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## **ROLES OF ENVIRONMENTAL EDUCATION STRATEGIES ON WASTE MANAGEMENT AMONG RESIDENTS OF OBIO/AKPOR LOCAL GOVERNMENT AREA OF RIVERS STATE, NIGERIA.**

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### ABSTRACT :

This study examined role of environmental education strategies on waste management among residents of Obio/Akpor Local Government Area of Rivers State. Three objectives, research questions and three hypotheses guided the study. The descriptive survey design was adopted in the study with a population of 3,049 residents and staff of Rivers State Waste Management Agency (RIWAMA). The sample size for this study was 351 respondents comprising 301 residents from CBOs and 49 staff of Rivers State Waste Management Agency (RIWAMA). The Taro Yamane formula was used to determine the sample size of the residents while the proportionate stratified sampling technique was used to select 10% of the population of each of the CBOs to arrive at the sample of 301 residents. The entire 49 staff will be studied as a census without sampling due to the manageable size of the staff. The instrument for data collection in this study was a researcher designed questionnaire titled "Role of Environmental Education Strategies on Waste Management among Residents Questionnaire". The instrument was validated by the researcher's supervisor and two other experts in the Department of Adult Education and Community Development, Rivers State University, Port Harcourt. The internal consistency of the instrument was determined using Cronbach Alpha method. Reliability coefficient is of 0.79. Mean and standard deviation statistic were used in answering the research questions. The result of the findings revealed among others that media campaigns such as radio jingles, television interviews and drama help in changing residents' attitude towards waste management and improves waste management practices among residents in Obio/Akpor LGA of Rivers State. Based on the findings of the study, it was recommended amongst others that, the Rivers State Waste Management Agency should explore the use of mass media platforms such as television, radio and social media to educate residents on the dangers of improper waste management as this will reduce the practice to a large extent.

Key words: Environmental Education, Waste, Waste Management.

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### INTRODUCTION:

The environment provides a basis for living. Its quality determines to a large extent, the quality of life enjoyed by its inhabitants. Man is constantly involved in a variety of activities which tends to degrade the quality of the environment, which in turn threaten man's existence on earth. Environmental degradation is used to describe a situation in which a part of the natural environment is damage or endangered the land, water bodies, air or the forests and all its resources, (Wan, Shen & Yu, 2015). Wastes are mostly waste generated from papers, wrappers, domestic and food remains and other materials. These wastes are usually thrown indiscriminately within the streets and schools in most developing countries because their technology for managing these waste are still in the developing stage.

This is the case in most metropolitan cities in Nigeria and other developing nations. This view was supported by Kobani & Wami (2022) who asserted that in Nigeria, solid wastes (household) disposal has become one of the fundamental national problems despite environmental sanitation programmes and policies adopted by the government at various levels to manage it. Most states in Nigeria set aside either first Saturday or last Saturday of every month as monthly sanitation day which usually starts from 7am and ends at 10am. To also complement the sanitation days Lagos and Rivers state government also set aside every Thursday starting from 7am to 10am as weekly sanitation in the markets and for all shops, store and any other category of business excluding the pharmaceutical stores.

In spite of these efforts, most urban cities in Nigeria including Obio/Akpor LGA (Port Harcourt metropolis) are daily littered with household generated solid wastes. Pedestrian walkways have turn to waste dump in most cities due to improper waste disposal habit among resident, non-availability of refuse collectors, and where there are refuse collectors, irregular collection habit of the refuse collection workers. Waste is directly linked to human development, both technologically and socially. Household and commercial wastes are littered on streets or sometimes at the center to major streets as seen in Port Harcourt metropolis which comprises Obio/Akpor Local Government Area of Rivers State. This is in line with Lawal's (2004) observation

that that roughly two thirds of waste generated by households in Port Harcourt Metropolis are dumped indiscriminately on the streets and in the drains thus posing serious environmental health hazards. This calls for a proper waste management strategy by the government and other bodies.

Waste management involves the generation, collection, transportation and disposal of waste, be it solid, liquid or gaseous waste. Waste management includes the processes and actions required to manage waste from its inception to its final disposal. Environmental education and awareness in the area of waste and waste management is increasingly important. This is because ignorance is one of the major reasons for indiscriminate waste disposal. People are not quite aware of the consequences of their indiscriminate waste practices to the health of humans and the environment. They are also not aware of what they can do to manage their wastes. This underscores the need for environmental education.

