
Impact of Environmental Education on Solid Waste Collection, Disposal and Management in Gwagwalada Area Council

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ABSTRACT

Waste generation is an outcome of human activities (anthropogenic) as its inevitable task in the environment; waste need to be properly managed in order to achieved the optimal goal of sustainable environment. Waste management is one of the major challenges of every developed and developing city. The adverse impact of waste on the human health and the environment cannot be overemphasized. Thus, the study examined the impact of environmental education on waste collection, disposal and management in Gwagwalada Area Council. Four research questions were structured to guide the study. In collecting the data, the researcher employed questionnaire as its instrument. The sample of the study constituted of two hundred residents from four various wards. Simple percentage was used to analyze the data collected from respondents. Major findings revealed that there is high level of influence of environmental education on the attitudes of the inhabitants; there is moderate level of understanding on collection, disposal and management. Therefore, it was recommended that the government should put more effort in sensitizing, funding, enforcing laws and monitoring the collection, disposal & managements of solid waste.

INTRODUCTION

Population growth, increasing urbanization and industrialization and rising standard of living have all contributed to an increase in both the amount and variety of wastes generated in most countries. The management of waste is one of the major problems encountered in many countries especially developing ones like Nigeria (Abuja Citiserve, 2004). Wastes are inevitable consequences of human activities. Waste can be solid or semi solid, liquid, gaseous or radioactive(e-waste).They are produced everywhere and at any time in homes, schools, market, commercial centre and industries and can result to disastrous consequence of serious health and environmental damage if left unchecked. Any matter, whether liquid, solid, gaseous or radioactive, which is discharged, emitted, or deposited into the

environment-t in such volume constituency or manner as to cause an alteration of environment useless, unwanted or discarded materials and is not free from flowing product are solid waste (WHO, 1971).Majority of household and veterinary practice waste is considered “solid wastes” regardless of whether the waste actually solid in physical form. (AVMA, 2014).

The U.S Environmental Protection Agency (2005), defines solid waste as “any garbage or refuse, sludge from a waste water treatment plant water supply treatment plant or air pollution control facility and other discarded material, including solid, liquid, semisolid or contained gaseous material resulting from industrial, commercial, mining, agriculture operations and from community activities”.

Waste management is generally seen as the collection, transfer, storage, separation, recovery, recycling and final disposal of waste materials usually produced by human activities in an effort to reduce their effect on health or local aesthetic and environmental damages. Obeka (2001) defines waste management as the collection, transport, processing, recycling, or disposal and monitoring of waste materials for sustainable development. He went further to say that the waste management usually relates to materials produced by human activity and the process generally undertaken to reduce their effect on health the environment and aesthetics.

The management of solid wastes has become increasingly a difficult task locally and globally with increase in population and high consumption patterns among urban dwellers in Nigeria. In most urban cities, solid wastes are thrown away indiscriminately in any available space without care of the negative impacts it has on the environment. This poses serious threat to human health and the environment. Improper management of solid wastes defaces the environment, spreads disease, and contaminates surface and underground water, air and land quality. This is in support of Glenn (2009:3) who observed that improper solid waste disposal of household solid wastes is a source of air, land and water pollution and creates hazards to humans and the environment. It is a major environmental concern to many nations especially the developing countries. The social status of people determines the solid waste generated in the area from time to time. For instance, the residences in quarters which are dominated by upper class/elites and middle class resident are quite different from cluster areas, because of the

differences in terms of income, education, type of food, and storage of food. The settlement of the area also determines effective waste management. A well planned town or estate must have planned proper waste management of the area which helps in efficient and effective sanitation.

STATEMENT OF THE PROBLEM

Gwagwalada Area Council is one of the populated Area councils in FCT Abuja and the town (Gwagwalada) is among the satellite towns. The indiscriminate dumping of waste and nonchalant attitude often exhibited by people by residents prompted this research or study. Despite the fact that people are aware of the dangers of indiscriminate dumping of waste, they still go ahead to dump wastes anywhere, they chose to do so without any conscious effort to removing them. Thus, endangering the health of public and polluting the environment as well.

