



## Knowledge and Attitude of Long Vacation Training Students Towards Solid Waste Management at Ahmadu Bello University, Zaria

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### Abstract

Poor sustainable waste management practices in some Nigerian Universities constitute one of the major factors leading to declining environmental health conditions of University communities. Sustainable waste management practices are needed to ensure the protection of the environment and students' health. Few studies have captured sustainable waste practices problems in Nigerian educational institutions, particularly the views of students in schools. This study was designed to assess the knowledge and attitude of Long Vacation Training (LVT) students of Ahmadu Bello University (ABU), Zaria, towards sustainable waste disposal practices. Using a sample size of 60 LVT students 2023/2024 Session, consisting of 30 males and 30 females. The researcher randomly selected this sample to represent the entire population of 300 LVT students in the 2023 academic year. A structured questionnaire was used to collect data and was analysed using percentage, mean and standard deviation with a decision rule of 2.50. The study found that the majority of ABU LVT students have good knowledge of sustainable solid waste management practices. It was also discovered that a greater number of ABU LVT students have a poor attitude towards sustainable solid waste management within the University environment.

**Keywords:** Long Vacation Training, Solid Waste Management, Student Knowledge, Student Attitude, Ahmadu Bello University

### Introduction

One of the greatest problems facing some Nigerian Universities is the unhealthy disposal of solid waste, which accumulates from students, staff and non-staff, including animal activities in those schools. The poor state of waste management practices in our University is caused by a myriad of inadequacies, including, but not limited to, inadequate facilities, poor funding, and poor implementation of environmental policies, as well as nonchalant attitudes of students and other members of the University community towards proper waste disposal guidelines. According to Adeolu et al. (2014), economic development, urbanisation, improved living standards in cities, and an increase in enrolments of student enrollment increase the quantity and complexity of generated solid waste in schools. As this waste accumulated, it may lead to degradation of the school compound, stress on the limited cleaning staff, leading to various health issues among learners and other members of the University community. Although the problem of poor sustainable waste practices is global, the situation in the northern part of Nigeria is severe, partly because of the lack of adequate knowledge of sustainable solid waste disposal practices, shortage of disposal facilities and people's poor attitude towards the environment. There is strong evidence which suggests that individual or group awareness and attitudes towards appropriate waste generation and management are critical in the effort to respond to the waste management challenges (Adediran et al., 2017). The poor attitude of the community members towards the environment also affected the educational institution's environmental challenges, which have been aggravated by an increasing student population, few infrastructural facilities and poor funding or budgetary allocation for institutional waste management and hygiene maintenance.

More so, the need for students' proper knowledge and awareness towards developing a positive attitude in the management of waste is related to environmental motivation, social pressures, attitudes and economic incentives (Desa et al., 2011). The problem of poor waste management has risen to a new proportion recently in schools among developing countries where there is little environmental awareness (Johnston, 2010) and where many members of the community are unaware of the severe consequences of poor solid waste accumulation without

proper disposal (Ibrahim & Babayemi, 2010). Sustainable waste disposal attitude of students of higher institutions appears to be crucial as they ultimately play a direct role in providing knowledge-based solutions to environmental problems (Adeolu et al, 2014). Environmental education Programme, if properly channelled, can also influence the environmental knowledge, attitude and behaviour of adults (parents, teachers and local community members) through the process of a health education programme.

According to Dung et al (2014), the common types of solid wastes found in schools in northern Nigeria include paper, grass, nylons (pure water bags, biscuit packs and cartons, lollypops, and sweet or candy wrappers), sugar cane chaffs, maize cobs, and groundnut shells. Other forms of waste may also be found on school premises, and these may not have even been generated directly by students, teaching and non-teaching staff, but by animals and plants within the University community. In Universities, for instance, it has been observed that waste in dump sites are sources of air and water pollution, land contamination, health hazards and environmental degradation (Balao et al., 2016). Regrettably, this condition characterizes the environment of most Universities in Nigeria. It is important to note that an endangered public health situation can exert excessive pressure on the health budget, curtail productivity and worsen general urban health conditions. This ugly situation persisted for decades because of the high rate of illiteracy, ignorance, uncivil culture of indiscriminate waste littering and other factors prevalent among many groups in our citadels of knowledge. Keeping all these in view, the present study was designed to assess the knowledge and attitude of Long Vacation Training students of Ahmadu Bello University, Zaria, towards sustainable solid waste management practices.

