

**Environmental Adult Education Delivery Strategies for Urban Dwellers on Solid Waste Management & Sustainable Development in Abia State****By****Ogadimma Felix Ononeze (Ph.D)****And****Joseph Aliwa (Ph.D)****And****Oyebamiji, M. A (Ph.D)****Abstract**

This study investigated environmental adult education delivery strategies for educating urban dwellers on solid waste management for sustainable development in Abia State. The study adopted the descriptive survey design. The population and sample of this study comprised 1956 health workers and residence in the study area (1862 members of 27 registered clubs, market associations, women groups and some town unions, and 94 health workers) in Abia state. The instrument used for collection of data for this research was a researcher made 40 items questionnaire titled Environmental Adult Education Delivery Strategies for Urban Dwellers on Solid Waste Management and Sustainable Development in Abia State. (EAEDSSWMSD). The researcher used mean to answer the research questions, and z-test analysis was used to test the hypotheses at 0.05 significant levels. Findings indicated that health workers and urban residents shared the same view on the education delivery strategies adopted for educating urban dwellers on solid waste management as well as the level to which they promote effective participation in activities for proper solid waste management among urban dwellers in the study area. Based on the findings, some recommendations were made which includes that the state environmental workers should always have a better time to relay their programmes on the electronic media such as television or radio so as to capture a wider audience to their information.

**Keywords:** Adult Education, Environmental Adult Education, Delivery Strategies, Sustainable Development

## Introduction

In Nigeria, government at various levels have made serious efforts to arrest the ugly situation of indiscriminate dumping of refuse in streets and gutters to the extent they embarked on environmental awareness campaign to educate the citizenry on the dangers of indiscriminate dumping of refuse. Efforts are made to map out dumping sites, collection bins were placed at various intervals within reach, incinerators were provided and defaulters were sanctioned. Refuse was cleared regularly by various environmental workers to avoid their spilling on the ground. Environmental issues, particularly those related to waste management and sustainable development, have become increasingly critical in urban centers across Nigeria. In Abia State, 400 and 850 metric tons of wastes are generated daily (Abia State Environmental Protection Agency, 2020). Also, the rate of waste generation is so high that in one night a refuse dump site that was cleared the previous day could be replaced with an equal volume the following morning, thus creating the erroneous impression that it was never cleared before. A shocking revelation about the sanitary condition of Abia state cities made by Friends of the Earth International (FEI) in 2014 ranked Aba and Umuahia amongst the first 20 dirtiest cities in the world (AIT, 2015). The rapid urbanization and population growth have intensified challenges surrounding solid waste management, posing significant threats to public health, environmental quality, and the sustainability of cities like Umuahia and Aba. To address these concerns effectively, there is a growing need for environmental adult educational approaches that target adult urban dwellers, who are both contributors to and victims of poor waste practices.

However, wastes are unwanted materials or left over. According Waste Framework Directive (2008), waste is any substance or object which the holder discards or intends or is require to discard. Muhammed and Manu sited in Ijah (2016) defined waste as something for which we have no further use and which we wish to get rid of. It is any material that is due for discarding. Waste therefore represents any item,

substance, article, or material derived from human or domestic bodily function ready to be thrown away. According to United Nations Environmental Programme (UNEP) in Pongracz (2002) defined waste as substance or object which are disposed as or intended to be disposed as or are required to be disposed of by the provision of National Law. Waste connotes residual material which are as a result of human activities which cannot be used or recovered as a resource, recycled into material production process or thermally/biologically utilized for energy production.

Waste is relative in two main aspects. First, something becomes waste when it loses its primary function for the user. A waste is therefore relative to this primary function. What we consider as waste may be useful for a secondary user. Someone's waste is often someone else's raw material. Simply put all wastes are not waste. Why a waste may lose its value for whom generated it, it may also have a value for its secondary user who will be the one to set the value, hence waste management.

Waste management is the precise name for the collection, transportation, disposal or recycling and monitoring of waste. The term is assigned to the material to show concern, the effort by the human activity for the safer health of human and the environment. Most of the time waste is managed to get resources from it. The waste to be managed includes all forms of matter i.e., gaseous, liquid, solid, and radioactive matter.

