall short of encouraging students' personal responsibility or keeping them sufficiently engaged for sustainable waste management practices.

The educational strategy known as place-based learning (PBL), which involves exposing students to environmental issues in their local communities, offers a chance to improve their attitudes and knowledge about waste management. PBL has the ability to foster a deeper understanding of waste management challenges and instill sustainable habits by tying theoretical knowledge to real-world experiences in the student's immediate environment. However, in the context of Nigerian higher education, there is a dearth of research on the efficacy of PBL in influencing students' attitudes and behaviors toward waste management. By investigating the impact of place-based learning on the knowledge and attitude of students in University of Benin regarding waste management, this study aims to close this knowledge gap. It specifically seeks to ascertain whether PBL can successfully raise students' awareness, cultivate favorable attitudes, and promote sustainable waste practices in an academic environment. Understanding the role of educational strategies like PBL could be crucial in influencing university students' future waste management behaviors, especially in light of the urgent need for sustainable waste management solutions.

**Research Question**

The following research questions are raised to guide the study:

1. What is the impact of place-based learning on knowledge towards waste management among university of Benin students?

**2.** What is the impact of place-based learning on the attitude towards waste management among university of Benin students?

**Hypotheses**

1. Placed based learning has no significant impact on knowledge towards waste management among university of Benin students.

2. Placed based learning has no significant impact on attitude towards waste management among university of Benin students.

**Purpose of the Study**

This study aims to examine the impact of place-based learning on knowledge and attitude towards waste management among university of Benin students. In particular, this research seeks to:

1. Investigate the impact of place-based learning on knowledge towards waste management among university of Benin students.

2. Explore the impact of place-based learning on the attitude towards waste management among university of Benin students.

**Significance of the Study**

This study is carried out to assess the the impact of place-based learning on knowledge and attitude towards waste management among university of Benin students. In the light of this, this study will be of great importance to students, lecturers and the school management as well as policy makers, planners and all stakeholders in the school community and the environment as well.

This study will reveal how the educational strategy known as place-based learning (PBL), which involves exposing students to environmental issues in their local communities, offers a chance to improve their attitudes and knowledge about waste management. It will enable the school management and other lecturers to adopt PBL, which has the ability to foster a deeper understanding of waste management challenges and instill sustainable habits by tying theoretical knowledge to real-world experiences in the student's immediate environment.

Also, this study will be essential in addressing waste management among the students and the factors that influence the knowledge and attitudes of the students towards waste management. The outcome of this study will enable the school management, policy makers and the State government come up with adequate measures towards providing seminars, workshops through place based learning to improve students knowledge towards waste management which has a huge benefit to the sustainability of the environment. Also this study will be a basis for further studies.

**Scope and Delimitation of the Study**

The scope of the study is focused on the the impact of place-based learning on knowledge and attitude towards waste management. This study will be carried out using students in the university of Benin. The study is delimited to students in the university of Benin.

# CHAPTER TWO
# REVIEW OF RELATED LITERATURE

This chapter will be discussed under the following subheadings:

- Place-Based Learning Approaches
- Solid Waste Management Awareness
- Knowledge of Solid Waste Management
- Attitude Towards Solid Waste Management
- Rationale Towards Solid Waste Management
- Impact of Place Based Learning on Knowledge Towards Waste Management
- Impact of Place Based Learning on Attitude Towards Waste Management
- Relationship Between Knowledge of Solid Waste Management and Attitude Towards Solid Waste Management
- Summary of Reviewed Literature

## Place-Based Learning Approaches

Place-based learning (PBL) is a teaching strategy that incorporates communities and local environments into lessons, increasing student engagement by establishing knowledge in relatable contexts. Based on constructivist and experiential theories, PBL highlights the importance of placing learning in authentic contexts where students actively investigate and resolve local issues.

According to Smith (2012), there is a growing interest in PBL because of its special ability to help students develop critical thinking skills, a sense of community, and a stronger sense of place.

## Theoretical Foundations of Place-Based Learning

PBL's theoretical foundations can be found in Dewey's (1938) experiential learning principles, which support learning by actively interacting with one's surroundings. According to Dewey, learning experiences based in real-world situations are more meaningful and are retained for a longer period of time. He therefore proposed that education should be relevant to students' lives. PBL is also supported by Vygotsky's (1978) sociocultural theory, which emphasizes the importance of social interaction and cultural resources in the learning process. PBL establishes a learning environment where knowledge is created through interaction with others and the surrounding environment by incorporating community members and local issues. Additionally, Sobel (2004) argues that interacting with one's local environment fosters environmental stewardship and characterizes PBL as a response to "ecophobia," or the disconnection between children and the natural world. This is in line with place attachment theory, which contends that strong emotional ties to particular locations can increase people's desire to preserve the environment and their motivation to learn (Scannell & Gifford, 2010).

## Benefits of Place-Based Learning

PBL has been shown to have educational, social, and personal benefits in numerous studies. Its ability to increase student motivation and engagement is one of its main advantages. For example, Lieberman and Hoody (1998) discovered that, in contrast to traditional classroom settings, students engaged in PBL projects demonstrated better attendance rates and academic performance. Students find their studies more relevant when academic material is tied to local issues, which improves engagement and knowledge retention (Gruenewald & Smith, 2014). PBL's capacity to promote critical thinking and problem-solving abilities is another important advantage. Students must analyze problems, take into account various viewpoints, and come up with workable solutions because PBL frequently entails addressing real-life community issues. Students who took part in place-based environmental projects demonstrated improved critical thinking abilities and self-efficacy in resolving environmental problems, according to Duffin et al. (2008).

Furthermore, PBL fosters civic engagement and a sense of duty. Because students regularly work with neighborhood organizations, governmental bodies, and other stakeholders, Woodhouse and Knapp (2000) contend that PBL improves ties between schools and communities. A crucial element of democratic education, these collaborations give students real-world knowledge of community needs and foster a sense of civic duty (Smith, 2007).

## Environmental Awareness and Stewardship

PBL has proven particularly successful in promoting environmental stewardship and awareness. PBL fosters ecological awareness and a sense of responsibility for the natural world by actively involving students in environmental projects in their local communities. Place-based environmental programs improve students' ecological knowledge and promote pro-environmental behaviors, according to studies in environmental education, including those by Ernst and Monroe (2004). Furthermore, according to Semken and Freeman (2008), PBL fosters a lifelong dedication to environmental stewardship, especially when students form emotional connections with the places they study.

## Challenges of Place-Based Learning

PBL has many advantages, but it also has drawbacks and objections. The requirement for professional development and teacher preparation is one of the main obstacles. In order to implement PBL, educators must take on a more adaptable and facilitative role and have a thorough understanding of the local community and its problems (Barnes, 2014). Teachers may find it more difficult to successfully implement PBL if they lack the necessary time, resources, and administrative support. Variability in educational outcomes is another problem. Because PBL is so context-dependent, some critics contend that its results are not always reliable or readily quantifiable. Gruenewald (2003) asserts that the local

context and the particular problems addressed have a substantial impact on PBL's success, making it challenging to develop consistent success metrics for various implementations. Furthermore, some proponents of traditional education worry that PBL's emphasis on regional concerns might take attention away from more general academic material and have an impact on students' scores on standardized tests (Beames et al., 2012).

**Empirical Studies on Place-Based Learning**

The various uses and results of PBL in various educational contexts are highlighted by empirical research. In an evaluation of a PBL program in rural schools, Powers (2004) discovered that students not only became more academically proficient but also grew closer to their communities. Similarly, despite the difficulties of densely populated areas, PBL has shown promise in involving students with their communities in urban settings. Smith and Sobel (2010), for instance, noted that urban PBL programs promoted a deeper comprehension of urban environmental challenges by encouraging students to address issues like pollution and food insecurity. Semken et al. (2009) investigated the efficacy of PBL in teaching geosciences in higher education and discovered that when learning was related to the students' immediate surroundings, they were more engaged and performed better. Furthermore, Chawla and Cushing (2007) found that college students who participated in PBL-facilitated community-based environmental projects had improved critical thinking abilities,

a greater sense of agency, and a higher propensity to engage in environmentally conscious personal behavior.