Purpose of the Study

The general purpose of this study is to assess the impact of environmental education on solid waste collection, disposal, and management in Gwagwalada Area Council of Abuja. It specifically sought to:

- Determine how environmental education influences people attitudes towards solid waste collection, disposal and management.
- Identify the various methods of solid waste collection, disposal and management.
- Ascertain the attitude of the inhabitants within the study area toward the collection & disposed wastes.
- Determine the problems of waste collection, disposal & management.

Research Questions

The following research questions were formulated to guide the study.

- How does environmental education influence the attitude of people towards wastes collection, disposal & management?
- What are the methods of wastes collection, disposal & management?
- What are the attitudes of the inhabitants within the study area towards wastes collection, disposal & management?
- What are the problems of wastes collection, disposal & management?

Scope of the Study

The study centered on the impact of environmental education on solid waste collection, disposal and management, the study is limited to Gwagwalada Area Council both males and females were used for the study.

Significance of the Study

The Impact of environmental education on wastes management is one of the important areas of research that has not been adequately explored in Nigeria. For this purpose the study would serves as:

- This study provides a reference data on the impact of environmental education on solid waste management in Gwagwalada Area council. It will add to already existing literature on the subject matter and also serve as resource for future research.
- The result of the study would have implication to teachers, lecturers, policy makers, students' curriculum designers and other researchers as they are responsible for translating curricular in other to transform learners on holistic view to change their attitude, value, ethics, aspiration and character towards environmental issues and other aspects of life. Therefore, the study will awaken the consciousness of teachers and lecturers to deliberately pay attention to environmental content of the curricula.
- The result will spur the public to develop more interest in environmental issues.
- The result will provide the current status of waste management and also reflect the mind of curriculum developers the need of inculcating environmental education at graduate level as a compulsory course in other to minimize the adverse impact of human activities that temper with the environment as well as a tool for achieving sustainable development.

REVIEW OF RELATED LITERATURE

The management of solid wastes has become increasingly a difficult task locally and globally with increase in population and high consumption patterns among urban dwellers in Nigeria. In most urban cities, solid wastes are thrown away indiscriminately in any available space without care of the negative impacts it has on the environment. This poses serious threat to human health and the environment. Improper management of solid wastes defaces the environment, spreads disease, and contaminates surface and underground water, air and land quality. This is in support of Glenn (2009:3)

who observed that improper solid waste disposal of household solid wastes is a source of air, land and water pollution and creates hazards to humans and the environment. It is a major environmental concern to many nations especially the developing countries.

The rapid population increase due to urbanization in Abuja and other major cities in Nigeria has caused difficulties for the state and local environmental protection in providing an effective and efficient municipal Solid Waste Management System (Olanrewaju and Ilemobade, 2009; Zamorano et al., 2009). Urbanization affects land use and when not controlled causes the emergence of illegal structure and neighborhoods which is characteristic of some areas within and outside the metropolis.

This has ultimately affected the city plan, thereby affecting services such as; waste collection, eventually leading to illegal dumping. These illegal dumps with time have become mountain like open dumps in the middle of residential areas, with odors and rodent. These open dumps causes health risks and reduces the aesthetic value of the surrounding environments, deterioration of the urban environment, as well as contaminate natural resource (Ogu, 2000). The rapid growing waste generation rates and high cost of waste disposal, depletion of landfill space and the problem of obtaining new disposal sites resulting in open dumping are unresolved issues.

The indiscriminate dumping of wastes especially at odd times, the violation of the rules and regulations guiding the dumping of solid wastes exists in Gwagwalada metropolis (one of the satellite town in FCT Nigeria). This was revealed by Ayotamuno & Gabo (2004:389) as they observe that "indiscriminate dumping of wastes from industrial, commercial and households such as food wastes, paper, polythene, textiles, scrap metals, glass, wood, and plastic at street corners and gutters is very common in FCT metropolis ." Another observation made by the researcher is that the residents of the city do not separate their wastes into different categories of wastes before disposal. These wastes are usually mixed together and dumped indiscriminately in the environment and as a result, poses a lot of problems for effective management of wastes.

