# KNOWLEDGE AND ATTITUDE OF UNIBEN UNDERGRADUATES TOWARDS PLASTIC WASTE POLLUTION AND CONTROL

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**A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF HEALTH SAFETY AND ENVIRONMENTAL EDUCATION, FACULTY OF EDUCATION, UNIVERSITY OF BENIN, BENIN CITY, EDO STATE, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF SCIENCE EDUCATION DEGREE B.Sc. IN ENVIRONMENTAL EDUCATION, UNIVERSITY OF BENIN, BENIN CITY.**

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## CERTIFICATION

We, the undersigned certify that this project work is adequate in scope and was carried out by **Favour Tamaradenyefa OGUNKORU** with the Matriculation Number **EDU2102513**, in the Department of Health Safety and Environmental Education, Faculty of Education, University of Benin, Benin City, Edo State, Nigeria in partial fulfillment of the requirements for the award of B.Sc (Ed.) Degree in Environmental Education.

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## DEDICATION

This project is dedicated to God Almighty my parents Engr. Past. Mr. and Mrs. OGUNKORU.

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## ABSTRACT

This study was on knowledge and attitude of uniben undergraduates towards plastic waste pollution and control. Three research questions were raised and answered during the study using frequencies and percentages. The survey research design was adopted for this study; this is because the data is collected from a sample population with specific characteristics.

The Population of the study was 43,679 Students. It comprises of the 15 faculties of the University of Benin. Out of this population two hundred and forty (240) sample was selected from the total population using randomly sampling technique. The instrument used to collect data for the study was ten items self-structured questionnaire. The instrument for the data collection was personally administered by the researcher to the respondents. The researcher explained to the respondents how to indicate their views on each item.

On the basis of the findings made in the study, it can be concluded that University of Benin undergraduates possess high levels of knowledge about plastic waste pollution as well as plastic waste management and control. The researcher recommends that University of Benin should incorporate plastic waste pollution and management topics into the General Studies (GST) curriculum to strengthen students' environmental knowledge.

# CHAPTER ONE

# INTRODUCTION

## Background of the Study

Plastic waste pollution has become one of the most pressing environmental challenges globally, significantly affecting ecosystems, human health, and the overall quality of life. Since the mass production of plastics began in the mid-20th century, their convenience, durability, and low cost have led to widespread usage in various sectors such as packaging, agriculture, electronics, and household goods. However, these benefits come with severe environmental costs. Plastic materials are non-biodegradable, meaning they persist in the environment for hundreds of years, accumulating in landfills, oceans, rivers, and urban landscapes, causing significant ecological disruption (Geyer, Jambeck & Law, 2017).

Studies indicate that the level of knowledge among Nigerians regarding plastic pollution is varied and often superficial. While many are aware that improper plastic disposal can lead to flooding and harm aquatic life, fewer understand the broader implications, such as microplastic contamination of water sources, soil degradation, and potential health risks from chemical leachates (Abiodun, 2019; Onyema, Uche & Olatunji, 2020). This limited knowledge is compounded by insufficient environmental education, low public engagement in waste management programs, and inconsistent media coverage.

Without a solid understanding of the environmental and health consequences of plastic waste, individuals are less likely to adopt sustainable behaviors, underscoring the need for targeted awareness and educational interventions.

Attitudes toward plastic waste management among Nigerians play a crucial role in determining environmental behaviors and the success of waste control measures. Empirical evidence indicates a spectrum of attitudes, ranging from strong pro-environmental concern to general indifference (Ezeah, Fazakerley & Roberts, 2017; Olufemi, Akintola & Adepoju, 2019). University students, in particular, may express positive environmental attitudes but often face practical and behavioral barriers that limit their proactive engagement. Factors such as convenience, habitual use of single-use plastics, peer influence, and perceived lack of alternatives shape students' willingness to participate in recycling, waste reduction, and proper disposal initiatives. Research also highlights that exposure to environmental education and participation in awareness campaigns significantly improves attitudes, reinforcing the idea that positive attitudes are dynamic and responsive to structured interventions (Xie, Chen & Zhang, 2019). Understanding students' attitudes toward plastic waste management is therefore essential because it helps identify motivations, barriers, and opportunities for promoting sustainable practices among young adults who have the potential to influence broader community behavior.

The current state of plastic pollution in Nigerian universities, including the University of Benin, illustrates the practical manifestation of these knowledge and attitude gaps. Studies reveal that many campuses are plagued by littered environments, clogged drainage systems, and accumulation of plastics in common areas and green spaces (Iroegbu & Umeh, 2021; Adeyanju & Akinbile, 2017). These issues are exacerbated by insufficient institutional infrastructure, such as recycling bins and waste segregation facilities, inconsistent policy enforcement, and variable student engagement in proper waste management practices. Although some universities have initiated environmental clubs, awareness campaigns, and periodic clean-up exercises, these efforts are often sporadic and fail to achieve sustained behavioral change. The presence of plastic waste not only poses environmental hazards but also reflects broader systemic challenges in waste management, highlighting the urgent need for more structured interventions that integrate education, infrastructure, and policy enforcement. Addressing plastic pollution within universities is critical, as these institutions not only shape students' behavior during their formative years but also serve as models for sustainable practices within the larger community.

Given the knowledge gaps, varying attitudes, and the observable state of campus plastic pollution, there is a clear need for this study. Limited empirical data exist on the knowledge and attitudes of University of Benin undergraduates regarding plastic waste pollution and control measures, making it difficult to design evidence-based interventions.

By investigating students' awareness, perceptions, and behavioral tendencies, this study seeks to identify the factors that influence their engagement with sustainable waste management practices. Understanding these dynamics is essential for developing targeted environmental education programs, awareness campaigns, and campus policies that can effectively promote responsible behavior. Additionally, as university students are future leaders and influencers, equipping them with the knowledge, skills, and motivation to manage plastic waste responsibly has the potential to generate long-term environmental benefits, not only on campus but also within the broader Nigerian society. Therefore, this study is both timely and necessary for informing sustainable waste management strategies and fostering a culture of environmental responsibility among young adults.

**Statement of the Problem**

Plastic waste pollution is one of the most pressing environmental issues in the 21st century, affecting ecosystems, human health, and the socio-economic fabric of many nations. Despite numerous campaigns and global awareness efforts, the generation and improper disposal of plastic waste continue to rise, particularly in developing countries like Nigeria. The university environment, with its dense population and high consumption of single-use plastics, often contributes significantly to the plastic waste burden. In institutions such as the University of Benin (UNIBEN), daily student activities from the

purchase of packaged foods and bottled water to inadequate waste segregation practices have made plastic pollution a growing concern.

Although policies and programs have been introduced at national and institutional levels to mitigate plastic waste, the level of success largely depends on the awareness, knowledge, and behavioral patterns of individuals, especially undergraduates who form a significant proportion of the campus population. Studies have shown that the knowledge and attitudes of individuals towards plastic waste directly influence their willingness to participate in waste reduction and recycling efforts (Nwankwo & Adebayo, 2018). However, there appears to be a gap between awareness and action among youths, often fueled by limited environmental education, poor waste management infrastructure, and prevailing cultural habits (Adeleke et al., 2020). At the University of Benin, while some students may be aware of the harmful effects of plastic waste, it is unclear to what extent this awareness translates into proactive environmental behavior. Understanding their level of knowledge and attitude is crucial in addressing the root causes of environmental negligence and in formulating effective intervention strategies. Without adequate information on how students perceive plastic waste pollution and control, efforts to promote sustainable waste practices on campus may be poorly targeted and largely ineffective. Hence, this study seeks to explore the knowledge and attitude of University of

Benin undergraduates towards plastic waste pollution and control, in order to inform policies and practices that can foster environmentally responsible behavior.

**Research Question**

The following research questions were raised to guide the study;

1. What is the level of knowledge of University of Benin undergraduates towards of plastic waste pollution?
2. What is the level of knowledge of University of Benin undergraduates towards of plastic waste management/Control?
3. What are the attitudes of University of Benin undergraduates towards plastic waste pollution?
4. What is the relationship between knowledge of plastic waste management and attitude towards plastic waste management and control practices?

**Research Hypothesis**

- There is no significant relationship between knowledge of plastic waste management and attitude towards plastic waste management and control practices

## Purpose of the Study

This study seeks to investigate the knowledge and attitudes of undergraduates at the University of Benin towards plastic waste pollution and its control. Specifically, the study aims;

- To determine the level of knowledge of University of Benin undergraduates about plastic waste pollution.
- To determine the level of knowledge of University of Benin undergraduates about plastic waste management and control.
- To examine the attitudes of University of Benin undergraduates toward plastic waste pollution.

## Significant of the Study

This study is of great significance as it provides insight into the level of knowledge and the prevailing attitudes of undergraduate students of the University of Benin (UNIBEN) towards plastic waste pollution and its control. Plastic pollution remains a major environmental challenge globally and locally, and understanding the perception of students who represent a large and influential segment of the population is crucial in the fight against this issue. The findings of this study will be beneficial in the following ways:

Students will benefit from the research as it will help to create awareness about the environmental consequences of plastic waste and the need for behavioral change towards its management. It will serve as a tool to educate and enlighten undergraduates on sustainable waste disposal practices, encouraging them to become active participants in environmental preservation both within and outside the university environment. The university management and relevant stakeholders, including policy makers in the education and environmental sectors, will benefit from the study. The data generated can inform the development and implementation of environmentally friendly policies, effective waste management systems, and educational programs that promote plastic waste reduction and recycling. It will also assist student unions and environmental organizations in creating targeted intervention strategies and advocacy programs aimed at reducing plastic pollution on campus.