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## Statement of the Problem

Wastes are inevitable part of human existence. As man engages in daily domestic and commercial activities, different types of wastes are generated. These wastes which are by-products of human activities can pose some kind of health and environmental risks if not properly managed.

Unfortunately, this has been the case in Obio/Akpor Local Government Area of Rivers State like most urban cities in Nigeria. There is observed indiscriminate waste disposal by households and business owners. Refuses are sometimes dumped in drainages and gutters which account for the flooding of some parts of the LGA during heavy rainfalls. Most streets are littered with wastes such as paper bags, nylons and packs of all kinds of products. Some traders and households even dump their wastes in the middle of major roads without bagging them properly. This has defaced the aesthetics of a beautiful city once referred to as “garden city” to a “garbage city”. It has also exposed residents to different kinds of ailments.

In a bid to deal with this issue, the Rivers State Government through its waste management agency, Rivers State Waste Management Agency (RIWAMA) established receptacles and dump sites across the Local Government Area and stipulated times when people should bring their wastes for collection. In spite of this and other efforts made, indiscriminate waste disposal is still an issue in the metropolis. This is because improper waste disposal is an issue rooted in people’s attitude and for this to stop there should be an attitudinal change. This study, therefore, seeks to find out the extent to which environmental education programmes could play in providing this change that would lead to proper waste management in Obio/Akpor LGA of Rivers State.

## Research Questions

This study was guided by the following research question:

1. What are the roles of media campaigns on waste management in Obio/Akpor Local Government Area of Rivers State?
2. What are the roles of public health campaign on waste management in Obio/Akpor Local Government Area of Rivers State?
3. What are the roles of awareness programmes on recycling on waste management in Obio/Akpor Local Government Area of Rivers State?

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## LITERATURE REVIEW

The review of literature addresses some concepts relevant to the study.

### *Concept of Environmental Education*

Environmental Education (EE) goes beyond transmission of mere knowledge and skills relating to the environment, and involves development of a culture of ideas and behaviours that maintain and sustain environmental quality. EE is an evolving concept. A look at various works by scholars, organizations, governments and agencies indicate that EE is defined from different perspectives and points of emphasis. While some definitions focus on the goals, objectives and outcomes of EE, others rest their attention on the description and dimensions of EE, or are tinted with cultural, philosophical and subject biases which rather compound the search for a common definition (Mbalisi, 2010; Eheazu, 2010; Stapp, 1969; Igbokwe, 2010; Carter & Simmons, 2010). The definitions of environmental education has transcended from a scientific standpoint to an integrated and interdisciplinary perspective (NAAEE, 2013).

Attempts to conceptualize EE is traced to 1968 UNESCO biosphere conference held in Paris. In this conference it was proclaimed that natural resources should be used rationally, and that there is need to develop an educational process within the curricular for all grade levels, that will provide technical training on how to use natural resources as well as increase awareness for global environmental problems (Carter & Simmons, 2010). The first known effort to define EE is attributed to the works of William B. Stapp. Stapp and others examined conservation education and realized that it was oriented towards rational use of basic natural resources, but not to solve basic problems associated with the environment. They were able to underline the importance and need to educate people so as to equip them with relevant skills and knowledge required to enhance good relationship with every facet of the environment. Stapp in Mbalisi (2018) defined that EE is aimed at producing a citizenry that is knowledgeable concerning to bio-physical environment and its associated problems, aware of how to help solve these problems, and motivated to work toward their solution.

Stapp (1969:15) elaborated further that every EE effort must be set to help the citizenry develop and/or attain:

1. A clear understanding that man is an inseparable part of a system, consisting of man, culture, the biophysical environment, and that man has the ability to alter the quality and interrelationship among these systems,
2. A broad understanding of the role of biophysical environment, both natural and man-made in the contemporary society;

3. A fundamental understanding of environmental problems confronting man, how these problems can be solved, and the responsibilities of citizens and government to solve them; and
4. Attitudes of concern for environmental quality and motivate them to participate in solving environmental problems.

Stapp based his conception of EE on some principles which include that:

1. Man is part of his surroundings and cannot be separated from his natural environment;
2. Most problems associated with the environment are as a direct result of negative impacts of man's activities;
3. People should be aware of their influences on the biophysical environment and must be responsible and committed in their actions to ensure that they live in a healthy and sustained environment;
4. The show of responsibility and commitment should be sufficient to the extent that one is motivated to take necessary action.