**Solid Waste Management Awareness**

In Nigeria, solid waste management (SWM) is still a major environmental concern due to the country's fast urbanization, population expansion, and poor waste management infrastructure. The management and mitigation of waste-related problems, such as pollution, hazards to public health, and deterioration of urban aesthetics, depend on citizens' awareness of efficient SWM practices. Effective solid waste management in Nigeria is fraught with difficulties, such as a lack of funding, ineffective regulations, and public ignorance. According to Ogwueleka (2009), Nigerian solid waste generation outpaces the infrastructure for waste management, with large cities like Lagos and Abuja producing large amounts of waste every day. Due to a lack of knowledge and insufficient infrastructure, poor SWM practices such as open dumping and irregular waste collection are widespread (Ogwueleka, 2009; Abila & Kantola, 2013). Though implementation and public compliance are still lacking, the National Environmental Standards and Regulations Enforcement Agency (NESREA) has made an effort to regulate waste management practices (NESREA, 2011).

According to studies, there are wide variations in Nigerians' awareness of SWM practices, with rural areas typically having lower awareness levels than urban areas. While some urban dwellers are aware of the significance of

appropriate waste disposal, Abila and Kantola (2013) note that there are still large knowledge gaps, especially with regard to recycling and waste segregation. Odewumi et al. (2013) discovered in their study of Ibadan residents that while many people are aware of the health risks that improper waste disposal poses, few know how to distinguish between waste that is biodegradable and that which is not. Similarly, a study in Osogbo by Omole and Alakinde (2013) discovered that households' improper waste disposal raised health risks due to residents' lack of knowledge about SWM. This low level of awareness is frequently caused by a lack of community-based waste management facilities and public education campaigns about appropriate waste disposal. In order to raise awareness of SWM, the authors support larger public education campaigns. They contend that these initiatives could greatly lower inappropriate disposal methods and improve public health outcomes. Ezeah et al. (2013) found that although residents were generally aware of the negative impact of improper waste disposal on health, they were unwilling or unable to change their practices due to limited waste management options. Social, economic, and cultural factors influence attitudes toward SWM in Nigeria. According to Ezeah et al. (2013), traditional practices shape attitudes toward waste disposal in many Nigerian communities, with people frequently disposing of waste in open spaces or water bodies. This practice is made worse by the lack of government-enforced regulations and inadequate waste collection services, making it difficult for residents to adopt alternative practices. Omole

et al. (2016) investigated socioeconomic status's impact on attitudes toward SWM in more detail. According to their survey of Ado-Ekiti residents, low-income households frequently put their immediate survival needs ahead of SWM procedures, considering appropriate waste management to be of secondary importance to their financial worries. These viewpoints imply that government-led programs must take socioeconomic barriers into account when promoting waste management practices, and that awareness alone may not be enough to promote appropriate SWM practices.Studies reveal that many Nigerians continue to dispose of their waste in an unsustainable manner despite efforts to improve SWM. Open dumping, open burning, and littering are still common nationwide, according to Ayotamuno and Gobo (2004), who also note that citizens lack facilities and incentives for sustainable practices like recycling. The Lagos Waste Management Authority (LAWMA) has implemented a number of initiatives to encourage recycling and waste reduction in Lagos, Nigeria's largest city; however, due to a lack of facilities and low public awareness, participation is still low (LAWMA, 2015). Positive advancements in SWM practices in Nigeria are also highlighted by certain studies. For instance, Afon (2007) noted that recycling and waste sorting are growing in popularity in some urban areas, particularly among young people and well-educated populations. According to Afon's research, regular education and community involvement can foster awareness and appropriate SWM practices. In a similar vein, Adewole (2009) investigated SWM

programs at Nigerian universities and discovered that students were more inclined to engage in recycling and waste segregation activities if they were informed about the negative environmental effects of waste. These results highlight the significance of educational establishments as possible agents of behavioral change and SWM awareness.

Although the Nigerian government has taken a number of steps to enhance SWM, enforcement is still a major problem. For example, NESREA has established rules for recycling and waste disposal, but because of a lack of enforcement resources, states do not always follow these rules (NESREA, 2011). Furthermore, the Environmental Sanitation Law requires specific waste disposal procedures, but in rural areas where awareness of the law is low, compliance is typically low (Imam et al., 2008). Egunjobi (2017) contends that although policies are in place, they frequently fall short because of a lack of resources, low public involvement, and poor infrastructure. He highlighted the necessity of policies that prioritize public education regarding recycling and waste minimization in addition to waste collection. Public awareness campaigns should be given top priority in government policies, according to Egunjobi, in order to promote a culture of appropriate waste disposal, recycling, and sustainable waste management techniques.

Nigerian authors suggest a multipronged strategy that incorporates government assistance, community involvement, and education to raise public

awareness and engagement in SWM. Omole and Alakinde (2013) recommend community-based education initiatives that engage local leaders in order to cultivate a sense of accountability and ownership for SWM. They contend that grassroots initiatives, like those that use mobile outreach programs and community radio, can effectively reach rural populations that might not have received formal training on waste management techniques. Institutions of higher learning can be extremely important in cities. In order to instill in students the importance of sustainable waste management practices at an early age, Abila and Kantola (2013) advise integrating environmental education into school curricula. In order to give students practical experience with recycling and waste segregation, they also support collaborations between educational institutions, municipal governments, and private waste management firms.

**Knowledge of Solid Waste Management**

Nigeria's solid waste management (SWM) problem has grown more urgent as a result of the country's fast urbanization, expanding population, and inadequate waste management infrastructure. Public education on sustainable waste management techniques is essential to reducing the hazards that inappropriate waste disposal poses to the environment and human health. This is especially crucial for undergraduate students, who make up a sizable and powerful portion of the population and are frequently the next generation of leaders in a variety of fields. A significant influence on the development of future

waste management techniques comes from undergraduate students. Once they graduate, their attitudes and understanding of SWM can have a big influence on not just campus settings but also more general community behaviors. Adewole (2009) asserts that universities have a special duty to teach SWM concepts to students, establishing campuses as models of sustainable operations. Students who are knowledgeable about and participate in SWM activities while attending university are more likely to embrace sustainable waste management, according to Adewole (2009).

Furthermore, Nnorom and Osibanjo (2008) stress that undergraduates' understanding of SWM is essential because they frequently produce large volumes of waste and have the potential to reduce waste impact through responsible practices. They point out that maintaining sustainable waste systems is made more difficult by a lack of understanding about waste separation, recycling, and disposal techniques. This emphasizes how important it is for educational institutions to raise students' awareness of SWM and support behavioral change. According to research, Nigerian undergraduates are aware of SWM, but there are still significant knowledge gaps in some areas, like recycling and waste segregation. According to a 2013 study by Abila and Kantola, which polled undergraduates at universities in northern Nigeria, while students understood the basic idea of SWM, they were not familiar with the waste hierarchy (reduce, reuse, recycle) or the specifics of how to separate recyclable

materials. This study emphasizes that the primary challenge is not a complete lack of awareness but rather a lack of depth in understanding effective waste management techniques.