The methods for the management of waste may differ for developed and developing nations. For urban and rural populations, industrial and residential areas it does differ as well. The management of waste in metropolitan and rural areas is the general responsibility of the government, why the waste that is produced by industry is managed by the industry itself, in case it is non-hazardous. For effective management of wastes it requires some kind of training or education.

Environmental issues, particularly those related to waste management and sustainable development, have become increasingly critical in urban centers across Nigeria. In

Abia State, rapid urbanization and population growth have intensified challenges surrounding solid waste management, posing significant threats to public health, environmental quality, and the sustainability of cities like Umuahia and Aba. To address these concerns effectively, there is a growing need for strategic educational approaches that target adult urban dwellers, who are both contributors to and victims of poor waste practices.

Environmental education according to Clarke (2014) is a process directed at creating awareness and understanding about environmental issues that lead to responsible individual and group actions. Similarly, Onyebamiji (2012) sees environmental education as a process that allows individuals to explore environmental issues, engage in problem solving, and take action to improve the environment. As a result, individuals develop a deeper understanding of environmental issues and have the skills to make informed and responsible decisions. The components of environmental education as contained in UNESCO (2005) are:

- Awareness and sensitivity to the environment and environmental challenges.
- Knowledge and understanding of the environment and environmental challenges.
- Attitudes of concern for the environment and motivation to improve or maintain environmental quality.
- Skills to identify and help resolve environmental challenges.
- Participation in activities that lead to the resolution of environmental challenges.

From the foregoing, environmental education does not only advocate a particular viewpoint or course of action. Rather, it teaches individuals how to weigh various sides of environmental issues through critical thinking for problem-solving and decision-making skills and abilities.

Environmental adult education delivery strategies for effective waste management can be seen as an organized effort to teach about how natural environments function and particularly, how human beings can manage their behavior and ecosystems in order to live sustainably. However, it is sometimes used more broadly to include, approaches and all efforts to educate the public and other audiences, including print materials, websites media campaigns on ways to effectively manage the environment. Also, it could be achieved through the use of posters and flyers, radio and television jingles and dramas, traditional institutions among others. Igbuku & Ogunkoya (2012) suggested the use of cinemas, educational forums, household door to door campaign, street plays, street dances and animation like puppet shows and cartoons.

Unfortunately, many people in African countries including Nigeria, until recently, regard the concern for effective strategies for managing waste as a less important issue which may distract attention from the most urgent and serious problem of achieving a fast rate of economic growth. This attitude stems in part from the belief that environmental degradation with waste generation is an inevitable price of development (Nwabueze, 2012) Several studies that been conducted on environmental adult education and solid waste management, Seadon (2010) a survey of refuse disposal in Imo State highlighted the role of women in environmental sanitation. The study revealed that 98 percent of refuse generated in the cities came from women. Selin, (2013) opined that the biggest targets for the success of environment education and conservation of the environment are women. In another related study carried out by Uwadiogwu & Chukwu (2013) on strategies for effective urban solid waste management in Nigeria. The study aimed to proffer urban solid waste management strategies which will effectively address the problems emanating from solid waste management. Principal Components Analysis (PCA) version of Factor Analysis was used to analyze the responses of respondents. The PCA was used to reduce the 27 considered management options into 7 composite strategies which

should be adopted for effective urban solid waste management. They are citizen mobilization and environmental education, strengthening of public workers, responsible government, logistics and infrastructural improvement, legislation, appropriate technologies, monitoring and surveillance. It is recommended that all segments of the society must team up with public agency to find a panacea to urban solid waste management.

To ensure a clean and safe environment, Abia State Government established Abia State Environmental Protection Agency (ASEPA) to monitor the environmental quality and to ensure a refuse-free environment. Part of their responsibility was to educate the populace on how to properly dispose their waste and keep their environment clean. In order to carry out this responsibility, the agency adopts different environmental education strategies (which includes the use of electronic media, door to door campaign, educational forum, natural groups, and so on ) to create clean and safe environment awareness among the populace and to educate them on how to properly dispose solid waste. But despite all the provisions made by government, change of attitude towards waste disposal among the populace is far-fetched, it is based on this background that this study is being carried out to investigate environmental adult education delivery strategies for educating urban dwellers on solid waste management for sustainable development in Abia State.