Stapp believed that the objectives of EE are to help people know their roles in the society; acquire understanding of biophysical environment and the interdependent relationship existing between natural systems, which include people, culture and biophysical environment. EE is expected to enable citizens acquire understanding of their responsibilities and the roles they are to play toward solving environmental problems/ issues, and develop in them feelings of concern that would motivate them to action. This background gave impetus to a broader view of environmental education that made UNESCO-IUCN cited in Krasny and Monroe (2013) to define it as the process of recognizing values, and clarifying concepts, in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture, and his bio-physical surroundings. Environmental education also entails practice in decision making and self-formulation of a code of behaviour about issues concerning environmental quality.

The International Workshop on Environmental Education that produced the Belgrade Charter is one of the early milestones that marked the development of EE. Framework, recommendations and statements of goals and objectives of EE were first realized (Stapp, 1978; UNESCO-UNEP, 1975). According to UNESCO in Tommy (2018:22):

...the goal of EE is to develop a world population that is aware of, and concerned about the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations and commitment to work individually and collectively toward solutions of current problems and prevention of new ones.

As indicated in this global framework, the objectives of EE are classified as "awareness, knowledge, attitude, skills, evaluation ability and participation" (1975:3).

Mbalisi (2008) defined Environmental Education as "a learning process that increases people's knowledge and awareness about the environment and its associated challenges, develops the necessary skills and expertise to address the challenges and fosters attitudes, motivations and commitments to make informed decisions and take responsible actions". In (2013), he cited UNESCO's definition of Environmental Education as "education about, from and for the environment".

**Education about the environment** focuses mainly on cognitive aspects. It is concerned with the acquisition of skills, knowledge and understanding of the environment and the related issues. It also concerned with discovering the nature of the area under study. It is crucial to perception and judgment.

**Education from the environment** refers to the process of education that uses the environment as a medium for discovering and as a resource of material for educational activities. It provides direct contact with the environment, gaining experiences, stimulating interest, as well as the relevant context for acquiring knowledge and developing skills.

**Education for the environment** aims at the development of an informed attitude and behaviour towards the environment. It goes beyond the acquisition skills and knowledge and involves values and attitudes that affect behaviour. It is concerned with the formation of attitudes that leads to a personal environmental ethic in order for people to be involved responsibly in actions for the sound management of the environment and the protection of natural resources. Ogueri and Whiston cited in Mbalisi (2004) stated that:

Education about the environment is not a derivative neither is it a residual, but encompasses everything: physical, economic structure, trade, institutional structures, values, attitudes, ethics, morality, terms of trade, laws, regulations, production schedules, research development agendas (who or what determines the same), education, training and empathy. Environmental education is therefore, part and parcel of life. It is a comprehensive lifelong process that prepares an individual for and makes him responsive to changes in a rapidly changing world with new knowledge, skills and behaviour.

From the above definition, man lives from the environment and through the environment and for the environment. The quality of life of humans depends on his environment and that is why man needs not to treat his environment with levity. The reason is that, his survival depends on his environment. Stapp in Mbalisi (2014) as an education aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and it associated problems, be aware of how to solve the problems and motivated to work toward their solution.

#### **Concept of Waste Management**

A waste is what the person responsible for discarding the material regards as a waste. Generally, materials discarded for disposal are deemed to be wastes (Furedy & Lardinios, 2000). Solid waste classified based on its origin, risk potential, or characteristics. Based on origin, solid waste can be classified in to food waste, rubbish, ashes and residues, agricultural waste, municipal waste, industrial process waste, and demolition and construction wastes. With regards to characteristics, it is classified as biodegradable and non-biodegradable. Solid waste can also be defined as the useless and unwanted products in the solid state derived from the activities of and discarded by society that is produced either by product of production processes or it arises from the domestic or commercial sector when objects or materials are discarded after use. Based on this definition, solid waste can be:

- (1) Garbage: This is the term given principally to food waste, but may include other degradable organic wastes.
- (2) Rubbish: This consists of combustible and non-combustible solid waste, excluding food wastes.
- (3) Refuse: This is the collective term for solid wastes, includes both garbage and rubbish.
- (4) Litter: This refers to odds and ends, bits of paper, discarded wrappings, bottles etc. Left lying around in public places

Demirbas (2011) describes waste management as a process by which wastes are gathered, transported and processed before disposal of any remaining residues. Management of these wastes is a critical concern to government all over the world due to relatedness to health of the people and also environmental hygiene and sustainability.