In a similar vein, a study carried out in southwest Nigeria by Ajibade et al. (2020) found that while many students acknowledged the significance of appropriate waste disposal, few were aware of the particular steps involved in sustainable practices like composting, waste sorting, and the detrimental effects that improper waste management has on the environment. This knowledge gap implies that students frequently only have a cursory understanding of SWM, which might not be enough to motivate the behavioral shifts required for sustainable waste management. According to a study conducted at the University of Calabar by Akpabio and Mfon (2016), students studying environmental science showed greater awareness and concern about SWM than students in other fields. This implies that exposure to the curriculum and course material have a major influence on SWM knowledge levels. In order to guarantee that every student gains a fundamental understanding of waste management, Akpabio and Mfon advise that SWM education be incorporated into the curricula of a variety of academic subjects, not just environmental studies. Students' perspectives on waste management frequently conflict with sustainable practices, despite the fact that awareness of SWM is steadily growing. Despite acknowledging the significance of SWM, many students do not practice waste separation or recycling because of

convenience and a lack of incentives, claim Afon and Faniran (2013). Due to limited access to designated waste bins and recycling facilities, students in Lagos often turned to inappropriate waste disposal methods, such as open dumping, according to their study. Furthermore, students' attitudes toward SWM practices are frequently influenced by social factors, including peer pressure, as noted by Aluko and Ilesanmi (2018). Students who saw their peers disposing of waste improperly were more likely to do the same, according to a study conducted at Obafemi Awolowo University. This suggests that the student body needs to establish an environment that is supportive and cultivate a culture of accountability and responsibility. They support the implementation of sanctions for inappropriate waste disposal, accessible recycling facilities, and awareness campaigns as ways for universities to promote good SWM behavior.

Students' knowledge and practices of SWM are greatly influenced by their institutions. According to Ezeah and Roberts (2013), students are more likely to dispose of their waste properly when universities have clear waste management policies and sufficient waste facilities. Students were more likely to comply with SWM practices on campuses with clear waste disposal policies and sufficient facilities, according to their study of universities in Nigeria. This implies that colleges should spend money on waste management facilities and regulations that encourage environmentally friendly disposal methods. Programs for education on SWM and environmental sustainability have been successful in increasing

awareness and fostering constructive attitudes. Adewole (2009) highlights how crucial it is to incorporate environmental education and SWM into university curricula. He contends that students are more likely to comprehend and internalize the significance of sustainable waste practices when they are exposed to information on waste impacts and management strategies through formal coursework. Students who had taken environmental science courses were more aware of SWM practices than those who had not, according to Adewole's research.

Effective SWM knowledge and practices among Nigerian undergraduates are hampered by a number of obstacles. Abila and Kantola (2013) claim that students' capacity to practice appropriate SWM is hampered by insufficient waste facilities, a dearth of recycling initiatives, and restricted access to waste management education materials. They point out that the lack of recycling bins and waste sorting facilities on campuses deters students from putting their understanding of SWM principles into practice, even when they are aware of them. The lack of institutional and governmental support for SWM education is another obstacle. According to Akpabio and Mfon (2016), although students may be aware of the environmental advantages of SWM, their full realization is impeded by a lack of government regulations and university funding for SWM initiatives. In order to support SWM education and infrastructure on campuses throughout Nigeria, they urge greater cooperation between academic institutions and governmental organizations.

**Attitude Towards Solid Waste Management**

The future of environmental sustainability in Nigeria is significantly shaped by the attitudes of Nigerian students toward solid waste management (SWM). Young adults at universities have a big influence on whether or not efficient waste management techniques are supported or impeded by the behaviors they develop and maintain. Environmental behavior is greatly influenced by attitude, and studies have indicated that favorable attitudes regarding SWM can encourage sustainable practices. The availability of SWM facilities, peer pressure, cultural viewpoints, and students' knowledge levels all have an impact on how different students feel about SWM in Nigerian universities. Since students frequently live in communities that produce a significant amount of waste in urban areas, Abila and Kantola (2013) stress that encouraging positive attitudes toward SWM among students is crucial for reducing Nigeria's waste-related problems. Adewole (2009) asserts that student attitudes and behaviors regarding waste management and disposal are crucial in lowering the risks to the environment and human health associated with waste, particularly in heavily populated university settings.

Students' attitudes toward sustainable waste management practices and their knowledge of SWM are correlated, according to several studies. Ajibade et al. (2020), for example, found that students who were more aware of and knowledgeable about SWM practices had a more positive attitude toward waste

separation, recycling, and responsible disposal in universities in southwest Nigeria. On the other hand, students who knew little about waste management were more likely to engage in inappropriate waste disposal, such as open dumping and littering, and to show less concern for these practices. The importance of environmental education as a means of encouraging students to have positive attitudes toward SWM is demonstrated by this pattern. According to Ogunbiyi and Kelechi (2017), students in environmental science programs tended to have more favorable attitudes toward SWM than students in other academic disciplines. Students who took courses or were exposed to environmental issues were more likely to see SWM as a personal responsibility and adopt more sustainable practices, according to their study, which was carried out at the University of Ibadan. This research backs up the claim that SWM education should be integrated across academic fields in order to promote constructive attitudes and conscientious waste management practices.

As demonstrated, the availability of SWM facilities on campuses affects students' attitudes and waste management practices. When the university actively encourages waste management practices and students have access to sufficient waste disposal facilities, like recycling bins, they are more likely to develop positive attitudes toward solid waste management (SWM) (Afon and Faniran, 2013). According to their study, which was carried out in Lagos State, student compliance with SWM practices was higher on campuses with easily accessible

facilities and visible waste disposal policies. However, in the absence of these facilities, students are less likely to act in ways that are environmentally responsible, which illustrates how accessibility and convenience affect attitudes toward waste management. Similarly, when universities actively participate in waste management initiatives, students are more likely to adopt positive attitudes toward SWM, according to a 2013 study by Omole and Alakinde on the role of institutional support in SWM practices. According to the authors, student compliance and engagement increase when university officials give SWM top priority by putting in place waste segregation bins, enforcing appropriate disposal procedures, and teaching students about waste management. This study emphasizes how crucial institutional dedication is to fostering an atmosphere that encourages constructive attitudes and conscientious SWM practices.

Peer and social influences are important in determining how students feel about SWM. According to Aluko and Ilesanmi (2018), Nigerian students are frequently impacted by the actions and customs of their classmates, which may or may not promote ethical waste management techniques. Students who witnessed their peers improperly disposing of waste were more likely to follow suit, according to their Obafemi Awolowo University study. This propensity to emulate peers suggests that fostering a culture of sustainable waste management on campus may have a positive impact on students' attitudes and actions regarding SWM. Peer-led SWM initiatives and awareness campaigns are suggested by

Aluko and Ilesanmi as ways to address the influence of peers and help students develop a sense of shared responsibility. They contend that students are more likely to embrace sustainable waste management (SWM) practices when a culture of SWM is normalized on campus. These programs might involve student-led recycling campaigns, environmental organizations, and contests that encourage appropriate waste management, which would ultimately affect how SWM is viewed on campus as a whole.

Students encounter a number of obstacles that prevent them from adopting constructive attitudes and behaviors regarding waste management, even though they are generally aware of SWM practices. Among these obstacles, inadequate SWM policies, limited access to waste disposal facilities, and a lack of government support are commonly mentioned. According to Ezeah et al. (2013), students frequently complained about the absence of easily accessible recycling bins and adequate facilities for waste segregation, which deterred them from practicing responsible disposal practices. Their analysis of public universities in Nigeria found that, even in cases where students have favorable opinions about SWM, inappropriate disposal methods are frequently caused by a lack of facilities. Furthermore, Akpabio and Mfon (2016) contend that students' capacity to uphold constructive attitudes and behaviors is further hampered by the uneven application of SWM policies on campuses. According to their research at the University of Calabar, students who saw inconsistent or weak SWM policies were less inclined

to practice sustainable waste management because they thought the institution did not place much emphasis on SWM. According to Akpabio and Mfon (2016), universities must create explicit SWM policies and implement them consistently because this can have a big impact on how students feel about waste management.