The aim of this study is to examine the environmental adult education delivery strategies for urban dwellers on solid waste management and sustainable development in Abia State. Specifically, the objectives of the study are to;

1. Identify different educational delivery strategies adopted by Abia State environmental workers for educating urban dwellers on solid waste management.
2. Access the level of effectiveness of the educational delivery strategies used by environmental workers for solid waste management in Abia State.

## Research Questions

The following research questions guided the study:

1. What are the different environmental adult education delivery strategies adopted by Abia State Environmental Workers for educating urban dwellers on solid waste management in Abia State?
2. To what extent has the delivery of environmental adult education effectively created awareness on proper solid waste management among urban dwellers in Abia State?

## Hypothesis

The following hypothesis was tested at 0.05 level of significance:

**H<sub>01</sub>:** There is no significant difference in the mean ratings of the opinions of health workers and the urban residents on the educational delivery strategies adopted for educating urban dwellers on solid waste management in Abia State.

## Method

This study adopted the descriptive survey design. According to Nzeneri (2010), in descriptive survey, data are usually collected, organized and analyzed and described as they exist in their natural setting without interfering with them. The population of this study comprised 1956 health workers and residence in the study area (1862 members of 27 registered clubs, market associations, women groups and some town unions, and 94 health workers) in Aba South, Aba North, Umuahia South, and Umuahia North local government areas of Abia state. The entire population was used. This was due to the manageable number of the population and this was at the researchers' discretion. The instrument used for collection of data for this research was a researcher made 40 items questionnaire titled "Environmental Adult Education

Delivery Strategies for Urban Dwellers on Solid Waste Management and Sustainable Development in Abia State” (EAEDSSWMSD). The questionnaire is divided into two sections, A and B, Section A will elicit responses on demographic data of respondents while section B contained research questions and corresponding items on each research question. In other to determine the reliability of the instrument, the researcher adopted the test-re-test method and Pearson Product Moment Correlation Coefficient Statistic. For the test re-test, the researcher administered the instrument to 20 respondents within the scope of population of the study 10 each from Aba and Umuahia but not within the sample selected for the study. The same instrument was re-administered to same respondents after two weeks interval and the data obtained from the two-test data was collated and analyzed with Pearson Moment Correlation Coefficient. The reliability index obtained was 0.81, the instrument was considered reliable. The researcher used mean to answer the research questions, and z-test analysis was used to test the hypotheses at 0.05 significant levels.

**Research Question One:** What are environmental adult education delivery strategies adopted for educating urban dwellers on solid waste management in Abia state?

**Table 1 Mean responses of educational delivery strategies used by environmental workers**

S/N	Item	SA	A	D	SD	Total	Mean	Decision
1	Use of print media	1010	758	-	186	6500	3.33	Agree
2	Use of electronic media	1015	939	-	-	6877	3.52	Agree
3	Use of door-to-door visits	1327	432	195	-	6994	3.58	Agree
4	Use of educational forum	573	995	386	-	6049	3.10	Agree
5	Use of drama	189	382	1354	29	4639	2.37	Disagree
6	Use of natural group	950	799	200	5	6602	3.38	Agree
<b>Grand Mean</b>							<b>3.21</b>	<b>Agree</b>

Table 1 shows that the grand mean score of the delivery strategies used by environmental workers (3.21) is greater than the expected or criterion item (2.50). This confirms that the education delivery strategies are adopted by the respondents, though the results show that the use of drama whose mean rating is 2.37, lower than others is an ineffective strategy while the usage of door-to-door visit is rated highest.

**Research Question Two:** To what level has the delivery of environmental adult education effectively created awareness on proper solid waste management among urban dwellers in Abia State?