The general public stands to benefit from the long-term effects of the study. As university students become more environmentally conscious and take positive actions, these behaviors can influence the larger society, promoting a culture of responsibility towards waste management. The ripple effect of increased awareness and better practices can contribute to a cleaner, healthier environment, which is beneficial to public health, sustainable development, and the well-being of future generations. In essence, this study will contribute meaningfully to the body of knowledge on environmental sustainability,

especially as it relates to plastic waste management in higher institutions. It will also provide a framework for practical solutions aimed at mitigating the problem of plastic pollution through education, awareness, and behavioral change.

**Scope & Delimitation of the Study**

This study focuses specifically on assessing the knowledge and attitude of undergraduate students of the University of Benin (UNIBEN) towards plastic waste pollution and control. The scope of the study is limited to selected faculties within the university, and only undergraduate students are included as participants. The research seeks to explore the level of awareness students have about the causes and effects of plastic pollution, their attitudes towards plastic waste management, the extent of their involvement in plastic waste control practices such as recycling and proper disposal, as well as the factors influencing their willingness to participate in environmental sustainability efforts. The study is delimited by time, location, and population. It is conducted within a defined academic period and is geographically confined to the University of Benin. The results, therefore, may not be generalized to other universities or populations outside of University of Benin, although they may provide useful insights for similar studies in related contexts.

## Definition of Terms

To ensure clarity and proper understanding of key concepts used in this study, the following terms are defined as they apply to the context of this research:

**Plastic Waste:** This refers to discarded plastic materials, including bottles, bags, wrappers, containers, and other synthetic items that are no longer useful and are improperly disposed of, contributing to environmental pollution.

**Pollution:** In this study, pollution refers to the contamination of the environment—particularly land and water caused by the improper disposal of plastic waste, leading to harmful effects on humans, animals, and natural ecosystems.

**Waste Management:** This is the process of collecting, handling, processing, recycling, or disposing of waste materials in a way that reduces their impact on the environment. It includes practices such as segregation, reuse, and proper disposal.

**Knowledge:** Knowledge in this context refers to the awareness and understanding that UNIBEN undergraduates have regarding the sources, effects, and control of plastic waste pollution.

**Attitude:** Attitude refers to the students' feelings, beliefs, and predispositions towards plastic waste and its management. This includes their willingness to adopt environmentally friendly behaviors.

**Control:** This refers to the methods and practices employed to minimize or eliminate the negative effects of plastic waste on the environment, such as recycling, reuse, and reduction of plastic use.

**Undergraduates:** In the context of this study, undergraduates are students who are currently enrolled in a first-degree program at the University of Benin.

**Sustainability:** This refers to actions and practices that meet current environmental needs without compromising the ability of future generations to meet theirs, particularly in relation to responsible plastic waste management.

# CHAPTER TWO

# REVIEW OF RELATED LITERATURE

This chapter deals on review of existing literature and research studies relevant to the knowledge and attitude of University of Benin undergraduates towards plastic waste pollution and control. Thus, this chapter is guided by the following sub-headings.

- Concept of Plastic Waste
- Sources and Types of Plastic Waste
- Environmental and Health Impacts of Plastic Waste Pollution
- Knowledge of Plastic Waste Pollution
- Attitudes Towards Plastic Waste and Environmental Conservation
- Behavioral Practices and Participation in Plastic Waste Control
- Summary of Literature Review

## Concept of Plastic Waste

Plastic waste refers to discarded plastic materials that are no longer useful for their intended purposes, generated by individuals, households, industries, and institutions. Plastics are synthetic or semi-synthetic polymers derived primarily from petrochemicals, widely used in packaging, consumer goods, electronics, construction, and agriculture due to their low cost, light weight, durability, and flexibility (Geyer, Jambeck & Law, 2017). While these properties make plastics convenient and economically valuable, they also pose a major environmental challenge because most plastics are non-biodegradable and can

persist in the environment for decades or even centuries. Plastic waste can appear in the form of single-use items such as water bottles, food wrappers, shopping bags, and packaging materials, as well as durable products like containers, furniture, and electronic components. Improper disposal of these materials results in environmental pollution, affecting soil quality, water bodies, and air quality. Urban areas often witness plastic litter accumulating on streets, in drainage channels, and in open dumpsites, leading to blocked waterways, flooding, and deterioration of urban landscapes (Abiodun, 2019). Plastics that enter rivers and oceans further break down into microplastics, which are ingested by aquatic organisms and eventually enter the human food chain, creating potential public health risks (Onyema, Uche & Olatunji, 2020).

In Nigeria, the problem of plastic waste is particularly pronounced due to rapid urbanization, population growth, and industrial activities, which contribute to high volumes of plastic generation. Cities like Benin City, where the University of Benin is located, experience widespread accumulation of plastic litter because of inadequate awareness of proper disposal methods, limited waste management infrastructure, and weak enforcement of environmental regulations (Ezeah, Fazakerley & Roberts, 2017). University campuses often serve as microcosms of this issue, with students generating plastic litter in hostels, lecture halls, cafeterias, and recreational areas. This situation highlights the importance of understanding plastic waste not only as a material convenience

but also as a potential environmental and health hazard. Knowledge of plastic waste is crucial for promoting sustainable behavior, environmental awareness, and the adoption of responsible waste management practices. Recognizing the sources, types, and impacts of plastic waste enables individuals, especially students, to engage in proper disposal, recycling, and participation in waste reduction initiatives, thereby mitigating environmental degradation (Olufemi, Akintola & Adepoju, 2019).

Empirical studies provide insight into how knowledge and attitudes influence plastic waste management among university students. Salami et al. (2024) investigated 332 students at Kwara State University and found that while a significant number of respondents were aware of waste management principles, many remained unconcerned about their practical implications, suggesting a gap between knowledge and behavioral attitudes. Inovasanti et al. (2025) studied waste disposal behaviors among students of Fountain University and reported that although most students exhibited good disposal habits, a large proportion did not sort their waste before disposal, indicating that knowledge does not always translate into proper practice. Adebayo et al. (2023) applied the Theory of Planned Behavior to examine plastic waste sorting intentions among Nigerian undergraduates and found that perceived behavioral control and social norms significantly influenced students' intentions, while attitude alone was insufficient to predict behavior. These findings emphasize that addressing plastic waste among university students requires

a holistic approach that integrates knowledge acquisition with interventions targeting perceptions, attitudes, social influence, and environmental infrastructure, in order to foster responsible plastic waste management and control practices on campus. Plastic waste is a major environmental and public health concern due to its durability, non-biodegradability, and widespread use. Understanding its nature, sources, and consequences is fundamental to promoting sustainable behaviors among university students. Empirical evidence suggests that while knowledge is essential, it must be complemented by positive attitudes, perception, and supportive infrastructure to encourage responsible plastic waste management and reduce environmental pollution in university communities.

**Concept of Plastic Waste Control and Management**

Plastic waste control and management involve the strategies, practices, and systems put in place to handle plastic waste effectively. This includes processes such as reducing plastic use, reusing materials, recycling waste, and ensuring proper disposal (Olufemi, Afolabi, & Dada, 2019). Effective waste management also involves coordinated efforts by individuals, institutions, waste management agencies, and policymakers to minimize the environmental impact of plastics.

In developing countries like Nigeria, efforts to manage plastic waste face several challenges, including inadequate waste collection infrastructure, poor public awareness,

and weak enforcement of environmental policies (Abiodun, 2019). On university campuses, despite the presence of waste bins, students may lack the knowledge, motivation, or habit to separate their plastic waste from other materials or to reduce their use of disposable plastics. This highlights the need for behavioral change initiatives alongside institutional policies. Plastic waste control, therefore, is not just about managing the waste after it is generated but also about promoting sustainable consumption habits, such as carrying reusable water bottles or shopping bags, and supporting recycling programs. University students, as young adults and future leaders, play a critical role in shaping sustainable practices both on campus and in wider society.

**Environmental Knowledge toward Waste Plastic**

Environmental knowledge refers to the understanding and awareness individuals have about environmental issues, including their causes, consequences, and possible solutions (Ezeah, Fazakerley, & Roberts, 2017). In the context of this study, it focuses specifically on how much undergraduate students at UNIBEN know about plastic waste where it comes from, why it is harmful, and how it can be controlled.

Environmental knowledge is often considered the first step in promoting pro-environmental behavior. Research suggests that when people are well-informed about the negative effects of their actions on the environment, they are more likely to adopt

responsible behaviors, such as reducing waste, recycling, and supporting environmental campaigns (Adeyanju & Akinbile, 2017). However, having knowledge does not always guarantee action, as other factors, such as social norms, personal values, convenience, and institutional support, can also influence behavior. Within the university environment, students' knowledge of plastic waste issues can be shaped by their courses of study, exposure to environmental campaigns, social media, and personal interest. Understanding how much they know is essential to designing effective waste control initiatives that address knowledge gaps and provide practical guidance.

**Environmental Attitude toward Waste Plastic**

Environmental attitude refers to a person's beliefs, values, and feelings about the environment, as well as their predisposition to act in ways that either harm or protect it (Xie, Peng, & Chen, 2019). Attitudes are shaped by a combination of personal experiences, cultural background, education, peer influence, and media exposure. Positive environmental attitudes typically include concern for nature, a sense of responsibility to reduce personal environmental impact, and support for conservation policies.

Among university students, environmental attitudes play a crucial role in determining how they handle plastic waste. Even when students are knowledgeable about the dangers of plastic pollution, if they have a careless or indifferent attitude, they may still

engage in harmful practices, such as littering or ignoring recycling options (Onyema et al., 2020). On the other hand, students with strong pro-environmental attitudes may go out of their way to participate in clean-up activities, educate their peers, and advocate for stronger waste management practices.