**Rationale Towards Solid Waste Management**

Solid waste management (SWM) continues to be a major environmental and public health concern. Rapid urbanization, population growth, and rising consumption have increased the amount of waste produced in the country, worsening the negative effects of inadequate waste management techniques on the environment and society. Effective SWM in Nigeria is justified by its potential to advance environmental sustainability, boost public health, generate employment opportunities, and advance the nation's general development. The serious health risks associated with inappropriate waste disposal are one of the main justifications for SWM's priority. According to studies, infectious diseases like cholera, malaria, and dysentery, which are common in both urban and rural areas with inadequate waste disposal systems, are directly linked to poor waste management practices. Nnorom and Osibanjo (2008) claim that the buildup of waste in urban areas causes the growth of disease vectors, especially rodents and flies, which feed on uncollected waste and aid in the spread of illness. For instance, inappropriately disposed of solid waste frequently clogs drains during times of high rainfall, causing flooding and the subsequent spread of waterborne

illnesses. Furthermore, poor sanitation brought on by insufficient SWM systems causes public health crises, particularly in densely populated urban areas like Lagos and Abuja, according to Afon and Faniran (2013). According to their study, inappropriate waste disposal practices like littering and open dumpsites pose major health risks, especially to children and other vulnerable groups, and greatly contribute to environmental pollution. Public health problems are made worse by the contamination of water sources caused by improper solid waste management. Effective SWM is therefore essential to lowering the burden of disease and raising living standards in communities.

The contribution that SWM makes to environmental sustainability is another important justification for its use in Nigeria. Rapid urbanization and poor waste management have resulted in pollution of the air, water, and land, among other environmental problems. Nigeria and other developing nations face serious environmental problems as a result of improper solid waste management, according to the United Nations Environment Programme (UNEP, 2018). Ineffective waste management practices, such as burning waste in open landfills, contribute to air pollution and climate change by releasing dangerous pollutants into the atmosphere. Additionally, hazardous chemicals leak into the ground from urban landfills and dumpsites, contaminating groundwater and soil and posing long-term ecological hazards. Furthermore, improper handling of solid waste leads to the devastation of nearby ecosystems, especially in cities where waste

buildup has an adverse effect on biodiversity. Uncontrolled waste disposal in water bodies, like rivers and streams, contaminates aquatic habitats and has an impact on the livelihoods of communities that depend on these water sources for fishing and agriculture, according to a study by Oloke and Akinmoladun (2014). In addition to endangering the environment, the depletion of natural resources also puts the financial stability of communities that rely on them at risk. Therefore, implementing effective SWM systems is essential to protecting natural ecosystems and encouraging sustainable urban growth.

Significant economic opportunities are also presented by effective SWM. The waste management industry has the potential to support economic expansion, job creation, and the development of a circular economy. With its expanding population and urban centers, Nigeria is well-positioned to capitalize on the billion-dollar global waste management market, according to the World Bank (2018). Jobs in the collection, sorting, recycling, and waste-to-energy sectors can be generated by efficient waste recycling programs. For instance, a study by Ajibade et al. (2020) emphasized how waste recycling programs in Nigeria have the potential to increase revenue, boost waste recovery rates, and create green jobs. In Nigeria, the circular economy which prioritizes waste reduction, recycling, and reuse offers a feasible route to long-term economic growth. Recycling can minimize environmental pollution, cut down on energy use, and lessen the demand for raw materials. According to Olajide and Oludare (2018), formalizing

and incorporating Nigeria's informal waste sector which is primarily made up of waste pickers and recyclers into the country's waste management plan could increase economic productivity and encourage sustainable practices. Together with neighborhood recycling programs, the establishment of a formal waste management industry can result in improved economic resilience, waste reduction, and resource efficiency.

The need for more robust institutional frameworks and policies is also part of the justification for effective SWM. According to Adewole (2009), clear, coordinated policies that address waste generation, collection, recycling, and disposal at the local and national levels are necessary for SWM to be successful in Nigeria. Unfortunately, two major obstacles to attaining sustainable SWM in Nigeria have been the lack of a unified waste management policy and inadequate implementation. Many local governments have inadequate financial and technical resources, which leads to poorly maintained waste management systems. Poor waste management practices are also a result of environmental laws not being enforced, according to studies. Nigeria has waste management regulations, but they are frequently not enforced effectively or consistently, according to Ezeah and Roberts (2013). They contend that a comprehensive strategy involving policy creation, public education, infrastructure investment, and community involvement is necessary for SWM to be successful. In order to guarantee that waste management regulations are appropriately implemented and that the general

public engages in sustainable practices, it is imperative that institutions and governance frameworks be strengthened.

Public awareness and behavioral change are also essential for any SWM initiative to succeed. Low awareness of the negative effects improper waste disposal has on the environment and human health is frequently associated with negative attitudes toward waste management in Nigeria. Many Nigerians, particularly in urban areas, lack the requisite knowledge regarding waste separation, recycling, and sustainable waste practices, claim Aluko and Ilesanmi (2018). They contend that in order to change Nigerians' perceptions of SWM, public awareness campaigns and behavioral change initiatives are crucial. Furthermore, there is a need for cooperation between the public and private sectors on programs that raise awareness of the value of waste management and promote appropriate disposal practices. Ezeah et al. (2013) contend in their study that social factors like community involvement have a significant impact on waste management results. It has been demonstrated that community-based waste management strategies, like neighborhood waste collection programs, are successful in enhancing waste disposal procedures. Behavior changes can be facilitated by incorporating the community in waste management initiatives, such as collective waste collection and waste segregation at the source. Therefore, the success of waste management systems depends heavily on public engagement and participation in SWM.

**Impact of Place Based Learning on Knowledge Towards Waste Management**

Place-based learning (PBL) has become a popular educational strategy, particularly for raising environmental consciousness and knowledge of important topics like waste management. PBL, which has its roots in experiential learning theories, places a strong emphasis on educational opportunities that engage students with local problems and foster a sense of connection with their immediate surroundings. By immersing students in practical, contextually relevant activities that highlight the intricacies of waste generation, disposal, and environmental stewardship, PBL helps students gain a deeper understanding of waste management. Place-based learning bridges the gap between theoretical concepts and real-world, hands-on applications by utilizing the local environment as a fundamental learning resource. According to Gruenewald (2003), PBL is an instructional approach that fosters critical engagement with the environment, enabling students to acquire firsthand knowledge of environmental issues. In the context of waste management, this method is especially pertinent since it allows students to see the negative effects of improper waste disposal and comprehend the advantages of efficient waste management techniques in their local communities.

According to Barnett et al. (2020), PBL is effective in environmental education because it makes students feel more responsible for their environment and increases their likelihood of adopting sustainable practices. They contend that

by placing instruction in familiar settings, students can better understand and remember the material by seeing how waste management affects the real world. Therefore, PBL's emphasis on localized learning offers a useful basis for comprehending the intricacies of waste management, equipping students with information that they can use immediately in their communities. PBL greatly improves students' understanding of waste management by promoting critical thinking and providing useful insights. Students who take part in place-based environmental programs show more understanding of waste types, waste reduction techniques, and the environmental effects of inadequate waste management than students in traditional classroom settings, claim Afreen and Egbue (2019). This expanded understanding frequently results in a greater understanding of the importance of appropriate disposal and recycling methods as well as other responsible waste management practices. Furthermore, according to Dewey and Sutherland (2021), PBL helps students comprehend the wider social, economic, and environmental ramifications of waste in addition to teaching them about waste management procedures by involving them in community-based waste management projects like recycling programs and waste audits. Students gain a more thorough grasp of the significance of waste management as a result of these experiential learning opportunities, which enable them to see the links between waste management and problems like public health, environmental degradation, and climate change. According to a study by Abiodun et al. (2022),

students who took part in waste recycling and community cleanup initiatives demonstrated noticeably greater awareness and knowledge of waste management techniques than their non-participating peers. According to the authors, incorporating PBL into environmental studies curricula at Nigerian universities has the potential to greatly improve students' understanding of waste management and their propensity to adopt environmentally friendly practices.