Ecological worries have attracted global attention in recent times. Countries and people are becoming increasingly conscious of the variety of these environmental problems like global warming, air, water and land pollution. Typically, human activities create wastes, and it is the way these waste collections are designed, collected and disposed of that can pose risks to the environment and public health (Desa et al., 2011). Waste disposal is an immediate and critical issue for the community now, and ineffective or irresponsible solid waste disposal pollutes the environment and poses a health risk to the public (Balao et al., 2016). Waste management technologies like land filling and incineration are not a complete solution to this problem. No one wants a waste disposal site in his or her neighbourhood. It is common knowledge that waste is nothing but useful material in wrong place. There is no material in this world which is not useful in one way or the other. Also, there is no material which is created out of nothing. It is man's ignorance that he considers certain things as waste and certain other things as useful (Adeolu et al, 2014). Just as types of wastes are changing, so must the knowledge and attitude of people towards these solid wastes change and must be properly managed. People must realise that the solution lies in using waste as a resource rather than to be destroyed (Desa et al., 2011). It has been argued that the human activities carried out in workshops, laboratories, classrooms and offices produce solid wastes including broken bottles, glass wares, woods, metals, papers, food plates, pure water sachets, sweet and biscuits nylons(Owojori et al., 2022) within a tertiary institution could pose a threat to the environment if not properly managed. One major way of reducing the environmental impact of solid waste generation is through the application of the reduce, re-use, recycle and recover principles as a subset of the circular economy (Owojori et al., 2022). Therefore, there is a need to find out the level of knowledge and attitudes of learners required from educational institutions, especially tertiary institutions, in shaping students' attitudes and perceptions towards proper solid waste management.

According to Boca and Sarach (2019), attitudes and perceptions inform students' environmental behaviour, and as such, it is crucial to appraise the environmental awareness level of students in sustainable solid waste management in academic institutions. The environment suffers from diverse environmental problems that require an individualistic approach, requiring each person to develop the right attitudes that will direct them towards environmentally sustainable behaviour (Owojori et al., 2022). Velazquez (2005) in Owojori et al.(2020) defined a sustainable university as an; "educational institute of learning, which compositely or partly addresses, engages and fosters, locally or globally, the reduction of adverse environmental, economic, societal, and health impacts generated in the utilization of resources to fulfill the primary functions of teaching, research, outreach and partnership, and learning in ways to help society make the transition to sustainable lifestyles" (pg. 56). However, to ensure a sustainable environment, there is a need to protect, conserve and manage the environment sustainably through environmental education and awareness (Boca & Sarach, 2019). Environmental education is a process planned for building up citizens to know and be concerned about their environment's condition and its related problems. This informs them of the responsibility to work exclusively towards more sustainable development (Owojori et al, 2022). The essence of achieving environmental sustainability in higher institutions

of learning cannot be overemphasised and has been highlighted by many researchers. Universities, similarly to cities, engage in complex activities and interactions that are associated with potentially significant environmental impacts, which, until recently, have not received attention in terms of social and environmental responsibility (Zhang et al., 2011).