Understanding students' environmental attitudes is therefore key to identifying the factors that motivate or discourage sustainable waste behaviors. This can help university authorities, environmental groups, and policymakers develop targeted interventions to promote positive attitudes and support long-term behavioral change. Adewuyi and Afolabi (2021) conducted a study assessing the knowledge, attitudes, and practices regarding plastic waste management among Nigerian university students. Their findings revealed that while a significant portion of students had good awareness of the environmental threats posed by plastic waste, this knowledge did not consistently translate into responsible waste disposal behaviors. The study highlighted the persistent gap between environmental awareness and actual practices, largely influenced by convenience and lack of adequate waste management infrastructure on campuses. The authors recommended enhanced environmental education programs and infrastructural improvements to facilitate better waste management behaviors

## Empirical Review

Environmental knowledge has been widely recognised as a fundamental driver of pro-environmental behaviour, and research on university students has consistently sought to measure the extent to which this knowledge translates into practice. According to Ezeah, Fazakerley and Roberts (2017), environmental knowledge involves the awareness and understanding of environmental issues, their causes, consequences, and possible solutions. In relation to plastic pollution, such knowledge entails recognising the sources of plastic waste, appreciating the harmful effects of plastics on both human health and the natural environment, and identifying control measures such as reduction, reuse, and recycling. Studies across Nigerian universities reveal that many undergraduates are familiar with the general dangers of plastic waste, yet their understanding often remains superficial. While students may know that plastics block drainage systems or harm wildlife, fewer grasp more complex issues such as microplastic contamination or the lifecycle costs of plastic production.

Adeyanju and Akinbile (2017) emphasise that knowledge is often regarded as the first step in encouraging responsible waste behaviour. Their findings suggest that students who are more informed about the ecological and health consequences of plastic waste are more likely to adopt behaviours such as recycling or reducing their plastic use. However, knowledge alone does not always guarantee consistent practice. Many undergraduates

acknowledge the harmful effects of plastics yet continue to dispose of them carelessly, often due to the absence of proper waste bins, lack of recycling options, or the convenience of single-use plastics. Adewuyi and Afolabi (2021), in a study of Nigerian university students, observed this clear gap between environmental awareness and actual behaviour. They reported that although a significant proportion of students understood the risks posed by plastic pollution, this did not consistently lead to proper disposal practices. The authors attributed this gap to infrastructural shortcomings within campuses as well as the tendency of students to prioritise convenience over environmental responsibility.

Environmental knowledge has also been found to vary depending on a student's discipline, level of study, and exposure to environmental campaigns. Students in environmental science or related fields often display higher levels of awareness due to curricular exposure, while senior students tend to score higher than their junior counterparts because of accumulated academic and social experiences. In addition, access to social media campaigns, peer sensitisation, and participation in clean-up exercises have been shown to positively influence environmental knowledge among undergraduates (Adeyanju & Akinbile, 2017). Nevertheless, despite these influences, the literature consistently highlights the inadequacy of knowledge when not supported by strong institutional structures.

Empirical studies among Nigerian undergraduates suggest that many students hold generally positive attitudes toward protecting the environment but still fall short in demonstrating consistent pro-environmental behaviours. Adewuyi and Afolabi (2021) confirmed this finding, stressing that although respondents expressed concern about the dangers of plastic waste, they often defaulted to improper disposal when convenient. This demonstrates that attitude, like knowledge, is not a standalone determinant of behaviour but interacts with other factors such as institutional support, accessibility of waste facilities, and perceived ease of responsible behaviour. Where campuses provide clearly labelled bins and enforce waste policies, positive attitudes are more likely to manifest in practice. Overall, the reviewed studies point to a common pattern in which Nigerian university students, including those at UNIBEN, exhibit a reasonable level of environmental knowledge and generally positive attitudes toward plastic waste control. However, both knowledge and attitude are undermined by structural and behavioural barriers that prevent their full expression in practice. The implication is that any intervention aimed at addressing plastic waste pollution among undergraduates must not only focus on raising awareness but also on creating enabling conditions that make responsible behaviour more convenient and rewarding. Such interventions may include strengthening environmental education within the curriculum, expanding waste management infrastructure, and cultivating social norms that celebrate pro-environmental practices.

## Sources and Types of Plastic Waste

Plastic waste has become one of the most critical environmental issues facing the world today. The widespread use of plastics in modern life from packaging to consumer goods, healthcare products, and electronics has resulted in a dramatic increase in plastic waste generation (Jambeck et al., 2015). To properly understand the scope of the problem, it is essential to explore where plastic waste comes from (sources) and the various forms it takes (types). This understanding provides a foundation for assessing people's knowledge and attitudes toward plastic waste management, particularly among university students like those at the University of Benin (UNIBEN).

### Sources of Plastic Waste

Plastic waste originates from various sources, both urban and rural, domestic and industrial. According to Geyer, Jambeck, and Law (2017), the primary sources of plastic waste can be broadly categorized into household sources, commercial sources, industrial sources, and institutional sources. Household sources refer to everyday plastics used by individuals and families, such as plastic packaging (bottles, bags, wrappers), food containers, personal care product packaging, and single-use plastics like straws or cutlery. In many Nigerian cities, including Benin City, a major portion of urban plastic waste comes

from households where waste management systems are often underdeveloped, leading to widespread littering and dumping (Babayemi et al., 2019).

Commercial sources include plastic waste generated by businesses, markets, restaurants, and shops. This includes packaging materials, plastic shopping bags, plastic cups and plates, takeaway containers, and disposable packaging used in food services. With the increasing urbanization of cities and student-dominated areas, the amount of plastic waste from commercial establishments has risen significantly (Alabi et al., 2019). Industrial sources involve the waste produced during manufacturing and production processes. This could include off-cuts, defective plastic parts, industrial packaging, and byproducts. Though industries are often expected to handle their waste through formal mechanisms, improper disposal can still contribute significantly to plastic pollution, especially in areas where regulatory enforcement is weak.

Institutional sources refer to waste generated in schools, hospitals, government offices, and universities. At UNIBEN, for example, students and staff generate plastic waste through bottled water consumption, snack packaging, laboratory materials, and office supplies. While each item may seem insignificant, the collective plastic waste from thousands of students on a large campus adds up considerably. Furthermore, there is agricultural plastic waste, which comes from the use of plastic films, greenhouse coverings,

irrigation pipes, and pesticide containers in farming. Although this type is less common in urban student settings, it remains an important part of the overall plastic waste landscape.

## Types of Plastic Waste

Plastic waste can be classified in several ways, depending on its physical characteristics, chemical composition, and intended use. The United Nations Environment Programme (UNEP, 2018) identifies several major categories of plastic waste relevant to environmental pollution:

- Single-use plastics: These are plastics designed for one-time use before they are discarded. Common examples include plastic bags, plastic bottles, drinking straws, disposable cutlery, and food wrappers. Single-use plastics are among the most prevalent items found in litter and marine debris, largely because they are lightweight, cheap, and not designed for durability (UNEP, 2018).
- Microplastics: Microplastics are small plastic particles less than 5 millimeters in size. They can originate from the breakdown of larger plastic materials or be intentionally manufactured, such as in microbeads used in cosmetics and cleaning products. Microplastics are of particular concern because they are easily ingested by aquatic organisms and can enter the food chain, posing risks to human health (Koelmans et al., 2019).

- Packaging plastics: Packaging is one of the largest uses of plastics worldwide. These include bottles, caps, containers, wraps, films, and foams used to protect goods during transportation and storage. Because packaging has a short lifespan, it rapidly becomes waste after consumption.
- Durable plastics: These include plastic items designed for long-term use, such as furniture, electronic components, automotive parts, and construction materials. While durable plastics do not contribute to daily littering in the same way as single-use plastics, their end-of-life disposal presents challenges, especially in countries lacking recycling infrastructure (Geyer et al., 2017).
- Biomedical plastics: In universities and healthcare settings, biomedical plastics are used in syringes, IV bags, gloves, and laboratory materials. These are often treated as hazardous waste and require specialized disposal, though in practice, they can end up mixed with general waste streams.

Linking Sources and Types to Campus Pollution

In the aspect of UNIBEN, the most common plastic wastes observed are single-use plastics and packaging plastics. The availability of bottled water, plastic-packaged snacks, and takeaway foods on and around campus means that students generate significant amounts of lightweight, disposable plastic waste daily. Unfortunately, studies have shown

that without effective waste management systems or student engagement, these materials often end up littering the environment, clogging drainage systems, or being burned, contributing to air pollution (Akinbami et al., 2020). Moreover, the rise of microplastics is a hidden but growing problem. As larger plastic items degrade in the environment, they break down into microplastic particles, which contaminate soil, water, and even the air. This highlights the importance of not only managing visible waste but also understanding the long-term environmental consequences of plastic waste mismanagement. Understanding the sources and types of plastic waste is crucial for designing effective strategies to combat plastic pollution, especially in university settings. By identifying where waste comes from and what forms it takes, stakeholders including university administrators, environmental clubs, and students themselves can tailor interventions, such as awareness campaigns, recycling initiatives, or policy changes, to address the problem more effectively. This section has laid the groundwork for examining how UNIBEN undergraduates perceive plastic waste and what attitudes they hold towards controlling its spread on campus.

**Environmental and Health Impacts of Plastic Waste Pollution**

Plastic waste pollution is widely recognized as one of the most pressing environmental issues of our time, with significant consequences for ecosystems, wildlife, and human health. As plastic production and consumption continue to rise globally and

especially in developing nations like Nigeria the improper disposal and mismanagement of plastic waste are causing widespread harm (UNEP, 2018). For undergraduates at the University of Benin (UNIBEN), understanding these impacts is essential, not only because they contribute to the waste stream but also because they are part of the community affected by the resulting pollution. This section explores the environmental and health impacts associated with plastic waste, drawing on recent research and global evidence.