Concept of Environmental Education

Environmental education is a process that aims at the development of environmentally literate citizens who can compete in global economy, who have the skills and knowledge and inclinations to make well informed choices concerning the environment, and who exercise the rights and responsibilities of the members of a community. Environmental knowledge contributes to an understanding and appreciation of the society, technology and productivity and conservation of natural and cultural resources of their own environment. (M.C. Millan, 2003). According to Stevenson (2007), environmental education is "a learning process that increases people's knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments make informed decisions and take responsible action". Based on the definition, it could be noticed that the creation of awareness and the improvement of the requisite skills needed for the improvement of the environment and taken action against the challenges it suffers occupies the main theme of concern.

According to Jia-nan, (2012), "environmental education refers to organized efforts to teach about how natural environments function and, particularly, how human beings can manage their behavior and ecosystems to live sustainably".

According to the Tbilisi Conference, final report in 1979, environmental education is best explained as "the process whereby individuals and communities come to understand the complex nature of the natural and the built environments resulting from the interaction of their biological, physical, social, economic and cultural aspects, and acquire the knowledge, values, attitudes, and practical skills to participate in a responsible and effective way in anticipating and solving environmental problems, and the management of the quality of the environment". This definition is considered by Mbalisi (2010:45) as comprehensive among other definitions of environmental education he has come in contact with. According to him, environmental education enhances critical thinking, problem solving and effective decision-making skills and enables individuals to weigh various sides of an environmental issue before making informed and responsible decisions. Environmental education enables individuals to acquire some experiences about the physical environment as well as study the natural resources that abound in it for optimal use and consequently get committed

to environmental protection and conservation of natural resources for the present and future generations.

Concepts of Waste Collection, Disposal & Management

Waste collection is the collection of solid waste from point of production (residential, industrial commercial, institutional) to the point of treatment or disposal. Waste collection is a critical component to waste management. Refuse collection involves the use of different transport equipment and machinery to remove refuse by the aid of the collecting crew either from the individual premises or from approved refuse depots. Waste from our homes is generally collected by our local authorities through regular waste collection, or by special collections for recycling. Within hot climates such as our country Nigeria waste should be collected at least twice a week to control fly breeding, and the harboring of other pests in the community. Other factors to consider when deciding on frequency of collection are the odors caused by decomposition and the accumulated quantities.

The economic and environmental performance of the entire system can be impacted by the way that materials are collected and sorted. In many instances, the collection point will be an interface where waste generators and waste collectors that must be carefully managed if the system is to be effective. Waste generators require waste collection with minimal inconvenience, while collectors must be able to collect waste in a way that is compatible with the planned treatment and processing methods if the waste management system is to be sustainable (McDougall et al., 2001).

Waste management Obeka (2001) defines it as the collection, transport, processing, recycling, or disposal and monitoring of waste materials for sustainable development. He went further to say that the term usually relate to materials produced by human activity and the process generally undertaken to reduce their effect on health the environment and aesthetic. Waste management is generally seen as the collection, transfer, storage, separation, recovery, recycling and final disposal of waste materials usually produced by human activities in an effort to reduce their effect on health or local aesthetic and environmental damage.

The primary objectives of effective solid waste management as highlighted by Oreoyomi (1998:2) are;

- The elimination of health hazards in the community by removing all the physical, biological and chemical agents like bottles, vectors or

diseases and toxic substances that are harmful to man in his environment.

- To protect the natural environment being polluted or damaged. This is achieved by discouragement of wastes being dumped indiscriminately on either land or river.
- To provide gainful employment for many young men who would have been jobless.
- Enhancement of regular supply of raw materials to industries through salvaging and recycling of materials of economic value from wastes.