### **Solid Waste**

Solid waste refers to any garbage, refuse, sludge, and other discarded materials, including solid, semi-solid, or contained gaseous materials, resulting from industrial, commercial, running and agricultural operations, and community activities (New York State Department of Environmental Conservation, 2015). Earlier on, Ezeah (2010) recalled that over the past decade, most Nigerian cities have been grappling with the challenges of managing their solid waste because of the phenomenal growth of both population and waste generation. This is due to an annual increase in population and socioeconomic indicators, as is documented in the Nigerian Population Census (NPC, 2008). It has been reported that the population in some States and Local Government areas is growing by as much as 20-30% per annum. Nigeria, as a developing nation, has put in a lot of effort aimed at managing solid waste, such as the establishment of environmental agencies at the three tiers of government. For instance, in response to the serious challenges posed by the ravaging effects of pollution, deforestation, desertification, erosion, solid waste management, and sundry manifestation of environmental degradation, the Federal Government of Nigeria enacted the National Environmental Standard and Regulation Enforcement Agency (NESREA) Act of 2007 through the Federal Ministry of Environment to replace the Federal Environmental Protection Agency Act. The agency provides authority to ensure compliance with environmental laws, local and international, on environmental sanitation and pollution prevention and control through monitory and regulatory measures. At the State and Local government levels, State Waste Management Agencies/Boards and Local Waste Management Boards are responsible for solid waste Management.

### **Environmental Knowledge and Attitude**

Environmental knowledge is defined as one's ability to identify some symbols, concepts, and behaviour patterns related to environmental protection (Liao & Li, 2019). It has been certified that environmental knowledge is positively associated with pro-environmental attitudes and behavioural intention (Eilam & Trop, 2012). The concept can influence pro-environmental behavioural intentions directly, as well as indirectly via the mediating effect of attitude (Scott et al., 2014). It influences environmental intention in two ways. Firstly, it may change an individual's environmental attitude and further lead to intention formation. An increase in knowledge can raise people's attitude towards environmental concern and awareness (Peattie, 2010). However, a lack of environmental knowledge may hinder the adoption of pro-environmental behaviour or may even lead to wrong or inefficient decisions (Barber et al., 2009). Environmental knowledge is an important factor in intention to behave in an environmentally responsible manner and environmentally responsible behaviour. Environmental knowledge is an important factor in intention to behave in an environmentally responsible manner and of environmentally responsible behaviour (Momoh & Oladepeye, 2010). Empirical evidence on the relationship between knowledge and behavioural intentions has found a positive association between knowledge and behavioural intention, which suggests that general knowledge (subjective knowledge) and techniques (objective knowledge) may increase the likelihood of an individual's behavioural intention in solving the environmental issues (Pedro et al., 2010). Studies on students have found positive relationships between knowledge, attitude, and behavioural intentions. It has been reported that higher education students' environmental knowledge has a positive influence on their pro-environmental intentions and behaviour (Vicente-Molina et al., 2013). Similarly, Yadav and Pathak (2016) also found that environmental knowledge influenced the intention to purchase green products. In the same vein, Michalos (2012) found that in adults and university students, a favourable attitude towards environmental issues was a better predictor of pro-environmental behaviour than knowledge.

### **Statement of the Problem**

In the 21<sup>st</sup> century, the amount of waste generated continues to increase due to a growing population and increasing consumption. According to Desa et al. (2011), the amount of solid waste generated went up from 17,000 tons per day in 2002 to 19,100 tons in 2005, an average of 0.8 kilogram per capita per day. The generation of solid waste is expected to reach 30,000 tons per day in 2020 and is expected to rise from the current 2.01 billion to 3.40 billion tons by 2050. Sadly enough, at least 33 per cent of that is not managed sustainably in an environmentally safe manner currently (Liao & Li, 2019). Meanwhile, Baloa et al. (2016) reported that the major drawbacks concerning waste management practices, especially in developing countries, are the ineffective waste collection strategies and lack of disposal sites. In the same vein, Licy (2013) also

suggested that the practice of basic solid waste management (SWM) is often neglected at the individual level in schools. While few students are aware of the negative impact of mismanaged waste on the environment, others' negative attitude coupled with insufficient environmental knowledge among higher institution students usually corresponds to poor practices towards maintaining good environmental conditions of their schools (Baloa et al., 2016).