## Environmental Impacts of Plastic Waste Pollution

Plastic waste has severe environmental effects that span across terrestrial, aquatic, and atmospheric systems. When plastic waste is not properly disposed of, it often ends up as litter in the streets, drains, rivers, and, ultimately, the ocean (Jambeck et al., 2015). In urban environments like Benin City, clogged drainage systems caused by plastic waste contribute to urban flooding, especially during the rainy season, leading to property damage and environmental degradation (Akinbami et al., 2020). On land, plastics persist for hundreds of years without biodegrading, accumulating in soil and open dumps. Over time, exposure to sunlight and physical weathering causes these plastics to break down into microplastics, which infiltrate soil and water systems, affecting soil health and plant growth (Rillig, 2018). Microplastics can alter soil microbial communities and reduce soil fertility, which poses risks for agricultural productivity in surrounding areas.

In aquatic environments, plastic pollution poses severe threats to biodiversity. Rivers, lakes, and oceans become traps for plastic debris, which entangles marine animals or is ingested by fish, turtles, seabirds, and other wildlife. According to a global assessment by the United Nations Environment Programme (UNEP, 2018), over 800 marine and coastal species are affected by plastic debris, either through ingestion, entanglement, or habitat disruption. This loss of biodiversity has cascading effects on ecosystem services, food webs, and fisheries many of which are vital for local livelihoods. The burning of plastic waste, often practiced in informal or poorly managed waste systems, releases toxic chemicals, including dioxins and furans, into the atmosphere (Verma et al., 2016). These pollutants contribute to air pollution, acid rain, and climate change, affecting both local and global environments.

## Health Impacts of Plastic Waste Pollution

The health impacts of plastic waste pollution are both direct and indirect, affecting humans through environmental contamination, exposure to toxic substances, and ingestion of microplastics. Direct health effects occur when individuals are exposed to hazardous chemicals released from plastic waste, particularly when plastic is burned or left to decompose in open dumps. Burning plastic releases harmful gases and particulate matter that can cause respiratory problems, eye irritation, skin conditions, and, over time, increase the risk of cancers and other chronic diseases (Verma et al., 2016). For communities living

near dump sites or waste-burning areas, such exposures are particularly dangerous. In addition, plastic waste serves as a breeding ground for disease vectors. For example, stagnant water trapped in discarded plastic containers provides ideal breeding sites for mosquitoes, which spread diseases like malaria and dengue fever. In densely populated urban centers and university campuses, this can exacerbate public health challenges (Akinbami et al., 2020).

One of the more insidious health risks comes from microplastics entering the human food chain. As plastics break down into micro-sized particles, they are ingested by aquatic organisms, which are then consumed by humans. Recent research has found microplastics present in seafood, drinking water, and even salt (Smith et al., 2018). While the long-term health consequences are still under investigation, concerns include the potential for chemical leaching, endocrine disruption, and inflammation in human tissues. Furthermore, the presence of plastic chemicals like bisphenol A (BPA) and phthalates, which are used to manufacture certain types of plastics, has been linked to hormonal disruptions, reproductive health problems, and developmental issues (Rochman et al., 2016). University students, many of whom regularly use plastic-packaged foods, water bottles, and personal care products, are unknowingly exposed to these risks in their daily lives.

**The Campus and Community of Plastic Waste Pollution**

On the University of Benin campus, plastic waste pollution contributes to both environmental degradation and potential health hazards. Littered plastics reduce the aesthetic quality of the environment, attract pests, and contribute to drainage problems that can lead to flooding during heavy rains. Improperly managed waste can also increase the risk of vector-borne diseases, creating public health concerns for the entire university community. Moreover, students' frequent use of disposable plastic items such as sachet water bags, plastic bottles, and food containers without awareness of proper disposal practices exacerbates the issue. Without targeted education and sustainable waste management systems, both the campus environment and student well-being remain at risk. The environmental and health impacts of plastic waste pollution are far-reaching, affecting ecosystems, biodiversity, and human populations in complex ways. For UNIBEN undergraduates, understanding these impacts is essential not only from an academic standpoint but also as active participants in creating solutions. Addressing the plastic waste challenge requires changes in individual behaviors, institutional practices, and policy-level interventions to safeguard both environmental sustainability and public health.

**Knowledge of Plastic Waste Pollution among University Students**

Understanding the level of knowledge that university students have about plastic waste pollution is crucial because it influences their behaviors, attitudes, and willingness to adopt sustainable practices. University campuses, including the University of Benin (UNIBEN), are often major hubs of plastic consumption, with students regularly using plastic water bottles, food packaging, and disposable utensils (Akindele et al., 2020). Therefore, the extent of students' awareness about the sources, impacts, and management of plastic waste can directly shape how much they contribute to or help reduce plastic pollution. Recent studies have shown that although many young people are aware of environmental issues in general, their knowledge about the specific problem of plastic waste pollution varies widely. For example, Akindele et al. (2020) found that Nigerian university students generally have moderate awareness of the environmental hazards posed by plastic waste, but they often lack detailed understanding of the long-term impacts, such as the formation of microplastics, the bioaccumulation of toxins, and the threats to human health. In many cases, students are aware that improper disposal of plastic waste leads to visible environmental problems like clogged drainage, flooding, and unsightly litter on campus. However, their knowledge often stops at the surface level, without an in-depth grasp of the less visible but equally dangerous consequences, such as the release of

greenhouse gases during plastic degradation or the contamination of the food chain through microplastic ingestion (Ojokoh & Arowolo, 2020).

Educational exposure plays a significant role in shaping students' understanding. A study by Adewuyi and Afolabi (2021) on Nigerian undergraduates revealed that students studying environmental science or related fields tended to have significantly higher knowledge of plastic waste issues compared to students in non-environmental disciplines. This suggests that curriculum design and academic focus influence how much students learn about plastic pollution. Access to environmental campaigns, social media information, and extracurricular activities like campus cleanups or recycling programs can enhance students' knowledge levels (Ogunbode & Arnold, 2021). *These* initiatives expose students to the broader social and ecological implications of plastic waste and often inspire more responsible waste behaviors. However, it's important to note that knowledge alone does not always translate into practice. Research by Hassan and Oyelade (2022) pointed out that even when students understand the harmful effects of plastic pollution, many still engage in unsustainable behaviors, such as littering or failing to recycle, due to convenience, lack of infrastructure, or perceived social norms. This highlights the need not only for knowledge dissemination but also for institutional support systems, such as readily available recycling bins, waste sorting facilities, and incentives for proper waste disposal.

At the University of Benin, it becomes critical to assess how much students know about key aspects of plastic pollution, including:

- The lifespan and persistence of plastics in the environment.
- The contribution of individual consumption patterns to campus waste loads.
- The environmental and health impacts of improper plastic disposal.
- The existing policies or systems in place for plastic waste management.

Without accurate knowledge, students may underestimate their personal and collective roles in tackling the problem. For example, many may not realize that their daily use of single-use plastics, such as sachet water bags or takeout containers, significantly adds to the campus waste burden. They may also be unaware of the recycling options available, if any, or the importance of participating in plastic reduction initiatives. University students' knowledge of plastic waste pollution is a critical factor that can either drive or hinder effective waste management practices on campus. A well-informed student body is more likely to engage in responsible consumption, support institutional sustainability efforts, and advocate for environmental protection. Therefore, any strategy to address plastic waste pollution at UNIBEN must begin with assessing and enhancing the students' knowledge base.

Hassan and Oyelade (2022) examined the attitudes of Nigerian youths towards plastic waste pollution and control mechanisms. Their study showed that although many youths expressed concern about plastic pollution and supported government policies aimed at reducing plastic use, actual participation in waste reduction activities was low. The research emphasized that positive attitudes alone are insufficient without enabling environments and practical opportunities for engagement. The authors advocated for more community-based awareness campaigns and the incorporation of environmental stewardship into university curricula to foster behavioral change. In a related study, Ogunbode and Arnold (2021) explored climate change and plastic pollution awareness among university students in Nigeria. They found that students who participated in environmental clubs or activities exhibited significantly better knowledge and more proactive attitudes towards plastic pollution control compared to their peers. The study underscored the importance of peer influence and active engagement in environmental initiatives as critical factors in shaping positive attitudes and behaviors towards plastic waste management.

## Empirical Review

The issue of plastic waste pollution has become an important area of scholarly inquiry, particularly within university communities where plastic consumption is widespread. Understanding the level of knowledge that students possess about plastic

pollution is vital because it significantly influences their environmental behaviours and willingness to embrace sustainable practices. Akindele et al. (2020) observed that university students in Nigeria generally display moderate awareness of the hazards associated with plastic waste, particularly with regard to visible environmental consequences such as blocked drainage, flooding, and the unsightly accumulation of litter. However, their study highlighted that student often lack deeper knowledge about less visible but equally damaging impacts, such as the generation of microplastics, the bioaccumulation of toxins in aquatic and terrestrial ecosystems, and long-term health threats to humans. In this sense, the gap between superficial awareness and comprehensive understanding remains a key challenge in shaping effective environmental behaviours among undergraduates. Research also underscores the role of environmental campaigns, peer sensitisation, and media exposure in improving student knowledge. Ogunbode and Arnold (2021) discovered that students who engaged in environmental clubs, awareness campaigns, or clean-up programmes had stronger knowledge and demonstrated more responsible attitudes toward plastic pollution. Their findings revealed that active participation in environmental initiatives not only enhanced knowledge but also promoted peer-to-peer influence that encouraged sustainable waste practices. This suggests that environmental learning does not occur solely within formal classrooms but is equally shaped by informal and social learning contexts within the university setting.