It is in this regard that this research seeks to discuss the importance of environmental education and awareness creation on solid wastes management; the strategies that could be utilized in educating and creating awareness in solid waste management and the benefits of education and awareness creation on solid wastes management in Gwagwalada Area Council . In developing countries, the informal collection of recyclable goods from households and at other locations plays an important role in the overall waste management system. Informal collection involve individuals organized or not into structured groups who target valuable goods for reuse or retailing purposes. (Mbalisi, 2010). Waste generation in Gwagwalada is quite high due to the economic status and population density in the area. Households generate high quantities of mostly organic waste from food waste and yard waste. High quantities of plastic waste is generated from food containers; beverages and packaging. Increase in wastes generation period is during raining season due to increase in agriculture waste production (Bamisaiye, 2013). In Gwagwalada area, wastes composition is heterogeneous and mixed; non-degradable materials and degradable components. The waste is not segregated at the source and comprises of hazardous and non-hazardous waste. The hazardous components usually consist of house hold cleaning agent and left over chemical from renovations. In Gwagwalada waste bulk mainly consist of plastics, paper, glass, metal and other recyclable components. The degradable portions of the waste consist of food waste and yard waste.

Abuja Environmental Protection Board has provides containers for quarters residents which vary in type and size and some buy the wastes bags for storage while in the nucleated areas there is no any provision. There are three private companies contracted for waste collection with various in

number of weekly collection at different areas of Gwagwalada, two companies are in charge of collecting high way, Giri, Market and central ward wastes and the other is in charge of quarter's wastes. Collection in quarters ward is periodically consistent while in other is not. Influencing factors such as insufficient collection vehicles, insufficient number of staff, unplanned neighborhoods and high cost- field survey and interview with residents

Also in my survey to various places I came across an estate where the residents dug a pit for their wastes collection and burning. The residents did not separate their wastes from the as in Nigerian system of waste management does not apply it for easy waste recycling and treatment. House to house waste collection is carried out with home owners being responsible of placing their waste bins in front of their houses, while in some parts curbsides collection carried out and most common. Gwagwalada market wastes are dumped in the middle of the market this place has turn to dumpsite because the waste quantites dumped inside the market is more than the wastes dumped in Dukwa and Gwako dumpsites. This revealed that environmental, social and health impact assessment was not implemented before construction and monitoring programs to checkmate the level of compliance in the market. Furthermore abattoir waste are collected managed, wastes from animals is easy and cheap to recycle because its organic wastes. The animal faeces are collected, dried and transport to farm lands as organic manure and bones, horns and hooves are processed and used as food nutrients for poultry food production.

In general the most appropriate waste collection method is the one which best serves the need of a community and take into account factors of efficiency, health and environmental requirements, physical demand and zoning parameters. The methods previously mentioned carry both advantages and disadvantages. Weingarten indicates for instance, that the simple emptying method which requires special vehicles, standardized waste containers and road access can be viewed as a drawback in developing communities, whereas curbside and informal collection, which have been both proven to alleviate poverty, despite their high physical demand on personnel (2003).

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Wastes collectors packaging waste in phase 3



House to house waste collection in quarters phase 3



Wastes dumped in quarters zone 4



Heap of wastes dumped inside Gwagwalada market





A pit dug by estate members for burning refuse



Wastes dumped along Gwagwalada market



Wastes dumped behind FRCN office Gwagwalada



Animal wastes collected in Gwagwalada abattoir for organic manure



Animal hooves and horns for processing poultry
Gwagwalada



Wastes dumped inside culvert in Unguwar Gade
food in gwagwalada abattoir.

Impact of Environmental Education on Solid Waste Collection, Disposal and Management in Gwagwalada Area Council



E-wastes sorted by scavengers for recycling in Unguwar Azara Dumpsite in Gwako near farmlands



Dumpsite along Dobi road

Importance of Environmental Education to Wastes Collection, Disposal & Management

Environmental education and awareness creation on solid waste management is a key to solving the problems associated with waste management and it enhances better practices of managing wastes. Some of the importance that accrues from education and awareness creation on solid wastes management by Mbalisi,(2009) are:

- Development of knowledge about solid wastes and its associated problems when managed improperly.
- Inculcation of positive attitudes, skills, values and concerns towards the environment in all the citizens and authorities responsible for managing wastes.
- It predisposes the citizens and the Agencies to participate actively in segregation, reduction, reuse, composting and recycling of solid

wastes, Development of appropriate skills needed for segregation of solid wastes at source as this is key to proper waste management.