Solid waste is a cleanliness and hygiene issue. The sites of overloaded waste bins and uncollected littered filths created not just foul aroma but great concern too in the ivory tower. Sometimes it is obvious in some schools to see litter at the roadside, drains clogged up with rubbish, and stagnated water filled with filthy garbage indicate that solid waste is a major environmental problem not only in our residents but also in the schools, including higher institutions of learning. Research has shown that most of the studies on Environmental Education concerned pre-school, primary, and secondary school students (Adeolu et al., 2014). However, very few studies were found to have investigated the variables of knowledge and attitudes of students of higher institutions of education in Nigeria in relation to solid waste management. This study, therefore, examines the knowledge of LVT students of ABU, Zaria, in relation to sustainable solid waste management practices. It also aims to reveal the attitudes of the students regarding solid waste management and identify steps that can be taken to make the institution one of the best waste managers.

### Objectives of the Study

The following objectives were formulated to guide the study:

1. To examine the level of knowledge of LVT students of Ahmadu Bello University, Zaria, on sustainable solid waste management practices.
2. To evaluate the attitude of LVT students of Ahmadu Bello University, Zaria, 2022/2023 session towards sustainable solid waste management practices.

### Methodology

The population of this study comprises the entire LVT students of Ahmadu Bello University, Zaria, of the 2022/2023 academic session. However, the sample of the study was made up of 30 male and 30 female LVT students who were randomly selected among others using simple random selection technique of first-come-first-served. A structured questionnaire developed by the researcher was used in collecting data from the respondents. To ensure face and content validity of the instrument, two senior research experts at the Department of Science Education, Ahmadu Bello University, Zaria, vetted the instrument. The instrument was restructured as suggested by the experts. A pilot study was conducted using 10 members of the population of the study who are not part of the actual study. Reliability of the instrument was determined to be 0.75 using the Richardson reliability coefficient test. The questionnaire comprises of three sections: "A", "B" and "C". Section "A" was to elicit personal data of the respondents such as age, gender, class, etc., while, Section "B" and "C" consisted of 10 questionnaire items each based on the two research objectives raised for the study. An adjusted 4 Likert rating scale of Strongly Agree (SA), Agree (A), Strongly Disagree (SD) and Disagree (D) were used with nominal values of 4, 3, 2 and 1, respectively. The researcher administered the questionnaire to the selected 60 LVT students in the 2022/2023 academic session. The data obtained were analysed and interpreted using arithmetic mean deviation. The numeric values assigned to the different scaling items used are as follows; SA = 4, A = 3, D = 2 and SD = 1. Therefore, the mean for these values was determined by  $x = 4 + 3 + 2 + 1 = 10/4 = 2.5$ . This formed the decision rule and the cut-off mean of 2.50. That means any response that has a mean score of 2.5 and above is accepted, while any response with a mean score below 2.5 is rejected.

## Results

The results of this study are presented in tables according to the research objectives they addressed.

**Table 1: Level of Knowledge of solid waste management among LVT students of ABU, Zaria.**

S/N	Items:	$\bar{x}$
1.	Popular open burning practices are injurious to students' health.	3.25
2.	Indiscriminate dumping of refuse is not good health-wise	2.92
3.	Unkept grass and hedges are harmful to both old and young	3.43
4.	A waste bin unkept is capable of causing sicknesses.	2.90
5.	Unmanaged fields and gardens are not good for healthy living	2.67
6.	Open defecation is a bad attitude that causes ill health in our environment.	3.62
7.	Free flowing of water from damaged water pipes is not health-friendly.	3.58
8.	Public urination rampant in the school environment is not ideal.	3.20
9.	A littered classroom with different waste leads to unhealthy living.	2.85
10.	Stagnant water, worn-out posters and wallpapers are detrimental to a healthy environment.	2.90
<b>Total Mean Score</b>		<b>3.13</b>

**Decision Rule:** Mean > 2.50 = Accepted; Mean < 2.50 = Rejected

Table 1 revealed respondents' responses on the level of knowledge of LVT Ahmadu Bello University students on solid waste management. The result shows that respondents agreed to the fact that LVT students, being adults, have adequate knowledge of solid waste management. This was supported by the total score of 3.13, which is greater than the decision rule mean score of 2.50. Hence, it could be concluded that the majority of Long Vacation Training students of Ahmadu Bello University, Zaria have good knowledge of solid waste management.