Place-Based Learning as a Tool for Environmental Awareness

Nigeria, where waste management issues are widespread and call for quick, locally relevant solutions, benefits greatly from place-based learning's emphasis on involving students with their local context. Olukanni and Adebiyi (2012) state that low public awareness and insufficient waste collection infrastructure are two major issues Nigeria faces when it comes to solid waste management. In response, it has been demonstrated that PBL-infused educational programs increase students' awareness of these problems and give them the skills they need to handle waste management in their local communities. According to Okereke and Ukpere (2019), PBL fosters a sense of ownership and accountability by encouraging students to recognize regional waste management problems and work together to develop community-led solutions. This is particularly crucial in environments with limited resources, as students may not be exposed to the cutting-edge waste management techniques and technologies that are prevalent in more developed settings. PBL helps students to develop problem-solving abilities

that are directly related to the waste challenges they face on a daily basis by allowing them to apply what they have learned to the local environment. Anoliefo et al. (2018) found that students engaged in waste sorting and recycling projects developed a deeper understanding of waste management practices, such as source separation and composting, than those in traditional settings, which further supports the use of PBL for waste management education. Given that students are more likely to continue practicing waste management techniques after the program ends, their findings imply that PBL not only helps students acquire knowledge but also fosters environmentally conscious behaviors.

**Impact of Place Based Learning on Attitude Towards Waste Management**

Place-based learning (PBL) has drawn more and more attention as a successful teaching strategy for fostering environmentally conscious attitudes, particularly with regard to waste management. PBL links theoretical knowledge with actual environmental issues by emphasizing learning in the context of a student's immediate surroundings. Since students directly experience the repercussions of inappropriate waste disposal and the advantages of sustainable practices, this method has been demonstrated to strengthen environmental attitudes, especially in the area of waste management. The premise behind place-based learning is that students gain a deeper understanding of environmental stewardship and a stronger, more intimate connection to the subject matter when they learn in, about, and from their local environment. PBL, according to

Gruenewald (2003), is a method that places instruction in the context of the student's community, enabling them to comprehend and deal with environmental issues directly. Positive attitudes toward waste management are shaped in large part by the empathy and sense of responsibility that are fostered by this localized learning. PBL encourages environmental sensitivity and pro-environmental attitudes in the context of waste management, according to multiple studies. Dewey and Sutherland (2021) assert that students who take part in environmental education programs that are centered on the community demonstrate a greater sense of environmental responsibility and are more likely to embrace sustainable waste management practices. According to the authors, PBL gives students an experiential foundation that helps them see waste management as a shared and personal responsibility rather than an abstract idea by placing learning within the context of their immediate environment.

By giving students a firsthand look at the waste-related issues that their communities face, place-based learning has been shown to have the potential to improve students' attitudes toward waste management. The impact of a PBL program on the attitudes of students toward waste management was studied by Abiodun and Eniola (2022), who found that students' sense of accountability for local waste issues significantly improved. According to the study, students who participated in community-based waste management activities, like recycling campaigns and neighborhood clean-up campaigns, showed greater pro-

environmental sentiments and were more likely to say they were committed to waste reduction. The authors claim that by emphasizing local contexts, PBL helps students understand the negative effects of improper waste management, which in turn affects their attitudes and actions. In a study carried out by Olukanni and Adebiyi (2017), they discovered that PBL improved students' attitudes toward environmental protection in addition to their understanding of waste management techniques. According to their research, students who took part in PBL activities like recycling and waste sorting in their communities were more inclined to engage in waste reduction techniques. They ascribed this change in perspective to PBL's experiential component, which allowed students to see and comprehend firsthand how their actions affect their surroundings.

Fostering Behavioral Change Through Place-Based Learning

Converting favorable attitudes toward waste management into sustained behavioral change is the ultimate objective. According to studies, PBL is especially successful at reaching this goal because it not only educates students about waste problems but also motivates them to actively participate in finding solutions. One of PBL's main advantages, according to Barnett et al. (2020), is its capacity to inspire students to adopt environmentally friendly practices. The authors contend that because they see waste reduction and recycling as personally relevant and significant, students who learn about waste management through PBL become more internally motivated to engage in these activities. Okereke and

Ukpere (2019) noted that PBL activities cause a discernible change in students' waste-related attitudes and behaviors. Their study concentrated on a group of secondary school students who participated in waste management initiatives that involved community recycling and waste sorting. The authors discovered that PBL helped students internalize the value of waste management, which led to a long-lasting dedication to eco-friendly practices after the program ended. They contend that this internalization process is essential to addressing Nigeria's waste management issues and promoting a sustainable culture.

Because it cultivates a sense of social responsibility, PBL's emphasis on community involvement also has a big impact on how students feel about waste management. According to Anoliefo et al. (2018), PBL's emphasis on community engagement inspires students to take charge of their surroundings and cultivate mindsets that are more in line with the welfare of the community. The authors point out that students are more likely to embrace and support sustainable waste management practices when they believe they are making a difference in the health of their local environment. PBL is a useful strategy for fostering the idea that waste management is a shared responsibility rather than just an individual one in Nigeria, a country with strong community-oriented values. Students who take part in PBL programs also exhibit more respect for their environment and a greater awareness of the environmental impact of their actions, according to Olajide and Oludare (2018). According to their research, students who

participated in neighborhood clean-up campaigns grew more devoted to keeping their surroundings clean and felt more pride in their neighborhood. As students start to view waste reduction as a component of their civic duty, this pride and dedication are crucial elements of a change in mindset toward waste management.

**Relationship Between Knowledge of Solid Waste Management and Attitude Towards Solid Waste Management**

Solid waste management (SWM) is becoming more widely acknowledged as an essential element of environmental sustainability, particularly in areas that are experiencing rapid population growth and urbanization. Researchers have focused on the relationship between SWM knowledge and attitudes, with numerous studies indicating that pro-environmental behaviors and positive shifts in attitudes can result from greater knowledge and comprehension of SWM practices. With an emphasis on how knowledge of solid waste concepts can influence attitudes toward responsible waste management practices, particularly in situations where awareness and educational outreach are required to promote sustainable waste practices.

Knowledge is a crucial factor in determining attitudes toward waste management because it gives people the information they need to make wise choices and embrace sustainable practices. According to Ajzen and Fishbein's (1980) theory of reasoned action, attitudes which are shaped by knowledge and beliefs about a particular subject have a significant impact on behavior. Applying

this theory to waste management, Gupta and Ogbonna (2016) discovered that people are more likely to have favorable opinions about waste management techniques like source separation, recycling, and composting if they are more knowledgeable about the effects of waste on the environment. This suggests that SWM-focused awareness and education campaigns can be extremely effective in influencing attitudes toward waste. In a similar vein, Olorunfemi and Adedoyin's (2018) study discovered a favorable relationship between university students' attitudes toward waste reduction practices and their understanding of SWM. According to the study, students who had taken part in SWM awareness campaigns or received environmental education were more likely to have favorable opinions about recycling and waste segregation. According to Olorunfemi and Adedoyin, educational institutions can cultivate a generation of environmentally conscious people who see waste management as a social and personal responsibility by providing students with pertinent information on SWM. Omran et al. (2009), who carried out a cross-sectional study in Malaysia investigating the relationship between waste knowledge and attitudes among residents, provide additional support for the influence of SWM knowledge on attitudes. They discovered that better attitudes toward waste reduction, such as cutting back on single-use items and supporting recycling programs, were shown by residents who were aware of waste management procedures. According to Omran et al., having knowledge helps people comprehend the reasoning behind

waste management regulations, which increases their acceptance and willingness to implement waste management techniques.