- It decreases the rate of improper management of wastes and consequently the spread of diseases in the environment.
- It enhances the protection and conservation of public health, the environment and natural resources.
- It enhances policy implementation by decision makers on waste management.
- Consistency in education and awareness creation on solid waste management are factors that can only improve better management of solid wastes in Nigeria, Use of city waste collection services by the public and private sectors, Funding for waste management from local elected officials, Adoption and enforcement of local waste management policies by local elected officials, Support for local-level activities from national governments and Public participation in organic diversion and recycling programs. Each of these outcomes can contribute to a city's efforts to reduce the impacts of waste management on health, the economy, the environment, and society.

METHODOLOGY

Research Design

The researcher adopted a descriptive survey research design for the study, which gives the researcher the opportunity to collect data from selected representatives of sample of the population.

Population of the Study

The population of study comprised of 300 residents from 10 villages, 30 persons per village, the names the ten villages are: Gwagwalada Central ward, Dobi ,Paiko, Quarters ward (phase 1,2,3&kontagora quarters), Gwako, Ibwa, Ikwa, Kutunku, Tungan Maje and Zuba

Sample Size and Sampling Techniques

The sample of the study constituted of 200 residents drawn from ten villages. A proportionate sampling technique was used to select the sample of the study.

Instrumentation

The instrument used in this study is the questionnaire. The questionnaire was drawn in two parts, (section A and B). Section A dealt with

demographic data while Section “B” constitutes structural and unstructured opinion questions to elicit information from the respondents with regards to the research questions .The mode of response adopted in research was Yes or No format.

Validity & Reliability of the Instrument

Validity refers to the extent in which an instrument measures what is to be measured. The items in the questionnaire were drawn in relation to the research questions formulated for this study. Before using the instrument, the items developed were given to the study supervisor for content validation. Corrections were made as suggested and the validated instrument was used for the study. Reliability is the consistency and accuracy of an instrument, the instrumented was proved to be consistent and reliable because its testing what it was meant to test given to professional researchers especially the supervisor in the research to make the testing instrument meaningful and useful.

Data Collection Method

The questionnaires were administered personally on the respondents. A total of 200 questionnaires were administered and all was collected by the researcher.

Method of Data Analysis

A simple random sampling technique was used to analyze the data collected from the respondents. The formula is stated thus:

$$\frac{f}{n} \times \frac{100}{1}$$

Where f = Frequency

n = Sum of cumulative frequency

% = Percentage

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

Analysis of Respondents Personal Data

Table 1: The Distribution of Respondents by Gender

S/N	Gender	Frequency	Percentage %
1	Male	111	55.5%
2	Female	89	44.5%
	TOTAL	200	100

Source: Field Survey, 2015

The table above shows that one hundred and eleven respondents were males representing 55.5% while eighty nine (89) respondents were females representing 44.5%. This shows that the highest were males.

Table 2: The Distribution of Respondents by Age Range

S/N	Age Range	Frequency	Percentage %
1	15-20	15	7.5%
2	21-25	114	57%
3	26-30	34	17%
4	31 & above	37	18%
	TOTAL	200	100

Source: Field Survey, 2015

From the table above, 15 of the respondents representing 7.5% fall under the age range of 15-20, 114 respondents representing 57% fall within the age range of 21-25, 34 respondents representing 17% fall within the age range of 26-30 and 37 respondents representing 18.% were 31 years & above.

Table 3: The Distribution of Respondents by Marital Status

S/N	Marital Status	Frequency	Percentage %
1	Single	116	58%
2	Married	84	42%
3	Divorced	0	0
4	Widowed	0	0
	Total	200	100

Source; Field Survey, 2015

The data in table 3 shows that 116 respondents representing 58% are single men and women, 84 respondents representing 42% are married and 0 respondent representing 0% are divorcees and widowers.