Waste Management is an approach aimed at reducing the production of waste through education and the adoption of improved production processes and less wasteful practices. Recycling by separate certain materials within the waste stream and reprocessing them. The recycling of many materials is currently not financially viable. Waste processing is treatment and recovery (use) of materials or energy from waste through thermal, chemical, or biological means (Wikipedia, 2013).

Solid Waste Management involves several stages of activities where people's participation is critically required in some of them and local body has to do the rest of the work. Solid waste management is defined as the discipline associated with control of generation, storage, collection, transport or transfer, processing and disposal of solid waste materials in a way that best addresses the range of public health, conservation, economic, aesthetic, engineering, and other environmental considerations. The primary goal of solid waste management is reducing and eliminating adverse impacts of waste materials on human health and the environment to support economic development and superior quality of life. There are six functional components of the waste management system, as outlined in World Bank (2020) as:

- (1) *Waste generation*: This encompasses any activities involved in identifying materials that are no longer usable and are either gathered for systematic disposal or thrown away.
- (2) *Onsite handling, storage, and processing*: This relates to activities at the point of waste generation, which facilitate easier collection. For example, waste bins are placed at sites that generate sufficient waste.
- (3) *Waste collection*: A crucial phase of waste management, this includes activities such as placing waste collection bins, collecting waste from those bins, and accumulating trash in the location where the collection vehicles are emptied. Although the collection phase involves transportation, this is typically not the main stage of waste transportation.
- (4) **Waste transfer and transport**: These are the activities involved in moving waste from the local waste collection locations to the regional waste disposal site in large waste transport vehicles.
- (5) *Waste processing and recovery*: This refers to the facilities, equipment, and techniques employed to recover reusable or recyclable materials from the waste stream and to improve the effectiveness of other functional elements of waste management.
- (6) *Disposal*: The final stage of waste management. It involves the activities aimed at the systematic disposal of waste materials in locations such as landfills or waste -to-energy facilities.

Based on the outlined functional components of waste management, people's participation in waste management is essential in the following areas:

1. Reduce, Reuse & Recycling (R R R) of waste.
2. Not to throw the waste/litter on the streets, drains, open spaces, water bodies, etc.
3. Storage of organic/bio-degradable and recyclable waste separately at source.
4. Primary collection of waste
5. Community storage/collection of waste in flats, multi-storied buildings, societies, commercial complexes, etc.
6. Managing excreta of pet dogs and cats appropriately.
7. Waste processing/disposal at a community level (optional)
8. Pay adequately for the services provided.

### ***Roles of Media Campaign on Waste Management***

Mass media campaigns are often used to expose high proportions of people to health related information through routine uses of existing media, such as television, radio, and newspapers. This helps in disseminating well defined behaviorally focused messages to large and heterogeneous audiences; however this media expectation according to Wakefield, Loken, and Hornik (2010) can sometimes be hindered by inadequate funding, fractured and cluttered media environment and use of inappropriate or poorly researched format. Mass media are often employed at all levels of public health in the hope that it would help achieve three important effects: "the learning of correct health information, the changing of health attitudes and values and the establishment of new health behavior" (Griffiths & Knutson, 2019).

Media campaign is the strategic use of mass media to support community organizers' efforts to advance social or public health policies. The purpose of media campaign is to put pressure on policymakers by setting the agenda and shaping debate to include policy solutions in news coverage of health issues. Media campaign equips people to become active in the political process of making positive changes (Donsbach, 2018).

Media campaign directed on policy makers would help set the ball rolling for good policies and laws to address the practice of indiscriminate dump of refuse and poor waste management. This can be done in the national, state and local government levels using the available media. As observed by Freimuth and Quinn (2014), the roots of health disparities often extend to social, economic, and political conditions, as such, media campaign moves beyond the focus on the individual, to mobilize the policy makers to address health disparities.

### ***Roles of Public Health Campaign on Waste Management***

Effective communication and adequate information are important precursor in healthy decision making. Information is necessary to achieve broader health knowledge and understanding of the environment. We desire adequate information in other to function actively and expectedly as members of the society. Communication here is pivotal in creating an enabling environment for the individual and society at large to contain and adapt to perceived health risks. The role of health campaign in addressing issues of public health concern and environmental sustainability cannot be over emphasized. Bernhardt (2014) observed that the trans-disciplinary nature, ecological perspective, change orientation, and audience-centered philosophy makes public health campaign unique and well equipped to effectively handle health related issue

Public health campaign can increase the intended audience's knowledge and awareness of a health issue, problem, or solution; influence perceptions, beliefs, and attitudes that may change social norms; prompt action; demonstrate or illustrate healthy skills; reinforce knowledge, attitudes, or behaviour; show the benefit of behaviour change; advocate a position on a health issue or policy; increase demand or support for health services; refute myths and misconceptions; and strengthen organizational relationships (National Cancer Institute, 2001).