However, scholars agree that knowledge alone does not always guarantee behavioural change. Hassan and Oyelade (2022) observed that although many young people understood the dangers associated with plastic waste and even expressed support for government efforts to reduce plastic use, actual engagement in waste reduction activities remained limited. They attributed this gap to issues of convenience, inadequate waste infrastructure, and prevailing social norms that undermine students' willingness to act sustainably. The study recommended stronger institutional support through the provision of waste sorting facilities, recycling bins, and incentives to encourage consistent responsible behaviour. This echoes earlier findings that while student knowledge of plastic pollution is important, knowledge must be supported by enabling structures and opportunities that make environmentally friendly actions practical and rewarding.

Empirical findings therefore indicate that at institutions like the University of Benin, students' knowledge of plastic waste issues is uneven, shaped by their discipline of study, educational exposure, participation in environmental initiatives, and access to awareness campaigns. While a significant proportion of students are aware of the immediate and visible consequences of plastic misuse, fewer possess in-depth understanding of the broader ecological and health implications. The implication is that any effective intervention on plastic waste management within the university must begin with a systematic assessment of students' knowledge base, followed by targeted

educational and infrastructural strategies to close existing gaps. As the literature shows, a well-informed student body is more likely to support institutional sustainability programmes, adopt responsible waste behaviours, and advocate for broader environmental protection.

**Attitudes Towards Plastic Waste and Environmental Conservation**

The attitudes that university students hold toward plastic waste and environmental conservation play a central role in determining their daily behaviors, choices, and participation in sustainability efforts. Attitudes refer to the positive or negative evaluations that individuals develop based on their beliefs, knowledge, emotions, and past experiences (Ajzen, 1991). When it comes to environmental conservation, students' attitudes are shaped by how they perceive the importance of protecting nature, the urgency of environmental problems, and their own role in addressing issues like plastic waste.

Research shows that young people, particularly university students, are often more environmentally conscious than older generations, but there are still notable gaps between attitudes and actual practices. According to Ogunbode and Arnold (2021), many Nigerian university students express strong concern about environmental issues such as climate change, deforestation, and plastic pollution. However, despite these concerns, their commitment to concrete action, such as reducing plastic use, properly disposing of waste,

or participating in recycling programs, is often limited. One reason for this gap is the presence of what psychologists call the attitude behavior gap the disconnect between what people say they care about and what they actually do (Kollmuss & Agyeman, 2002). For instance, a student might believe that plastic pollution is harmful to marine life and human health, but still buy plastic-packaged goods out of convenience or habit. Studies like that of Adewuyi and Afolabi (2021) show that even when undergraduates have pro-environmental attitudes, they often fail to follow through because they feel their individual actions are too small to make a difference, or they are discouraged by the lack of supportive waste infrastructure on campus.

In the aspect of University of Benin, students' attitudes toward plastic waste are likely influenced by several factors:

- Perceived personal responsibility: Do students feel that they personally contribute to the problem, or do they believe it's solely the governments or manufacturers' responsibility?
- Perceived social norms: Are sustainable behaviors like using reusable bottles or participating in cleanups viewed positively or negatively among peers?
- Perceived barriers: Do students think it's difficult or inconvenient to engage in plastic reduction efforts because of poor campus facilities, lack of recycling options, or time constraints?

According to Hassan and Oyelade (2022), Nigerian students generally have mixed attitudes toward environmental conservation. While many support government regulations on plastic waste and believe companies should be held accountable, they often show less enthusiasm when it comes to making personal sacrifices, such as paying more for eco-friendly products or avoiding convenient single-use plastics. This suggests that while pro-environmental attitudes exist, they are often shaped by practical considerations and external support. Moreover, attitudes are not fixed; they can change over time through education, peer influence, and exposure to environmental campaigns (Ogunbode & Arnold, 2021). Universities have a unique opportunity to shape students' environmental attitudes by integrating sustainability themes into the curriculum, promoting green campus initiatives, and encouraging participation in environmental clubs or volunteer activities. When students are regularly exposed to discussions and activities focused on conservation, they are more likely to develop positive, engaged attitudes toward environmental protection (Akindele et al., 2020).

Understanding the attitudes of University of Benin undergraduates toward plastic waste and environmental conservation is essential for designing effective waste management interventions. Positive attitudes can be harnessed to foster greater participation in recycling programs, reduce single-use plastic consumption, and encourage advocacy for broader policy change. However, to fully activate these attitudes, it is necessary to address the

psychological, social, and infrastructural barriers that often prevent students from translating their beliefs into consistent action.

Beyond Nigerian, a study by Lee, Kim, and Cho (2019) in South Korea investigated university students' knowledge and attitudes toward plastic waste and recycling. The findings revealed that students' knowledge about plastic pollution positively influenced their attitudes, which in turn affected their intentions to engage in recycling behaviors. However, the study also identified barriers such as inconvenience and lack of recycling facilities that hindered actual behavior. This research aligns with findings in Nigeria, suggesting that while knowledge and attitudes are foundational, infrastructure and practical support are crucial to translating intention into action.

**Behavioral Practices and Participation in Plastic Waste Control**

Behavioral practices refer to the actual actions and habits individuals adopt in their daily lives to manage and control plastic waste, such as reducing consumption, reusing items, properly sorting recyclables, and participating in waste reduction initiatives. Among university students, especially undergraduates at the University of Benin (UNIBEN), understanding these behavioral practices is essential to evaluating how well knowledge and attitudes translate into meaningful participation in plastic waste control.

Studies have shown that even when students possess good knowledge of the dangers of plastic waste and express positive attitudes toward environmental conservation, their behaviors often fall short of ideal practices (Adewuyi & Afolabi, 2021). For instance, many students understand that single-use plastics like sachet water bags, disposable cutlery, and plastic bottles contribute significantly to campus litter, yet they continue to use them out of convenience or lack of alternatives (Hassan & Oyelade, 2022). This reflects the well-documented attitude behavior gap the disconnect between what individuals believe and how they act (Kollmuss & Agyeman, 2002).

In practical terms, behavioral practices related to plastic waste control among undergraduates may include:

- Refusing or reducing the use of single-use plastics by carrying reusable water bottles, bags, and containers.
- Proper disposal of plastic waste in designated bins instead of littering or dumping waste indiscriminately.
- Recycling participation, where facilities exist, by separating plastics from general waste streams.
- Involvement in environmental initiatives, such as clean-up campaigns, awareness events, or sustainability clubs on campus.

A study by Akindele et al. (2020) on plastic waste behaviors in Nigerian universities revealed that while awareness of recycling and waste reduction practices is high, actual participation is often limited by infrastructural and systemic challenges. Students frequently reported that recycling bins were unavailable or poorly maintained, waste collection systems were inconsistent, and there was little institutional support for campus-wide sustainability programs. As a result, even those who were motivated to act responsibly found it difficult to sustain their efforts.

Moreover, behavioral practices are not solely shaped by individual choices; they are heavily influenced by social norms and peer behaviors. Ogunbode and Arnold (2021) emphasize that when environmental behaviors become normalized within a social group such as among classmates, hostel mates, or student associations they are more likely to be adopted by others. Conversely, when unsustainable behaviors like littering or excessive plastic use are common, they reinforce a culture of inaction and apathy.

Participation in plastic waste control efforts also hinges on the perceived efficacy of such actions. Many students question whether their small, individual contributions can meaningfully impact the broader problem of plastic pollution (Hassan & Oyelade, 2022). Without visible institutional commitment or governmental support, students may feel disillusioned, leading to reduced participation.

However, research has highlighted several strategies that can boost behavioral participation among undergraduates. These include:

- Campus-based environmental education programs that not only inform but also engage students in hands-on sustainability efforts (Adewuyi & Afolabi, 2021).
- Peer-led initiatives and social campaigns that make plastic waste control a visible and collective activity.
- Improved waste infrastructure, including clearly marked recycling bins and regular waste collection services.
- Incentive schemes, such as rewards for recycling or participating in environmental programs.

Ultimately, enhancing behavioral practices and participation in plastic waste control among UNIBEN undergraduates requires a combination of individual responsibility, peer influence, institutional support, and enabling infrastructure. By addressing these multiple levels, the university can foster a culture where sustainable behaviors are not just known and supported in theory, but actively practiced in everyday student life.

Beyond Nigerian contexts, a study by Lee, Kim, and Cho (2019) in South Korea investigated university students' knowledge and attitudes toward plastic waste and recycling. The findings revealed that students' knowledge about plastic pollution positively

influenced their attitudes, which in turn affected their intentions to engage in recycling behaviors. However, the study also identified barriers such as inconvenience and lack of recycling facilities that hindered actual behavior. This research aligns with findings in Nigeria, suggesting that while knowledge and attitudes are foundational, infrastructure and practical support are crucial to translating intention into action.

## Empirical Review

Empirical studies have consistently highlighted that the attitudes of university students toward plastic waste and environmental conservation significantly shape their behaviors and engagement in sustainability initiatives. Attitudes are generally viewed as positive or negative evaluations formed through knowledge, beliefs, emotions, and personal experiences (Ajzen, 1991). Within Nigerian universities, research has shown that while many undergraduates express strong concern for environmental issues such as climate change and plastic pollution, their willingness to consistently adopt sustainable practices remains limited. Ogunbode and Arnold (2021), for instance, reported that although students acknowledge the dangers of plastic waste, their participation in practices such as recycling or reducing single-use plastics is often constrained by convenience and lack of infrastructural support.

Adewuyi and Afolabi (2021) similarly observed the presence of the attitude–behavior gap, whereby students with positive environmental attitudes still fail to act responsibly due to perceived barriers. Many believe their individual actions are too insignificant to make an impact, while others are discouraged by the absence of adequate facilities for proper waste management. This aligns with the findings of Hassan and Oyelade (2022), who noted that although students often support government regulations on plastic waste and expect companies to take responsibility, they display less enthusiasm when it comes to making personal sacrifices, such as avoiding single-use plastics or paying extra for eco-friendly alternatives.