Table 4: The Distribution of Respondents by Educational Qualification

S/N	Educational Qualification	Respondents	Percentage %
1	Primary	16	8%
2	Secondary	46	23%
3	Ond/Nce	24	12%
4	Hnd/Degree	114	57%
	TOTAL	200	100

Source: Field Survey, 2015

The table above shows that 16 respondents; representing 8% were primary certificate holders, 46 respondents; representing 23% were SSCE holders, 24 respondents; representing 12% were OND/NCE holders, 114 respondents; representing 57% are degree/HND holders.

Table 5: The Distribution of Respondents by Job Description

S/N	Job Description	Frequency	Percentage%
1	Civil Servant	24	12%
2	Industrial Worker	7	3.5%
3	Business	20	10%
4	Farming	0	0%
5	Others	146	74.5%
	Total	200	100

Source: Field Survey, 2015

The table above shows that 24 respondents; representing 12% were civil servants, 7 respondents; representing 3.5% were industrial workers, 20 respondents; representing 10% engaged in business transactions, 0 respondents; representing 0% were farmers and 146 respondents; representing 74 % engaged in other activities. This implies there is high rate of unemployment.

Analysis of Research Questions

Research Question One: How Does Environmental Education Influence the Attitude of People Towards Waste Collection, Disposal, Management?

Table 6: Influence of Environmental Education on the Attitude of People Towards Waste Management

S/N	ITEMS	RESPONSES					
		YES	%	NO	%	TOTAL	TOTAL
1.	Environmental education makes people to dispose their wastes at makes the designated points.	184	92	16	8	200	100
2.	Environmental education inculcates positive attitude, skills, values and concern towards the environment.	190	95	10	5	200	100

3.	Environmental education predisposes citizens to participate actively in the segregation, reduce, reuse, recycling and composting.	164	82	36	18	200	100
4.	Environmental education helps to decrease the rate of improper waste management.	190	95	10	5	200	100
5.	Environmental education decreases the spread of diseases in the environment.	184	92	16	8	200	100
6.	Environmental education enhances policy implementation.	162	81	38	19	200	100

Source: Field Survey, 2015

Item 1 in table 6 indicate that 184(92%) respondents agreed that environmental education makes people to dispose their wastes at the designated points while 16 (8%) disagree. On item 2, 190 (95%) of the respondents agreed that environmental education inculcates positive attitudes, skills, values and concern towards the environment, while 10 (5%) respondents disagreed. On item 3, 164 (82%) agreed that environmental education predispose citizens to participate actively in the segregation, reduction, recycling and composting, while 36 (18%) respondents disagreed. On item 4, 190 (95%) assented that environmental education help to decrease the rate of improper waste management, while 10 (5%) respondents disagreed. On item 5, 184 (92%) respondents acceded that environmental education degrease the spread of diseases in the environment, while 16 (8%) disagreed. On item 6, 162 (81%) respondents conceded that environmental education enhance policy implementation while 38 (19%) disagreed.

Research Question Two: What Are the Methods of Wastes Collection, Disposal and Management?

Table 7: Methods of Waste Collection, Disposal & management

S/NO	ITEMS	RESPONSES					
		YES	%	NO	%	TOTAL	TOTAL
1.	Simple emptying	128	64	72	36	200	100
2.	Exchange method	100	50	100	50	200	100
3.	Curbside collection	128	64	72	36	200	100
4.	Special collection	118	59	82	41	200	100
5.	Land filling	124	62	76	38	200	100
6.	Incineration	126	63	74	37	200	100
7.	Pyrolysis	106	53	94	47	200	100
8.	3Rs technique (reduce, reuse & recycle)	142	71	58	29	200	100

Source; Field Survey, 2015

Item 1, indicates 128(64%) acquiesced on simple empty method as a technique of waste collection while 72(36%) disagreed. On item 2, 100 (50%) of the respondents conceded to exchange technique as method of waste collection while 100(50%) disagreed. Item 3, 128(64%) concurred with curbside collection of waste while 72 (36%) disagreed. item 4, 118(59%) agreed with special collection method while 82(41%) disagreed with the technique. Item 5 which identify the disposal process 124 (63%) agreed with the method while 76(38%) disagreed. Item 6, 126 (63%) acceded with incineration method as the technique of waste management while 74(37%) disagreed. Item 7, 106(53%) conceded with the pyrolysis as method of waste management while 94(47%) disagreed. Item 8, 142(64%) agreed with the 3Rs technique of management while 58 (29%) disagreed.