People's perceptions of waste management and their propensity to embrace sustainable waste management are both influenced by their attitudes toward SWM. Bandura (2001) asserts that attitudes play a crucial role in the process of behavioral change because they have the power to either facilitate or impede the adoption of new behaviors. People are more likely to act in ways that benefit the environment when they have accurate knowledge about SWM because their attitudes tend to be more in line with sustainable practices. Ogwueleka (2009), for instance, showed that Nigerian students who had a positive attitude toward SWM and a solid knowledge base were more likely to engage in waste reduction practices like using campus recycling bins and refraining from littering. The importance of attitudes in SWM behavior is further demonstrated by Bashir et al. (2018) in India, who discovered that although knowledge can raise awareness, it is positive attitudes that determine long-term participation in waste management practices. According to the study, people who believed that solid waste management (SWM) improved environmental quality and community health were more likely to keep recycling and reducing waste in spite of obstacles like limited access to recycling facilities. According to Bashir et al., long-lasting behavioral changes in waste management require promoting positive attitudes via education.

In areas like Nigeria where waste management issues are severe, educational programs play a particularly significant role in fostering SWM knowledge and influencing attitudes. According to Okot-Okumu and Nyenje (2011), education acts as a link between attitude and knowledge, paving the way for changes in behavior. Educational institutions can create the foundation for sustainable attitudes and behaviors by putting in place SWM programs that teach students the value of waste reduction and appropriate disposal. Olajide and Ajayi (2016) found that Nigerian university students who took part in SWM workshops showed a notable increase in their knowledge and favorable attitudes toward SWM, which lends credence to this perspective. According to their findings, universities can cultivate environmentally conscious attitudes that are likely to transcend campus life by offering students real-world, experiential waste management education. The authors go on to say that incorporating waste management instruction into curricula can help students develop sustainable attitudes, which will help society as a whole change how waste is managed.

**Summary of Literature Review**

Based on experiential learning theory and backed by empirical data demonstrating its advantages for the environment, society, and academia, place-based learning provides a dynamic and context-sensitive approach to education. The literature shows that PBL's advantages frequently exceed these obstacles, especially when the objective is to develop involved, informed, and responsible

citizens, even though issues like teacher preparedness and the requirement for resources still exist. PBL enables students to make the connection between academic ideas and practical applications by incorporating local issues into the curriculum, culminating in improved community well-being and personal development. PBL is a particularly promising strategy for teachers looking to equip students for both local and global challenges, especially as interest in sustainable and community-centered education continues to rise. The literature on SWM awareness in Nigeria reveals a pressing need for increased public education and community involvement. Even though some urban dwellers have a rudimentary understanding of SWM, awareness and involvement are still low overall, especially in rural areas. In order to promote sustainable SWM practices, Nigerian academics stress the significance of public involvement, community education, and government intervention. Nigeria can enhance its waste management procedures and lower the risks to human health and the environment posed by inappropriate waste disposal by tackling these issues. The research on undergraduates in Nigeria who are aware of SWM emphasizes the necessity of better institutional support, infrastructure, and education in order to promote sustainable waste management. Although Nigerian students typically have a basic understanding of SWM, there is still a large knowledge gap, especially when it comes to procedures like composting, recycling, and waste segregation. Furthermore, peer behavior, convenience, and a lack of enabling infrastructure all

have an impact on students' attitudes toward SWM, which restricts their ability to put their knowledge into practice.

Nigerian academics suggest a multipronged strategy to raise undergraduates' awareness of SWM and promote sustainable practices. This entails investing in campus waste management infrastructure, integrating SWM education into the university curriculum across all subject areas, and putting in place university-led programs to promote favorable waste management attitudes. Universities can play a critical role in promoting sustainable SWM practices both within and outside of their campus communities by providing students with the required information, resources, and encouraging environment. In order to encourage students to have sustainable SWM attitudes, Nigerian universities must take a comprehensive approach that integrates instruction, institutional support, and community engagement. Students can develop positive attitudes toward SWM and become future advocates for sustainable waste management practices if universities address the current obstacles and promote an environmentally conscious campus culture. Nigeria has a well-defined and complex justification for efficient solid waste management. Economic growth, environmental sustainability, and public health all depend on effective waste management. Nigeria can take advantage of SWM's potential advantages, which include disease prevention, environmental preservation, economic expansion, and job creation, by tackling the problems of inadequate waste disposal methods and institutional

inefficiencies. To do this, though, all parties involved government organizations, institutions, communities, and the private sector must work together to create all-encompassing, sustainable waste management systems. In order to promote a culture of responsible waste management that guarantees the long-term health of the environment and society, education, policy creation, and public involvement will be essential.

Place-based learning is an effective way to help students learn more about waste management, especially in Nigeria, where environmental degradation and waste disposal are persistent problems. PBL helps students see directly the effects of waste management practices and inspires them to adopt sustainable practices by creating a stronger bond between them and their local environment. According to the reviewed studies, students who participate in PBL in waste management show increased knowledge, environmental consciousness, and a sense of accountability for waste management practices in their local communities. Through direct connections with their local environment and waste issues, place-based learning has been shown to be an effective educational strategy for promoting positive attitudes toward waste management. PBL aids students in internalizing environmental values and cultivating a sense of responsibility for sustainable practices, according to studies conducted in Nigeria and elsewhere. PBL helps students see waste management as a significant and personally relevant issue through practical projects and community involvement, which is crucial for

fostering pro-environmental attitudes and behaviors. The correlation between attitudes toward and knowledge of SWM emphasizes how crucial environmental education is in advancing sustainable waste management techniques. Research shows that people who know more about SWM are more likely to have favorable opinions about recycling, waste reduction, and proper disposal. However, a solid body of knowledge as well as favorable social and structural circumstances are necessary for bringing about long-lasting behavioral change.

# CHAPTER THREE

# METHOD OF THE STUDY

This chapter presents the method and procedures that will be used in conducting the study. It is organized under the following sub-headings:

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

## Research Design

The research design that was adopted for this study was the quasi experimental research design. The research design is the most suitable in order to examine the impact of place-based learning on knowledge and attitude towards waste management among university of Benin students. The quasi-experimental design is used to reveal the cause-and-effect relationship that exist among

variables, that is the independent (manipulated) and dependent (resultant) variable. It helps researchers understand the influence of specific variables on outcome and provides direction and insights into the efficacy of the policies or interventions.

In this, research, the quasi-experimental design was suitable as it compared students who have no knowledge about solid waste management and other group who have vast knowledge about it. It therefore made it possible to find out if place based learning has any impact in their knowledge and attitudes towards solid waste management among undergraduates in the university of Benin.

**Fig 4: Quasi Research Design.**

R1 O1 X O2
R2 O1 O2
Where:
R1= Experimental group
R2= Control group
O1 = Pretest
X = Treatment ( Place Based Learning)
O2 = post test

**Population of the Study**

The population of this study consisted of all the students in the University of Benin, while the target population was the 100 level students in the department of Health, Safety, and Environmental education (H.S.E.). This consisted of students enrolled in two different course areas: Environmental Education and Health Education (Department of Health, Safety, and Environmental Education 2023/2024 session). Out of 100 students in both course areas, fifty (50) undergraduate students were randomly selected.

**Sampling and Sampling Technique**

Purposive sampling technique was selected for this study. Purposive sampling is a non-probability sampling technique in which researchers purposely select individuals that possesses the specific characteristics or qualities of interest to the study. This method is used to gather in-depth information and explore specific dimensions of a phenomenon. The respondents were categorized into two, the experimental group and the control group. Those who responded in the experimental group category received a treatment (place based learning) while those under the control group did not receive any treatment. A total of fifty (50) respondents were chosen from both course areas. The sampling method is best explained in the table below;

**Table 1.0: Sampling Method**

| S/N | Selected groups | Number of Respondents |
|---|---|---|

| | | |
|---|---|---|
| 1. | Experimental Group | 25 |
| 2. | Control Group | 25 |
| TOTAL | | 50 |

**Research Instrument**

A self structured questionnaire was used for the study. The questionnaire was divided into three sections. Section A covered the demographic data of the respondents while section B tested the respondents knowledge about solid waste management. And section C provided information that asked the respondents to indicate their level of agreement with a series of questions using A four point scoring scale drawn along the modified Likert summated rating scale for measurement ( SA = Strongly agree, A = Agree, D, D=Disagree, and SD= Strongly disagree) to show their attitude towards the sources of emotional stress.