Beyond Nigeria, international research has reported similar patterns. A study by Lee, Kim, and Cho (2019) in South Korea found that while students' knowledge strongly influenced their attitudes toward recycling and conservation, infrastructural challenges like inadequate facilities hindered the translation of these attitudes into practice. This suggests that knowledge and attitudes, though essential, are insufficient without enabling environments that make sustainable actions both convenient and rewarding. Overall, the empirical literature shows that student attitudes toward plastic waste are generally favorable, but these attitudes are often shaped by perceived responsibility, social norms, and institutional barriers. For undergraduates at the University of Benin, fostering more consistent pro-environmental behavior will require not only building on existing positive

attitudes but also addressing the structural and psychological obstacles that prevent these attitudes from being fully translated into daily action.

**Challenges and Barriers to Effective Plastic Waste Management**

Despite growing awareness of the dangers of plastic waste and increasing calls for sustainable practices, many universities including the University of Benin (UNIBEN) face significant challenges in managing plastic waste effectively. These challenges span structural, behavioral, institutional, and cultural dimensions, creating barriers that limit students' and staff's ability to engage fully in plastic waste reduction and control.

One major challenge is the lack of adequate infrastructure for waste management on campus. According to Akindele et al. (2020), many Nigerian university campuses lack sufficient waste bins, and even where bins exist, they are often poorly labeled, making it difficult for users to separate plastics from general waste. Without a functional system for segregation, collected waste ends up in landfills or open dumps, negating any recycling potential. Similarly, waste collection services are sometimes irregular or inefficient, leading to overfilled bins, scattered litter, and blocked drainage systems (Adeyemi & Fagbemi, 2021).

Another important barrier is institutional neglect or weak policy enforcement. Universities often lack clear guidelines or campus-wide policies on plastic waste

management, leaving responsibility scattered across departments or facilities teams without clear leadership. Even when sustainability programs are initiated, they are sometimes short-lived due to funding shortages, lack of staff training, or absence of administrative support (Ogunbode & Arnold, 2021). This lack of institutional coordination can discourage students and staff from engaging in environmental initiatives, as they perceive such efforts as low priority.

Behavioral and attitudinal barriers are also critical. While many students express positive attitudes toward environmental conservation in surveys, actual behaviors often lag behind (Adewuyi & Afolabi, 2021). Common reasons for this attitude-behavior gap include convenience, peer pressure, and a general sense of apathy. For instance, carrying a reusable bottle or sorting waste may be seen as "extra effort" compared to simply disposing of everything in a general bin. Moreover, if peers and social groups are not modeling sustainable behaviors, individuals may feel little social incentive to change their own habits (Hassan & Oyelade, 2022).

Awareness gaps compound these challenges. Although there is general knowledge of the dangers of plastic waste, many undergraduates lack detailed understanding of the processes involved in waste management, the specific environmental impacts of their actions, or the benefits of proper plastic waste control. Without targeted education and

engagement, students may underestimate the significance of their individual contributions or feel powerless to make a difference (Akinro & Adewumi, 2021).

Finally, external socio-economic factors play a role. In Nigeria, broader systemic issues such as limited recycling industries, poor waste management systems, and lack of government incentives affect what can realistically be achieved at the university level. Even when students are motivated to act, they are constrained by the larger context in which they operate, including limited access to affordable alternatives to single-use plastics and a lack of market demand for recycled materials (Olowoporoku & Adeola, 2020).

Addressing these challenges requires a multi-level approach. On one hand, the university administration needs to provide the necessary infrastructure, policies, and institutional support for plastic waste management. On the other hand, there must be consistent efforts to educate, engage, and motivate students to adopt sustainable behaviors, reinforced by peer influence and campus-wide campaigns. Collaborative partnerships with local governments, NGOs, and private recycling companies can further enhance the effectiveness of campus-based waste control initiatives.

A study by Shehzad, Khan, and Zafar (2020) in Pakistan examined undergraduate students' environmental awareness and their participation in plastic waste reduction programs. The researchers found a positive correlation between environmental knowledge

and participation levels, but also noted that socioeconomic factors, including financial constraints and access to alternatives to plastic, impacted students' ability to reduce plastic use effectively. The study concluded that interventions need to consider these broader socio-economic barriers alongside educational efforts.

Locally, Akinro and Adewumi (2021) focused on environmental awareness and pro-environmental behaviors among Nigerian youths, including university students. Their findings indicated that while most students demonstrated basic knowledge of plastic pollution, their attitudes varied depending on personal values and perceived social norms. The study also pointed out that motivation to participate in plastic waste control activities often depends on perceived effectiveness and community support. Collectively, these empirical studies demonstrate a consistent pattern: knowledge and positive attitudes toward plastic waste pollution are necessary but not sufficient conditions for effective plastic waste control. Behavioral practices are strongly influenced by external factors such as infrastructure, institutional support, peer influence, and socio-economic conditions. This body of literature supports the need for comprehensive strategies that integrate education, infrastructure development, policy enforcement, and social engagement to enhance plastic waste management among university students.

## Summary of Literature Review

The reviewed literature reveals that while plastics provide undeniable convenience, their durability has created a persistent waste problem that negatively impacts both the environment and human health. Studies from global and Nigerian contexts emphasize issues such as flooding from blocked drainage systems, pollution of aquatic and terrestrial ecosystems, the spread of microplastics in food and water, and harmful emissions from open burning. Within Nigeria, the rapid pace of urbanization, weak enforcement of environmental laws, and poor infrastructure have intensified these problems. University campuses have been found to mirror these broader challenges, as students show a moderate awareness of the dangers of plastic waste but often fail to translate this knowledge into consistent pro-environmental practices.

Despite these contributions, a number of gaps are evident in the existing literature. Many studies fail to separate knowledge of pollution impacts from knowledge of waste management practices, making it difficult to identify which type of knowledge influences behavior more strongly. In addition, most research relies heavily on self-reported surveys rather than direct observation or institutional data, leaving questions about the accuracy of reported behaviors. Campus infrastructure, though frequently mentioned as a barrier, is often described in general terms rather than analyzed in relation to actual student practices. Furthermore, limited attention has been given to differences among students based on level

of study, discipline, or residence, even though these factors are likely to shape waste-use patterns and awareness. Another notable gap lies in the area of microplastics, as few studies focus on students' knowledge and perceptions of this emerging risk.

A critical gap for this research is the absence of studies specific to the University of Benin. While existing works provide insights into youth awareness and challenges in Nigerian universities broadly, there is little evidence that captures UNIBEN students' distinct knowledge levels, attitudes, and behaviors in relation to plastic waste. The unique waste profile of the university, shaped by high consumption of sachet water, bottled drinks, and packaged foods, makes such a localized study necessary.

This research is therefore positioned to fill these gaps by separating pollution knowledge from management knowledge, applying behavioral frameworks to explain why students may fail to act on their awareness, and directly connecting campus infrastructure to reported behaviors. It will also move beyond general statements of willingness to participate in waste control to examine students' readiness to engage in specific actions such as waste sorting, clean-up activities, and advocacy. By doing so, the study will not only provide UNIBEN-specific evidence but also generate actionable insights that can guide both policy and practical interventions aimed at improving plastic waste management on campus.

# CHAPTER THREE

# METHODOLOGY

This chapter described the research methodology used in this study under the following subheadings

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

## Design of the Study

The descriptive survey research design was adopted in gathering relevant information from the respondents for the purpose of understanding some aspects of the behavior of the population. The method was suitable because it enabled the researcher to get specific response from the respondents and most essentially to assess the knowledge and attitude of Uniben undergraduates towards plastic waste pollution and control.

**Population of the Study**

The Population of the study was 43,679 Students. It comprises of the 15 faculties of the University of Benin. The target population comprises of full-time undergraduate students of the various faculties during the 2024/2025. The present population of the University of Benin undergraduate is 43,679 students (21881 females and 21789 males). The faculties are shown in the table below:

Table 1: List of faculties in the university of Benin and their population.

| S/N | Faculty | Population of the Study |
|---|---|---|
| 1 | Agriculture | 1685 |
| 2 | Arts | 6262 |
| 3 | Basic medical science | 3437 |
| 4 | Dentistry | 111 |
| 5 | Education | 7416 |
| 6 | Engineering | 5481 |
| 7 | Environmental Science | 1015 |
| 8 | Law | 1078 |
| 9 | Life science | 5132 |
| 10 | Management science | 3505 |
| 11 | Medicine | 685 |

| | | |
|---|---|---|
| 12 | Pharmacy | 1107 |
| 13 | Physical science | 3283 |
| 14 | Social science | 3411 |
| 15 | Veterinary Medicine | 70 |
| | **Total** | 43,679 |

Source: Academic planning unit, Students Affairs Division, University of Benin, (2025)

**Sample and Sample Technique**

The study involved a total of 240 respondents, drawn from five faculties of the University of Benin. The sample size was determined using proportional allocation, where exactly 2.5% of the undergraduate population from each selected faculty was calculated. This method ensures that larger faculties contribute more respondents while smaller faculties contribute fewer, in proportion to their actual population sizes.

This study will adopt a multi-stage sampling procedure. This approach will be used because it allows the researcher to reduce the large population into smaller, manageable units while ensuring fairness and inclusiveness.

Firstly, systematic sampling will be used to select five faculties out of the fifteen available. The faculties will be arranged in alphabetical order, and the first and every other third faculty will be selected. The selected faculties will include Agriculture, Dentistry, Environmental sciences, Management sciences, and Physical sciences The number of

respondents to be drawn from each selected faculty will be determined using purposive sampling in which exactly 2.5% of the undergraduate population of each selected faculty was calculated. This method will ensure that larger faculties contributed more respondents while smaller faculties contributed fewer, in proportion to their actual sizes. This resulted in a total of 240 respondents.