Health campaign is the central pillar of communication skills and strategies employed to achieve maximum health result or outcome. It is the generality of communication strategies employed to in a way to achieve success in any public health intervention. It involves all human interaction carried out in the Health Care delivery processes. As succinctly described in Kreps and Thornton (2012), it is "the way we seek, process and share health information" (p. 2).

Health campaign has variously been used to shape public attitude and increase public consciousness on issues affecting our environments. It enhances the ability to communicate directly with the public in a bit to achieving expected attitudinal change. According to the Harvard School of Public Health (2014), the field of health communication is about how health information is being generated and disseminated and how that information affects individuals, community groups, institutions and public policy.

Health campaign goes beyond mere exchange of relevant health information through available mass media. The mass media here is an advocacy tool used to disseminate health programmes, influencing and mobilizing the people in making decisions that enhances their collective health. It helps in drawing policy makers towards making policies and laws that will bring about healthy living. In the words of Schiaro (2017) the concept of Health Communication is an "art and technique of informing, influencing, and motivating individual, institutional and public audiences about important health issues". It helps the people accommodate and shape health related issues.

Kreps, Bonaguro and Query (2018) illustrated the field of health campaign aptly as an: Applied behavioural science research area not only because it examines the pragmatic influences of human communication on the provision of health-care and promotion of public health, but also because the work in this area is often used to enhance the quality of health care delivery and health promotion. To this end, health communication inquiry is usually problem based, focusing on identifying, examining, and solving health care and health promotion problems (p.1). It is worthy of mention here that the term Health Campaign formally came to existence as a sub-discipline of Communication in 1975 when erudite communicators assembled in their annual convention of interventional communication associated. This official recognition became necessary at the time because of the prevalent environmental and health challenges erupting in the world due to lack of proper and relevant health information and some perceived public resistance to modern health intervention, aimed at improving public health (Harrington (2014). Effective health communication is central to promoting healthy living and advances our ability to function expectedly well as a member of the society.

However, going by the enormous benefit of health communication in handling health related issues, we believed that one can effectively utilize the health communication strategies in changing unwholesome behaviors, attitudes and practices towards waste disposal in Nigeria and help mobilize the people towards a national consciousness in modern waste management system. This can be achieved through the import of health communication strategies to inform, educate, mobilize and coordinate the people in making effective decision that would enhance good health living and maintain environmental sustainability.

Communication here will mobilize relevant stakeholders in this sector – government, NGOs, community leaders, religious leaders, medical experts etc to understand their different perspectives in developing and implementing public health policy and awareness campaigns. By so doing, health communication will help develop informative, appropriate messages to educate, encourage behavior change, and engage people in waste management to avoid public health risk. This will help bridge the obvious gaps between different groups through communication, thereby promoting public health (Mariah, 2016).

### ***Roles of Recycling on Waste Management***

Recycling refers to recovery of useful materials such as glass, paper, plastics, wood, and metals from the waste stream so they may be incorporated into the fabrication of new products. With greater incorporation of recycled materials, the required use of raw materials for identical applications is reduced. Recycling reduces the need of natural resource exploitation for raw materials, but it also allows waste materials to be recovered and utilized as valuable resource materials. Recycling of wastes directly conserves natural resources, reduces energy consumption and emissions generated by extraction of virgin materials and their subsequent manufacture into finished products, reduces overall energy consumption and greenhouse gas emissions that contribute to the global climate change, and reduces the incineration or landfilling of the materials that have been recycled. Moreover, recycling creates several economic benefits, including the potential to create job markets and drive growth (Lumen, 2013).

Common recycled materials include paper, plastics, glass, aluminum, steel, and wood. Additionally, many construction materials can be reused, including concrete, asphalt materials, masonry, and reinforcing steel. "Green" plant-based wastes are often recovered and immediately reused for mulch or fertilizer applications. Many industries also recover various by-products and/or refine and "re-generate" solvents for reuse. Examples include copper and nickel recovery from metal finishing processes; the recovery of oils, fats, and plasticizers by solvent extraction from filter media such as activated carbon and clays; and acid recovery by spray roasting, ion exchange, or crystallization. Further, a range of used food-based oils are being recovered and utilized in "biodiesel" applications.