**Validity of the Instrument**

The face and content validity of the instrument was established by giving draft copies of the instrument to the project supervisor and two other experts in the Department of Health, Safety and Environmental Education. Their corrections and suggestions were be used to prepare the final copy of the instrument.

**Reliability of the Instrument**

Internal consistency reliability was adopted in this study to pilot test the questionnaire. Twenty (20) questionnaires were administered to students who are not part of the study population. Then their response was subjected to data

analysis, Cronbach's alpha (α) was calculated with SPSS for attenuation. Cronbach alpha value of 0.823 was observed. Thus the instrument is reliable

**Method of Data Administration**

The instrument was administered directly to the respondents by the researcher. The respondents were urged to reply freely and impartially as it relates to them in order to obtain first hand information from them without bias. The respondents filled out the questionnaire, which the researcher retrieved personally upon the completion of their responses.

**Method of Data Analysis**

Data collected through the administration of questionnaires were analyzed using descriptive statistics for easy interpretation. Descriptive statistics are brief informational coefficients that summarize a given data set, which can be either a representation of the entire population or a sample of the population. It involves summarizing, organizing, and presenting data meaningfully and concisely. This will enable the researcher to meaningfully describe independent factors in the study, as well as helping to indicate the number and percentage of respondent rank, and rank variables under this study.

# CHAPTER FOUR

# PRESENTATION OF RESULT AND DISCUSSION OF FINDINGS

This chapter presents the analysis of data collected for this study. The presentation and analysis was based on the separate consideration of each hypotheses tested. The following are the results which are shown in tabular forms and discussed.

**Hypotheses testing**

Ho1. Placed based learning has no significant impact on knowledge towards waste management among university of Benin students.

**Table one: Independent sample t-test on placed based learning has no significant impact on knowledge towards waste management among university of Benin students**

**Group Statistics**

| | group | N | Mean | Std. Deviation | t-test | Df | Sig |
|---|---|---|---|---|---|---|---|
| knowledge | experimental | 25 | 7.8400 | .80000 | 2.09 | 48 | 0.04 |
| | control | 25 | 7.0400 | 1.74356 | | | |

The hypothesis ($Ho_1$) states that place-based learning has no significant impact on students' knowledge of waste management at the University of Benin. However, the results of the independent sample t-test presented in Table 1 indicate otherwise.

The experimental group, which participated in place-based learning, had a mean knowledge score of **7.84** with a standard deviation of **0.80**, while the control group, which did not receive place-based learning intervention, had a lower mean

score of **7.04** with a standard deviation of **1.74**. The t-test value of **2.09** with **48** degrees of freedom yielded a significance level of **0.04** ($p < 0.05$). This indicates that there is a statistically significant difference in knowledge levels between the experimental and control groups. Therefore, the null hypothesis ($Ho_1$) is rejected, suggesting that place-based learning **does have a significant impact** on students' knowledge of waste management at the University of Benin.

Ho2. Placed based learning has no significant impact on attitude towards waste management among university of Benin students.

**Table two: Independent sample t-test on placed based learning has no significant impact on attitude towards waste management among university of Benin students**

**Group Statistics**

| | group | N | Mean | Std. Deviation | t-test | Df | Sig |
|---|---|---|---|---|---|---|---|
| attitude | experimental | 25 | 25.2800 | 4.39242 | .1.15 | 48 | 0.25 |
| | control | 25 | 23.9200 | 3.95727 | | | |

The hypothesis ($Ho_2$) suggests that place-based learning has no significant impact on students' attitudes toward waste management at the University of Benin. The results of the independent sample t-test presented in Table 2 show that the experimental group, which received place-based learning intervention, had a mean attitude score of **25.28** with a standard deviation of **4.39**, while the control

group, which did not receive the intervention, had a mean score of **23.92** with a standard deviation of **3.96**.

The t-test value of **1.15** with **48** degrees of freedom resulted in a significance level of **0.25** ($p > 0.05$). Since the p-value is greater than the conventional threshold of 0.05, the difference in attitude scores between the two groups is not statistically significant. Therefore, the null hypothesis ($Ho_2$) is **retained**, indicating that place-based learning **does not have a significant impact** on students' attitudes toward waste management at the University of Benin.

**Discussion of Findings**

The findings from this study provide insight into the effectiveness of place-based learning (PBL) in enhancing university students' knowledge and attitudes toward waste management. The results of the independent sample t-test indicate that PBL had a significant impact on students' knowledge of waste management but did not have a statistically significant impact on their attitudes toward waste management.

The rejection of the null hypothesis ($Ho_1$), which posited that PBL does not significantly impact students' knowledge of waste management, aligns with previous research emphasizing the effectiveness of PBL in environmental education. Gruenewald (2003) highlights that PBL fosters critical engagement with environmental issues by allowing students to experience real-world problems

firsthand. In this study, students in the experimental group who participated in PBL activities scored significantly higher in knowledge assessments than those in the control group, indicating that localized, experiential learning provides a meaningful understanding of waste management concepts.

Similarly, Barnett et al. (2020) argue that PBL enhances students' ability to retain environmental knowledge by situating learning within familiar contexts. This assertion is further supported by Afreen and Egbue (2019), who found that students who participated in place-based environmental education programs demonstrated greater knowledge of waste types, reduction techniques, and proper disposal methods. Dewey and Sutherland (2021) also reinforce this perspective, stating that experiential learning opportunities, such as community waste management projects, enable students to make connections between waste management and broader social and environmental issues. This suggests that PBL can effectively improve students' comprehension of waste management practices and their relevance to sustainability.

However, the findings related to students' attitudes toward waste management challenge some previous studies. The retention of the null hypothesis ($Ho_2$), which stated that PBL has no significant impact on attitudes toward waste management, indicates that while PBL may enhance knowledge acquisition, it may not necessarily translate into attitudinal change within the timeframe of the study. This contradicts prior research by Abiodun et al. (2022), who found that

participation in waste recycling and community clean-up initiatives significantly increased students' awareness and commitment to proper waste disposal practices. Furthermore, Okereke and Ukpere (2019) argue that PBL fosters a sense of environmental responsibility by encouraging students to recognize and address local waste management issues.

One possible explanation for this discrepancy is that attitudinal changes often require prolonged exposure and reinforcement beyond short-term educational interventions. While students in the experimental group may have gained new knowledge, shifting deeply ingrained attitudes toward waste management might require continuous engagement, reinforcement, and real-world application over an extended period. Olukanni and Adebiyi (2012) emphasize that societal and infrastructural factors, such as inadequate waste collection services and low public awareness, also influence attitudes toward waste management, potentially limiting the immediate impact of PBL initiatives.

Despite these findings, studies such as those by Dewey and Sutherland (2021) and Abiodun and Eniola (2022) suggest that sustained community involvement in PBL activities can eventually lead to attitude shifts. These studies indicate that when students participate in long-term waste management initiatives, such as recycling programs and environmental advocacy, they develop a stronger commitment to sustainable waste practices. The findings of this study may therefore suggest the need for extended PBL interventions, continuous

reinforcement, and integration with broader policy and infrastructure improvements to facilitate attitudinal transformation. In conclusion, the results of this study reaffirm the effectiveness of PBL in improving students' knowledge of waste management while also highlighting its limitations in immediately influencing attitudes. Future research should explore longer-term interventions and examine additional factors that may mediate the relationship between PBL and attitude change. Expanding the scope of PBL activities to include sustained community engagement and policy integration may provide further insights into fostering meaningful and lasting attitudinal shifts toward waste management among students.