Within each selected faculty, simple random sampling will be employed to select departments and levels of study. Balloting with replacement will be used to give every department and level an equal chance of selection.

Finally, individual respondents will be selected within the chosen departments and levels using simple random sampling. This process will ensure that all students had equal chances of inclusion in the study.

Table 2: The distribution of the sample

| S/N | Faculty | Students per Faculty | Calculation (2.5%) | Numbers of Respondent |
|---|---|---|---|---|
| 1 | Agriculture | 1685 | 1685 × 0.025 = 42.125 | 42 |
| 2 | Dentistry | 111 | 111 × 0.025 = 2.775 | 3 |
| 3 | Environmental sciences | 1015 | 1015 × 0.025 = 25.375 | 25 |
| 4 | Management sciences | 3505 | 3505 × 0.025 = 87.625 | 88 |
| 5 | Physical sciences | 3283 | 3283 × 0.025 = 82.075 | 82 |
| | **Total** | 9599 | – | 240 |

**Source: Field survey (2025)**

The total sample size of 240 was deemed adequate based on sample size determination guidelines (e.g., Yamane, 1967), which recommend approximately 300 respondents for a population of over 40,000 at a 95% confidence level and 5% margin of error.

**Research Instrument**

The instrument that was adopted for the collection of the needed data for the study is the questionnaire. The questionnaire is titled **"**The knowledge and attitude of Uniben undergraduates towards plastic waste pollution and control**."** The questionnaire comprised of two sections; "A and B". The section 'A' of the instrument focused on the gathering of personal information of the respondents while the section B was designed towards seeking information on the study. Section B contained items designed to measure both knowledge and attitude of students towards plastic waste pollution and control. The knowledge items were structured as multiple-choice questions with four options labeled A–D**.** Each correct response was scored **o**ne (1) poi**nt**, while an incorrect response was scored zero (0) points. The total knowledge score for each respondent was obtained by summing the correct responses, with higher scores indicating greater knowledge.

The attitude items were also structured on a four-point scale with options labeled A–D. For scoring, the options were weighted as follows:

- A = 4 points

- B = 3 points
- C = 2 points
- D = 1 point

The cumulative score for each respondent represented their overall attitude toward plastic waste and its control. Higher scores reflected more positive attitudes, while lower scores indicated less favorable attitudes.

**Validity of the Instrument**

The questionnaire was given to the researcher's supervisor and two other experts in the Department of Health Safety and Environmental Education, Faculty of Education, University of Benin, Benin City, Edo State for scrutiny. Thereafter their suggestions and observations were taken into consideration before the final copy of the instrument was produced and administered to the respondents.

**Reliability of the Instrument**

To determine the reliability of the instrument, the split-half reliability procedure was employed. Ten (10) copies of the research instrument were administered to a set of respondents, the items of the questionnaire were divided into two halves, and the responses from each half were scored separately. The correlation between the two sets of scores was

computed to ascertain the degree of internal consistency of the instrument. To determine the reliability of the instrument, Cronbach's alpha was employed and a coefficient of 0.711 was obtained. This ensured that the instrument yielded consistent results and was dependable for data collection.

**Method of Data Collection**

The instrument for the data collection was personally administered by the researcher to the respondent. The researcher explained to the respondent on how to indicate their views on each item. Efforts were made to explain the questions to the respondents in a manner that enable them to respond objectively to the questions.

**Method of Data Analysis**

Data were analyzed using percentages, frequency counts in order to facilitate the interpretation of the data collected. Chi-square statistical test was employed to test the stated hypotheses at 0.05 level of significance.

# CHAPTER FOUR

## DATA PRESENTATION AND DISCUSSION OF FINDINGS

This chapter presents and analyzes the data collected through the questionnaire administered to two hundred and forty (240) undergraduates of the University of Benin. The analysis was done using frequency counts, percentages, mean, standard deviation, and Chi-square ($\chi^2$) statistics in line with the method described in the previous chapter. The purpose of this analysis is to determine the level of knowledge and attitude of UNIBEN undergraduates toward plastic waste pollution and control, and to test the stated research hypothesis.

**Table 3: Demographic Information of Respondents**

| **Variable** | **Category** | **Frequency (f)** | **Percentage (%)** |
|---|---|---|---|
| Gender | Male | 118 | 49.2 |
| | Female | 122 | 50.8 |
| **Total** | | 240 | 100 |
| Level of Study | 100 Level | 46 | 19.2 |
| | 200 Level | 66 | 27.5 |
| | 300 Level | 76 | 31.7 |
| | 400 Level | 52 | 21.6 |
| **Total** | | 240 | 100 |

Table 3 shows that there were slightly more female respondents (50.8%) than males (49.2%), indicating a fairly balanced gender distribution. The distribution across levels of study shows that 31.7% of respondents were in 300 level, 27.5% in 200 level, 21.6% in 400 level, and 19.2% in 100 level. This implies that all levels of undergraduate students were adequately represented in the study.

**Research Question One: What is the level of knowledge of plastic waste pollution among undergraduates of the University of Benin?**

Table 4: Level of Knowledge of Plastic Waste Pollution

| S/N | Knowledge Level | Frequency (f) | Percentage (%) |
|---|---|---|---|
| 1 | High Knowledge | 144 | 60.0 |
| 2 | Moderate Knowledge | 60 | 25.0 |
| 2 | Low Knowledge | 39 | 16.2 |

High knowledge (4-7), Moderate Knowledge (4-5) Low Knowledge (1-3)

Table 4 presents the distribution of respondents according to their level of knowledge of plastic waste pollution. The results show that 60.0 percent of the respondents demonstrated a high level of knowledge, scoring between 4 and 7 on the knowledge scale. This category represents the majority of the sampled students, indicating that most undergraduates of the University of Benin possess a strong understanding of plastic waste pollution, including its

causes, health implications and environmental effects. 25.0 percent of the respondents fell within the moderate knowledge category, scoring between 4 and 5. This group reflects students who have a fair but incomplete understanding of plastic waste pollution and may require additional sensitisation to deepen their knowledge.

Only 16.2 percent of the respondents were classified as having low knowledge, scoring between 1 and 3. This indicates that a small proportion of students lack adequate awareness of plastic waste pollution and its consequences. Overall, the results show that the majority of University of Benin undergraduates have a generally high level of knowledge about plastic waste pollution. This suggests that environmental awareness efforts on campus may be contributing positively to students' understanding of issues related to plastic waste.

**Research Question Two: What is the level of knowledge of plastic waste management and control among undergraduates of the University of Benin?**

Table 5 Level of Knowledge of Plastic Waste Management and Control

| S/N | Knowledge Level | Frequency (f) | Percentage (%) |
|---|---|---|---|
| 1 | High Knowledge | 156 | 65.0 |
| 2 | Moderate Knowledge | 48 | 20.0 |
| 2 | Low Knowledge | 36 | 15.0 |

High knowledge (4-7), Moderate Knowledge (4-5) Low Knowledge (1-3)

Table 5 presents the level of knowledge of plastic waste management and control among undergraduates of the University of Benin. The results show that 65.0 percent of the respondents demonstrated a high level of knowledge, scoring between 4 and 7 on the knowledge scale. This indicates that the majority of the students possess strong knowledge of proper plastic waste management practices such as recycling, reuse, proper disposal, segregation, and institutional waste control measures. Additionally, 20.0 percent of the respondents fell within the moderate knowledge category, scoring between 4 and 5. This group reflects students who have an average understanding of plastic waste management but may still lack complete knowledge of all recommended management and control strategies.

Only 15.0 percent of the respondents demonstrated low knowledge, with scores ranging from 1 to 3. This suggests that a relatively small proportion of students have insufficient knowledge of plastic waste management and may not be fully aware of proper waste handling practices. The findings indicate that undergraduates of the University of Benin generally possess a high level of knowledge of plastic waste management and control, which may be attributed to exposure to environmental information, awareness programmes and increased public discourse on waste reduction.

**Research Question Three: What are the attitudes of undergraduates of the University of Benin toward plastic waste pollution and control?**

Table 6 Mean and Standard Deviation of Respondents' Attitudes Toward Plastic Waste Pollution and Control

| S/N | Attitude Items | SA | A | D | SD | Mean ($\bar{X}$) | SD | Decision |
|---|---|---|---|---|---|---|---|---|
| 1 | Using reusable items reduces plastic waste. | 108 (45.0%) | 91 (37.9%) | 27 (11.3%) | 14 (5.8%) | 3.22 | 0.83 | Agreed |
| 2 | I feel personally responsible for reducing plastic waste. | 82 (34.2%) | 98 (40.8%) | 40 (16.7%) | 20 (8.3%) | 3.00 | 0.91 | Agreed |
| 3 | I am concerned about the health effects of plastic pollution. | 121 (50.4%) | 85 (35.4%) | 22 (9.2%) | 12 (5.0%) | 3.32 | 0.77 | Agreed |
| 4 | Improper disposal of plastics is a serious environmental problem. | 139 (57.9%) | 79 (32.9%) | 15 (6.3%) | 7 (2.9%) | 3.46 | 0.65 | Agreed |
| **Cluster Mean** | | | | | | **3.25** | | **Agreed** |

***Criterion Mean: 2.50***

Table 6 shows that the respondents agreed with all listed attitude items, as indicated by the cluster mean of 3.25 which is above the decision benchmark of 2.50. This result means that undergraduates of the University of Benin have a positive attitude toward reducing plastic pollution. They acknowledge that reusable items, personal responsibility, awareness of

health risks and proper disposal practices are important for minimising plastic waste on campus.

Testing of Hypothesis

Hypothesis: There is no significant relationship between knowledge of plastic waste management and attitude towards plastic waste management.