**Table 2: Mean responses on the level to which environmental adult education create awareness on solid waste management among urban dwellers.**

S/N	Item	VHL	HL	LL	VLL	Total	Mean	Decision
7	Use of print media	1198	570	186	-	6874	3.52	High level
8	Use of electronic media	1186	768	-	-	7048	3.61	High level
9	Use of door-to-door visits	942	816	10	186	6422	3.29	High level
10	Use of educational for a	533	1317	60	-	6203	3.17	High level
11	Use of drama	-	573	1362	19	4462	2.28	Low level
12	Use of newspaper	744	1174	6	-	6510	3.39	High level
13	Use of handbills	794	985	205	-	6541	3.35	High level
14	Use of radio jingles	1533	421	-	-	7395	3.78	High level
	<b>Grand Mean</b>						<b>3.30</b>	<b>High level</b>

Table 2 shows that the grand mean of the responses (3.30) is greater than the criterion mean (2.50). The grand mean of 3.30 confirms that to a high level that the identified strategies create awareness among the urban dwellers in the area of study. However, drama to a low level creates awareness.

### Test of Hypothesis

**Hypothesis 1:** There is no significant difference in the mean ratings of health workers and Abia urban residents on the education delivery strategies adopted for educating urban dwellers on solid waste management.

**Table 3: Summary of z-test analysis on creation of awareness among urban-dwellers in Abia state**

Variables	N	Mean	SD	$Z_{cal}$	$\alpha$	$Z_{tab}$	Decision
Health workers	94	3.21	0.78	0.1001	0.05	1.96	$H_0$ Accepted
Urban Residents	931	3.22	0.81				

From the results of the z-test analysis as shown in Table 3, the statement of hypothesis 1 is accepted; implying that there is no significant difference in the mean ratings of health workers and Abia urban residents on the education delivery strategies adopted for educating urban dwellers on solid waste management. This is because the calculated z-value is less than the critical z-value at 0.05 level of significance.

### Discussion of findings

Research question one shows that the grand mean rating of (3.21) environmental adult education delivery strategies adopted in Abia state for solid waste management is greater than the expected mean of 2.50. This is an indication

that the strategies generally are effective. Again, the mean rating of all the strategies is greater than 3.0 except in the use of dramas which has a mean rating 2.37, an indication of an ineffective strategy. The finding shows that door to door was ranked highest, follow by electronic media, prints etc. The findings does not support the opinions of Ezima (2014) who rated print media as the most widely used strategy to disseminate information for solid waste management. The electronic is rated high because of appraises current events through broadcasts, documentaries, commentaries etc which evoke interest in the people. On the other hand, dramas were rated lowest against the idea of some researchers as Nzenri (2010) and Jensen (2014) who opined that the strategy is good because they expose social problems in stimulating ways.

Research question two examined the extent of awareness created by the strategies/strategies in the urban dwellers in Abia state. The result of table 2 shows that to a high extent, the strategies create a great awareness in the people of waste management with a mean rating 3.30. This finding was supported by the test of hypothesis 1 (table 4.2.1) in which the null hypothesis was accepted that there is no significant difference in the mean ratings of health workers and residence on the education delivery strategies adopted for educating urban dwellers on solid waste management in Abia State. The findings supported Michael-Agwuoke and Ekpete (2013) who said environmental education is a process directed at creating awareness and understanding about environmental issues. Beatty (2012) truly sees environmental education as a process in problem solving and improvement of the environment. The results also collaborate with Oyebaniyi (2013) who opined that through the print media may audience could be reached. The educational strategies create enough awareness among the public. This according to Anyatonwu (2014) approves the public of current events and thereby creates awareness in the audience. In making the education more effective, the door-to-door strategies are used to meet the public in their homes to inspect their surrounding and to educate them.

### **Conclusion of the findings**

Based on the findings of this study, it was concluded that the identified environmental adult education strategies to solid waste management are effective and it created awareness among urban dwellers in the study area. Also, these strategies equipped dwellers with requisite knowledge for waste management to a low extent. It was also concluded that health workers and urban residents shared the same view on the education delivery strategies adopted for educating urban dwellers on solid waste management as well as the level to which they promote effective participation in activities for proper solid waste management among urban dwellers in the study area.

### **Recommendations**

Consequent upon the findings are subsequent implications, the researcher proposed the following recommendations to improve the effectiveness of the Environmental Adult Education delivery strategies of Abia State Environmental Workers on solid waste management among urban dwellers.

1. The state environmental workers should always have a better strategies and time to relay their programmes on the electronic media such as television or radio so as to capture a wider audience to their information.
2. The government should provide the public with proper enlightenment and awareness on how to properly use the disposal bins and incinerators at flash points of the cities and persuade families to provide some on their own.

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