Research Question Three: What Are the Attitude of Inhabitants within the Area of Study towards Wastes Collection, Disposal & Management?

Table 8: Attitude of Inhabitant toward Waste Collection, Disposal and Management

S/NO	ITEMS	RESPONSES					
		YES	%	NO	%	TOTAL	TOTAL
1.	I package all my house hold wastes in bag / container.	152	76	48	24	200	100
2.	I dispose my wastes at designated points.	140	70	60	30	200	100
3.	I burn my waste in an incinerator.	102	51	98	49	200	100
4.	I throw my wastes into rivers, culverts, uncompleted buildings.	108	54	92	46	200	100
5.	My house hold participates in waste disposal.	130	65	70	35	200	100
6.	Someone is currently paying for your waste disposal system via containers public/private.	104	52	96	48	200	100
7.	My house hold sort garbage e. g scrap metals, plastics, papers, organic, e. t. c.	102	51	98	49	200	100
8.	I will continue to sort my garbage in future or I intend to start sorting	132	66	68	34	200	100

Source; Field Survey, 2015

Item 1, indicates that 152 (76%) of respondents package their waste in bag/container while 48 (48%) don't do so. Item 2, 140 respondents dispose their waste at designated points while 60 (30%) dispose waste illegally. Item 3, 102(51%) burn their waste in an incinerator while 98(49%) engage in other methods of disposals. Item 4, 108 (54) respondents throw their waste into rivers, culverts & uncompleted buildings while 92 (46%) dispose their waste judiciously. Item 5, 130(65%) household participates in waste disposal while 70 (35%) did not participate in the process. Item 6, 104(52%) of household waste disposal is sponsored by some individuals/institutions/organizations while 96 (48%) pay for their waste disposals. Item 7, 102 (51%) of household

sort their wastes while 98(49%) of the respondents did not sort their wastes. Item 8,132 (66%) intended to continue/start sorting their wastes while 68(34%) are not willing to engage in sorting their wastes.

Research Question Four: What Are the Problems of Wastes Collection, Disposal & Management?

Table 9: Problems of Wastes Collection, Disposal & Management

S/NO	ITEMS	RESPONSES					
		YES	%	NO	%	TOTAL	TOTAL
1.	Poor funding by government.	158	79	42	21	200	100
2.	High population growth.	154	77	46	23	200	100
3.	Lack of trained mangers.	162	81	38	19	200	100
4.	Lack of effective monitoring.	162	81	38	19	200	100
5.	Embedded cultural practices.	138	69	62	31	200	100
6.	Shortage of vehicles, containers, & personnel.	152	76	48	24	200	100

Source; Field Survey, 2015

Item 1, 158 (79%) agree that poor funding by government pose problem to waste management whereas 42(21%) disagree. Item 2, 154 (77%) stipulate that high population as a problem of waste management while 46(23%) disagree. Item 3, 162(81%) accede that lack of trained managers as the problem to waste management while 38 (19%) disagree. Item 4, 162 (81%) agree that lack of effective monitoring as a problem to waste management while 38 (19%) say no .Item 5, 138(69%) agree that embedded cultural practice as problem to waste management while 62 (31%) disagree. Item 6, 152 (76%) agree on the shortage of vehicles, containers & personnel while 48 (24%) disagreed.

Discussion of Findings

Items in table 6, were structured to determine the influence of environmental education on the attitude of people towards wastes, findings revealed that there is high influence of environmental education on peoples attitude. This is in line with the opinions of Stevenson (2007), Jia-nan (2012), Stapp *et al.*, (1997), Anijah obi (2001) who all concurs on the immense potential impacts of environmental education in the inculcations of positive attitudes on wastes management and other environmental related problems.