**Chi-square Table**

| Variable | $\chi^2$ Calculated | df | $\chi^2$ Critical (0.05) | Decision | Sig. Value |
|---|---|---|---|---|---|
| Knowledge vs Attitude | 9.84 | 3 | 7.81 | Reject $H_0$ | 0.02 |

**Hypothesis Testing**

The chi-square test for independence was conducted to determine the relationship between knowledge of plastic waste management and attitude toward its control practices. The result showed a calculated $\chi^2$ value of 9.84, which is greater than the critical value of 7.81 at 3 degrees of freedom and 0.05 significance level. Therefore, the null hypothesis is rejected, indicating a statistically significant relationship between knowledge and attitude. This implies that students with higher knowledge of plastic waste management tend to exhibit more positive and responsible attitudes toward its control.

## Discussion of Findings

For the first research question, which asked what is the level of knowledge of plastic waste pollution among undergraduates, the findings revealed that the majority of respondents demonstrated a high level of knowledge. This shows that undergraduates of the University of Benin have a clear understanding of the nature of plastic waste pollution, its causes and the environmental and health risks associated with it. This aligns with Adebayo and Musa (2022), who reported that university students in Nigeria are increasingly aware of environmental challenges due to exposure to media campaigns and campus awareness programmes.

The second research question examined whether undergraduates are knowledgeable about plastic waste management and control. The findings revealed that 85 percent of the respondents demonstrated high knowledge of management practices such as recycling, reusing, proper disposal and waste segregation. Only 15 percent scored within the low knowledge category. These results support the findings of Ogunbiyi and Okafor (2020), who observed that university students tend to be more informed about waste management solutions due to formal and informal environmental education.

The third research question explored the attitudes of undergraduates toward plastic waste pollution and control. The findings showed that respondents agreed on all attitude

items, with a cluster mean of 3.25, which is above the benchmark of 2.50. The highest level of agreement was recorded for the item stating that improper disposal of plastics is a serious environmental problem, while other items related to personal responsibility, concern for health risks and support for reusable alternatives also received strong agreement. These results are consistent with the findings of Nwafor (2021), who noted that students from tertiary institutions tend to display positive attitudes toward environmental issues, especially when they possess adequate knowledge.

This study also presents the analysis The result of the chi-square test showed a significant relationship between knowledge of plastic waste management and students' attitudes toward its control. Since the calculated chi-square value (9.84) exceeded the critical value (7.81), the null hypothesis was rejected. This means that students with higher knowledge of plastic waste management were more likely to exhibit positive attitudes toward proper waste handling. The finding suggests that increased awareness and understanding of waste management practices contribute to more responsible environmental behaviour among undergraduates.

The findings of this study therefore indicate that undergraduates of the University of Benin have high levels of knowledge about plastic waste pollution and management and also possess favourable attitudes toward practices that can reduce plastic pollution. This

aligns with the literature suggesting that improved environmental knowledge contributes to responsible behaviour and positive environmental attitudes among young people.

# CHAPTER FIVE

# SUMMARY, CONCLUSION AND RECOMMENDATIONS

## Summary

This study investigated the level of knowledge and attitude of University of Benin undergraduates toward plastic waste pollution and its control. The descriptive survey design was employed, and data were collected from 240 students across various faculties using a structured questionnaire. The instrument assessed students' knowledge of plastic waste pollution, knowledge of plastic waste management, and their attitudes toward plastic waste control. Data were analysed using frequency counts, percentages, means, standard deviations and Chi-square statistics.

The findings revealed that students possessed high levels of knowledge regarding the nature, causes and environmental implications of plastic waste pollution. Respondents also demonstrated high knowledge of plastic waste management practices, including proper disposal, recycling, and waste segregation. Furthermore, students exhibited generally positive attitudes toward plastic waste control, with cluster mean scores exceeding the decision benchmark.

## Findings

The findings of the study, based on the research questions and hypotheses, are summarized as follows:

1. There was a balanced gender distribution among respondents, and all levels of study were adequately represented.
2. Undergraduates exhibited a high level of knowledge of plastic waste pollution, with 83.8% scoring within the high-knowledge category.
3. Students also demonstrated a high level of knowledge of plastic waste management and control, with 85% showing strong understanding of management practices.
4. Students' attitudes toward plastic waste control were positive, as indicated by a cluster mean of 3.25, which is above the benchmark of 2.50.
5. Knowledge and attitude were found to be strongly aligned, suggesting that awareness campaigns and institutional sensitisation efforts are influencing students' perceptions and responses to plastic waste on campus.

## Conclusion

Based on the findings of this study, it can be concluded that University of Benin undergraduates possess high levels of knowledge about plastic waste pollution as well as plastic waste management and control. The majority of students understand the causes and

environmental threats posed by plastic pollution and are aware of appropriate methods for minimising and managing plastic waste. This high level of awareness is complemented by positive attitudes toward plastic waste reduction, as reflected in the respondents' agreement with attitude statements that emphasise responsibility, proper disposal and the use of reusable alternatives.

The findings imply that environmental awareness initiatives within the university environment are contributing to increased understanding and improved attitudes toward plastic waste management. However, it is important to note that knowledge alone may not automatically result in consistent environmentally responsible behaviours. Continuous sensitisation, provision of waste disposal facilities and campus-wide policy enforcement are needed to translate knowledge and attitude into sustained behavioural change. Overall, the study reinforces the importance of environmental education and institutional support in promoting sustainable waste management among university students.

**Recommendations**

In the light of the findings and conclusions drawn from the study, the following recommendations are made:

1. The University of Benin should incorporate plastic waste pollution and management topics into the General Studies (GST) curriculum to strengthen students' environmental knowledge.
2. The university management should provide clearly labelled recycling bins in hostels, lecture halls and major public areas on campus to encourage proper waste segregation.
3. Environmental clubs, associations and the university's Health and Safety Department should organise regular sensitisation programmes such as workshops, rallies and seminars on plastic waste reduction and recycling.
4. Policies aimed at reducing the use of single-use plastics on campus should be developed and strictly enforced, while encouraging students and staff to adopt eco-friendly alternatives.
5. The university should collaborate with environmental agencies and non-governmental organisations to implement sustainable waste management initiatives and provide students with practical experiences in recycling and environmental stewardship.

**Suggestions for Further Studies**

To build on the findings of this research, the following suggestions are made for future studies:

1. A comparative study should be conducted to assess differences in knowledge and attitudes toward plastic waste management between students in public and private universities.
2. Behavioural-based research is needed to determine whether students' high knowledge levels actually translate into environmentally responsible waste management practices.
3. Discipline-focused studies should investigate how environmental education programmes influence plastic waste management behaviour across different academic fields.
4. A longitudinal study should be carried out to examine how sustained awareness and sensitisation campaigns influence changes in students' attitudes toward plastic waste management over time.
5. Future studies should explore the impact of digital media and social-media-based campaigns on shaping students' perceptions and behaviour toward plastic waste management.

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## APPENDIX A

## DEPARTMENT OF HEALTH SAFETY AND ENVIRONMENTAL EDUCATION, FACULTY OF EDUCATION UNIVERSITY OF BENIN

## QUESTIONNAIRE

## ON

## KNOWLEDGE AND ATTITUDE OF UNIBEN UNDERGRADUATES TOWARDS PLASTIC WASTE POLLUTION AND CONTROL

Dear Participants,

I am a student of the Department of Health safety and Environmental Education, Faculty of Education, University of Benin. I am carrying out a study on the title above for educational purpose. I therefore solicit for your responses, all your response will be treated confidentially

Please answer the following questions honestly and to the best of your knowledge. Your participation is entirely voluntary, and all information will be kept confidential.

**Thank you.**

**Section A: Demographic Information**

1. Gender: Male [ ] Female [ ]
2. Level: 100level [ ] 200level [ ] 300level [ ] 400 level [ ]

**Section B: Respondents Responses**

**Question One: Level of Knowledge about Plastic Waste Pollution (Multiple Choice)**

1. Which of the following is a major environmental impact of plastic waste? a) Increased soil fertility b) Blocked drainage systems and flooding c) Improved water quality d) Decreased air pollution
2. How long can plastics persist in the environment? a) 1–5 years b) 10–50 years c) Hundreds of years d) They decompose immediately
3. What is microplastic contamination? a) Small plastic pieces that enter water and food chains b) Plastic bags used for packaging c) Recycled plastic products d) Plastic used in electronics
4. Which of the following is a source of plastic pollution on campus? a) Bottled water and soft drinks b) Trees and grass c) Metal cans d) Paper notebooks

**Question 2: Level of Knowledge about Plastic Waste Management/Control**

1. Which of the following is a proper method for disposing of plastic bottles? a) Throwing in drainage b) Burning openly c) Placing in a recycling bin d) Throwing in open fields
2. Which practice reduces plastic pollution effectively? a) Reusing plastics b) Throwing plastics in gutters c) Burning plastics d) Leaving plastics on campus lawns
3. What does "waste segregation" mean? a) Mixing all types of waste together b) Separating plastics from organic and other waste c) Dumping plastics in rivers d) Burning all waste together
4. Which institution is primarily responsible for managing plastic waste in universities? a) Student clubs b) Local government and university management c) Private citizens only d) Vendors on campus

| S/N | ITEMS | SA | A | D | SD |
|---|---|---|---|---|---|
| **RQ3** | **Attitudes toward Plastic Waste Pollution** | | | | |
| 1. | I know using reusable alternatives instead of single-use plastics is an effective way to reduce plastic waste pollution | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 2. | I feel personally responsible for reducing plastic pollution on campus. | | | | |
| 3. | I am concerned about the effects of plastic pollution on human health. | | | | |
| 4. | Improper disposal of plastic waste is a serious environmental problem that affects everyone in the University community. | | | | |

## RELIABILITY B

**ALL VARIABLES**

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 12 | 100.0 |
| | Excluded[a] | 0 | .0 |
| | Total | 12 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .711 | 12 |