**Table 2: Attitude of LVT students of ABU, Zaria towards solid waste management.**

S/N	Items:	$\bar{x}$
1.	I hardly stop people from open waste burning practices	3.05
2.	I often dump refuse anywhere other dump.	2.78
3.	I hardly participate in grass cutting and hedge removal in my school environment.	3.12
4.	I don't usually use a waste bin while in the classroom or school premises.	2.85
5.	I care less when my school garden or field is filled with grasses and other solid waste.	2.73
6.	I barely correct people from open defecation in my environment.	3.23
7.	I had never helped to cover up free-flowing water from a water pipe on the road.	3.08
8.	I care less about people urinating in public indiscriminately.	3.03
9.	I do sit to receive lectures in a littered classroom without much concern for the health implications.	3.13
10.	I have never engaged in paving the way for stagnant dirty water or assisted in removing filthy posters and rotten wallpapers	3.08
<b>Total Mean Score</b>		<b>3.08</b>

**Decision Rule:** Mean > 2.50 = Accepted; Mean < 2.50 = Rejected

Table 2 indicates the respondents' responses on the attitudes of LVT Ahmadu Bello University, Zaria students, on solid waste management. The outcome of the result shows that a greater number of Ahmadu Bello University LVT students have a negative attitude towards solving the problems of solid waste management in the school environment. The majority of the respondents agreed to the fact that they hardly participate in correcting environmental wrongs perpetrated by others in their presence. More so, they also admitted to having nonchalant attitude concerning the environment and the motivation for actively participating in environmental improvement and protection. This result was supported by the total mean score of 3.08, which is greater than the average mean score of 2.50, as decision rule.

## Discussion

The findings of this study showed that LVT students of Ahmadu Bello University, Zaria, have good knowledge of solid waste management. This finding is in agreement with the study of Desa et al (2011), which showed that

the respondents' behaviour and practice they engage in waste management is because they value cleanliness and they want to mitigate the possible disease occurrences. However, there is a necessity to develop students' attitudes and willingness to reduce problems related to solid waste management. This finding is contrary to the finding of Dung et al (2014), who found that college of education students in the North Central Zone of Nigeria had a low level of knowledge of solid waste management but had positive attitudes toward solid waste management.

### Conclusion

Long Vacation Training students of Ahmadu Bello University, Zaria are primary and secondary school' teachers in training. Meanwhile, the importance of teachers' knowledge base in teaching cannot be underestimated. When emphasising the importance of teachers in the effective implementation of Environmental education in Nigerian schools, this study concludes that it is more than imperative for teachers to be committed to teaching environmental education in their various schools. Apart from commitment, they also need a good knowledge base in environmental education, which includes solid waste management. Knowledge is all about gaining a variety of experiences and acquiring a basic understanding of solid waste management and its associated problems. This justifies the position of Schratz (2016) that knowledge is familiarity with someone or something, which can include facts, information, descriptions or skills acquired through experience, or education.

### Recommendations

Based on the findings of this study, the following recommendations were proffered:

1. During the matriculation ceremony and orientation for new students, awareness should be created towards the good, sustainable attitude towards waste disposal and management practices among students and other members of the University community
2. Long Vacation Training students should be encouraged to imbibe the culture of speaking out against their colleagues and other community members when they are found littering the environment with solid waste irresponsibly.
3. Open defecation and urination should be outlawed by the University authority to promote good hygiene and sustainable waste management practices.
4. LVT students should also be enlightened and mandated to properly dispose of used materials, rubbish and other wastes in the dustbin provided responsibly.

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