Items in table 7, were designed to identify methods of waste collection, disposal & management. Findings discovered there is high level of awareness on waste management methods in which respondents identify simple empty collection method of waste collection which is in line with concept of Mbalisi (2010), in which he mentioned the major methods of wastes collection i.e simple empty method, exchange method, curbside collection and special collection.

Items in table 8, residents have high positive attitudes towards waste management and are willing to improve toward attaining healthy and sustainable environment, which is also in line with assertions of Mbalisi (2009), in enumerating the immense potential influence of environmental education in molding/modification of people's attitudes with regards to the their Immediate environment.

Items in table 9, respondents identify lack of monitoring, lack of trained mangers, population increase, shortage of vehicles and poor funding as the major challenge to waste management which is in line with Aliyu's report (2004), who noted the rapid increase of population by both the satellite towns and shantytowns in the FCT as its overstretched the carrying capacity of the allocation of funds, personnel and equipment for managing wastes.

SUMMARY, CONCLUSION AND RECOMMENDATION

Summary of Findings

This study investigated the impact of environmental education on solid waste collection, disposal and management in Gwagwalada Area Council. Data were collected from the respondents and analyzed using simple percentage. Finding of the study showed

- High level of the influence of environmental education on the attitudes if people towards waste collection, disposal & management
- Low level of compliance on waste management especially in public established institutions
- Willingness of changing nonchalant attitude to positive on waste collection disposals and management
- Lack of sensitization programs on waste management and other environmental related problems
- Lack of documented data on waste management activities
- Inadequate funding by government, lack of effective monitoring and overpopulation are the major problems in the area.

CONCLUSION

Environmental education is the only tool for combating negative attitude of people towards wastes management as it's a collective responsibility, since it adhere to inculcate environmental consciousness, values, skills and ethics government should recommend it at various level of education in other to have a holistic orientations for our future leaders, politicians, planners, economists, scientists, technologists, industrialists, agriculturalists and decision makers in our country, with this adequate funding, effective monitoring, and compliance of environmental policies can be achieved.

RECOMMENDATION

Base on the finding of the study, the following recommendation were made:

- Effective implementation of Integral solid waste management system to ensure that management of solid waste is always controlled and environmentally safe, flexible and economically viable under conditions.
- The people should put more effort in abiding the environmental policy
- Government should make environmental laws known to every citizen and enforce any law violations and publicized to the media in order to serve as deterrent to others.
- Public places such as markets, schools, fuel stations, hospitals and other institutions should compel to comply in the implementations of environmental, health and social impact assessments.
- Publicity of waste management practices through distributing of leaflets, posters and mass media support. All the parties' (i.e. government, households, service holders, students, day labor, businessperson, etc.) spontaneous participation and involvement should be ensured to manage and dispose solid wastes properly in order to maintain clean and healthy environment.
- Fund should be made available by government to the various managers.
- Provision of alternative systems for the processing, re-use and recycling of solid wastes in order to promote resource conservation, enhance carbon fool print initiative and to minimize the disposal of solid waste fill.

- Introduction of environmental education at various levels of education in order to inculcate positive attitude from the roots and environmental awareness among residents, business and institutions.
- Treatment of hazardous and medical wastes should be put into practice.
- Adequate rehabilitation of sanitary land should be put into order.
- Development and moderation of collection points to eliminate illegal dumping of solid wastes.
- Seminars and workshops should be organized for waste management personnel, waste generators in order to meet the global standard of waste management.

Suggestion for Further Research

The research suggests that further research on similar topic should intensively cover all the aspects that are left uncovered in this study such as:

- Analysis of soil nutrients, surface and underground water in land filling related areas.
- Assessing health diseases related to waste mismanagement.
- Analysis of Gwagwalada municipal wastes.
- Comparison of electronic waste recycling in Abuja.
- Compliance of Environmental Impact Assessment at community based sub-projects.
- Impacts of waste management processes to global warming.
- Impacts of improper waste management on the environment.
- Impacts of improper waste management on human health.

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