# CHAPTER FIVE

# SUMMARY, CONCLUSION AND RECOMMENDATIONS

## Summary

This study was embarked upon to examine the impact of place-based learning on knowledge and attitude towards waste management among university of Benin students. The following hypotheses where formulated and tested:

3. Placed based learning has no significant impact on knowledge towards waste management among university of Benin students.
4. Placed based learning has no significant impact on attitude towards waste management among university of Benin students.

The purpose and significance of the study was presented and pertinent terminologies were outlined. It was concluded that there is a need to examine the impact of place-based learning on knowledge and attitude towards waste management among university of Benin students. This gave the insight to embark on the study to examine the impact of place-based learning on knowledge and attitude towards waste management among university of Benin students.

Literatures pertinent and peculiar to the study were reviewed on examine the impact of place-based learning on knowledge and attitude towards waste management among university of Benin students. In reviewing the literature on the the impact of place-based learning on knowledge and attitude towards waste management among university of Benin students, the sub-sections included;

place-based learning approaches, solid waste management awareness, knowledge of solid waste management, attitude towards solid waste management, rationale towards solid waste management, impact of place based learning on knowledge towards waste management, impact of place based learning on attitude towards waste management and the relationship between knowledge of solid waste management and attitude towards solid waste management.

The Research methodology discussed the Research design, population of the study, sample and sampling technique, research Instrumentation, validation of the instrument, reliability of the instrument, administration of the instrument, method of data collection, and method of data analysis. Necessary data were tabulated. From the analysis of the data, the researcher was able to find out that place-based learning does have a significant impact on students' knowledge of waste management at the University of Benin. However, from the hypotheses tested it was further observed that that place-based learning does not have a significant impact on students' attitudes toward waste management at the University of Benin.

**Conclusion**

This study examined the impact of place-based learning (PBL) on university students' knowledge and attitudes toward waste management. The findings revealed that PBL greatly improves students' understanding of waste management principles, confirming its efficacy as an environmental awareness teaching

method. The lack of a statistically significant effect of PBL on students' attitudes toward waste management, however, indicates that longer exposure, reinforcement, and more extensive institutional support may be necessary for attitudinal transformation.

These findings emphasize how crucial it is to incorporate experiential learning strategies, like PBL, into environmental education programs in order to enhance students' comprehension of waste management. PBL programs should, however, be maintained over time and supplemented by community involvement, policy backing, and infrastructure advancements in order to produce significant attitudinal change. Long-term therapies, behavioral reinforcement techniques, and outside variables that affect students' attitudes about trash management should all be investigated in future studies. PBL has the ability to support long-term behavioral change in sustainable waste management methods in addition to information development by encouraging ongoing engagement and practical implementation.

**Recommendations**

The research findings of this study, enabled the researcher to make the following recommendations;

- Universities should incorporate sustained PBL activities into their environmental education curricula. Long-term engagement in real-world waste management projects, such as recycling programs and waste audits, can

reinforce knowledge and gradually influence students' attitudes.

- Partnerships between universities, local governments, and environmental organizations should be encouraged to provide students with opportunities for active participation in community-based waste management initiatives. This will enhance experiential learning and foster a sense of environmental responsibility.

- Institutions should implement strategies such as incentive programs, peer-led environmental campaigns, and awareness workshops to reinforce positive waste management behaviors among students. Continuous exposure to sustainable practices may help bridge the gap between knowledge and attitude change.

University administrations should improve waste management infrastructure on campuses by providing adequate waste disposal bins, recycling facilities, and waste segregation programs. A supportive environment can encourage students to adopt and sustain proper waste management behaviors

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## APPENDIX I

## DEPARTMENT OF HEALTH, SAFETY AND ENVIRONMENTAL EDUCATION

## FACULTY OF EDUCATION, UNIVERSITY OF BENIN,

## BENIN CITY, EDO STATE.

## QUESTIONNAIRE

## The Impact of Place-Based Learning on Knowledge and Attitude Towards Waste Management Among University of Benin Students

Dear respondents,

This is designed to examine the impact of place-based learning on knowledge and attitude towards waste management among university of Benin students. The sole purpose of this research project is academic, and it will be kept private. As such, you are obliged to answer the following questions in a courteous and sincere manner.

Thank you.

**Oremegie Efemena**
**Researcher**

**Section A**

**Instruction:** please tick (√) as appropriate.

**Demographic background**.

**Gender:** Male ( ) Female ( )

**Religion:** Christianity ( ) Islam ( ) Others ( )

**Age:** less than 20 years ( ) 20 – 25 years ( ) Above 25 years ( )

**Level:** 100( ) 200 ( ) 300( )

**Course Area:** Health Education ( ) Environmental Education ( )

**SECTION B: Impact of place-based learning on knowledge towards waste management among university of Benin students**

1. Which of the following best describes solid waste management?

a) Only the process of recycling materials b) Collecting, processing, and disposing of waste responsibly c) Dumping waste in designated areas only d) None of the above

2. What are the main goals of proper solid waste management? a) To reduce pollution b) To conserve resources c) To generate income d) To increase waste production

3. The best place to dispose a trash after usage of the needed item is to a. Throw it inside the bush ( ) b. Dispose it at where everyone is disposing trash ( ) c. In the trash bin ( )

4. What s best way of storing solid waste before disposal a. In bins ( ) b. Gathering them at open spaces ( ) c. Hiding them somewhere ( )

5. Which of the following is considered a primary step in managing solid waste? a) Dumping waste in landfills b) Reducing waste at the source c) Burning waste d) Ignoring waste

6. What is the purpose of waste segregation? a) To make waste collection easier b) To prevent waste from being recycled c) To separate recyclable and non-recyclable materials d) To reduce the amount of waste produced

7. Which type of waste should be placed in recycling bins? a) Organic waste like food scraps b) Hazardous waste like batteries c) Recyclable materials like plastics and paper d) All types of waste

8. Which solid waste management approach involves turning waste materials into new products? a) Landfilling b) Recycling c) Incineration d) Composting

9. What is the main environmental impact of improper solid waste disposal? a) Reducing waste b) Soil, water, and air pollution c) Increased use of renewable resources d) Reduced need for waste management facilities

**10.** Which law or policy in Nigeria directly addresses solid waste management? a) The Environmental Protection Act b) The Waste Reduction Law c) The Solid

Waste Management Act d) The National Environmental Standards and Regulations Enforcement Agency (NESREA) Act

**SECTION C: Impact of place-based learning on the attitude towards waste management among university of Benin students**

**SA= Strongly Agree**

**A= Agree**

**D= Disagree**

**SD= Strongly Disagree**

| S/N | ITEMS | SA | A | D | SD |
|---|---|---|---|---|---|
| 11 | I am concerned about solid waste management issues on campus | | | | |
| 12. | Proper waste management is essential for the health and cleanliness of the environment | | | | |
| 13. | Every student has a responsibility manage their solid waste properly | | | | |
| 14. | Engaging in proper solid waste management can improve public health | | | | |
| 15. | It concerns me if I see solid waste not disposed properly in school | | | | |
| 16. | Having to sort out solid waste properly is time consuming and unnecessary | | | | |
| 17. | I am ready to be involved in decisions and lifestyle towards effective solid waste management | | | | |
| 18. | I believe that participating in waste management initiatives (e.g., recycling, clean-ups) can make a real difference in reducing campus waste | | | | |
| 19. | I feel a sense of personal responsibility toward the cleanliness and solid waste management on my campus. | | | | |
| 20. | If given the opportunity, I would like to engage in more environmental sustainability initiatives related to waste management on campus | | | | |

## APPENDIX II

# Reliability

# Scale; ALL VARIABLES

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 20 | 100.0 |
| | Excluded[a] | 0 | .0 |
| | Total | 20 | 100.0 |

a.Listwisedeletionbasedonallvaria blesintheprocedure.

**ReliabilityStatistics**

| Cronbach's Alpha[a] | No of items |
|---|---|
| .823 | 20 |