Numerous examples of successful recycling and reuse efforts are encountered every day. In some cases, the recycled materials are used as input materials and are heavily processed into end products. Common examples include the use of scrap paper for new paper manufacturing, or the processing of old aluminum cans into new aluminum products. In other cases, reclaimed materials undergo little or no processing prior to their re-use.

Some common examples include the use of tree waste as wood chips, or the use of brick and other fixtures into new structural construction. In any case, the success of recycling depends on effective collection and processing of recyclables, markets for reuse (e.g. manufacturing and/or applications that utilize recycled materials), and public acceptance and promotion of recycled products and applications utilizing recycled materials.

## METHODOLOGY

The design adopted in this study was the descriptive survey design. The population of this study is 3049; consisting of 3000 residents of Obio/Akpor Local Government Area and 49 staff of RIWAMA. The sample size for this study was 351 respondents comprising 301 residents from CBOs and 49 staff of Rivers State Waste Management Agency (RIWAMA). The instrument for data collection in this study was a structured questionnaire titled: "Role of Environmental Education Strategies on Waste Management among Residents Questionnaire" (REESWMRQ). The Reliability coefficient of the instrument is 0.79. The data collected for this study were analyzed using the mean statistics and standard deviation.

## RESULTS

**Research Question 1:** What are the roles of media campaigns on waste management in Obio/Akpor Local Government Area of Rivers State?

**Table 1: Mean Response on Roles of Media Campaigns on Waste Management in Obio/Akpor LGA**

S/N	Items	Residents N = 290			RIWAMA Staff N = 49		
		Mean	SD	Remark	Mean	SD	Remark
1	Talk shows on radio helps in changing residents' attitude towards waste management in Obio/Akpo LGA	2.89	0.62	Agree	3.01	0.69	Agree
2	Sponsorship of weekly jingles on radio on how to manage wastes leads to improved waste management practices in Obo/Akpor LGA.	2.75	0.53	Agree	2.92	0.68	Agree
3	Having periodic drama on television on how to manage wastes will improve waste management habits of residents.	3.08	0.87	Agree	2.56	0.66	Agree
4.	Granting television interviews to experts on how to manage wastes improves residents' attitude to waste management.	2.60	0.50	Agree	2.81	0.53	Agree
5.	Spreading information on right ways of managing waste on social media will make residents engage in proper waste management practices.	2.70	0.66	Agree	2.66	0.71	Agree
6.	Periodic adverts on waste management on newspapers will improve residents attitude towards wastes disposal.	2.81	0.81	Agree	2.72	0.78	Agree
	Grand Mean	2.81		Agree	2.78		Agree

The result of the data analysis in table 1 above for research question one revealed that residents and RIWAMA staff agreed with all the items in the table. This is seen in the mean scores of items 1-6 which are above the criterion of 2.50. With grand mean scores of 2.81 and 2.78 for residents and RIWAMA staff respectively, the answer to research question one is that media campaigns such as radio jingles, television interviews and drama help in changing residents' attitude towards waste management and improves waste management practices among residents in Obio/Akpo LGA of Rivers State.

**Research Question 2:** What are the roles of public health campaign on waste management in Obio/Akpor Local Government Area of Rivers State?

**Table 2: Mean Response on the Roles of Public Health Campaign on Waste Management**

S/N	Items	Residents N = 290			RIWAMA Staff N = 49		
		$\bar{X}$	SD	Remark	$\bar{X}$	SD	Remark
7	Organizing sensitization on the health implications of improper waste disposal in major markets will promote better waste management practice in Obio/Akor LGA.	2.55	0.50	Agree	3.01	0.72	Agree
8	Having health walks on dangers of poor waste disposal will improve waste management practices among residents.	3.00	0.68	Agree	2.53	0.51	Agree
9	Organizing health workshops on the danger of improper waste disposal in churches will lead to better waste management practices among residents of Obio/Akpor LGA.	2.98	0.62	Agree	3.01	0.88	Agree
10	Including talks on health implications of improper was disposal in primary, secondary and tertiary health centres will increase the chances of better waste management in Obio/Akpor LGA.	3.11	0.67	Agree	2.66	0.54	Agree
	Grand Mean	2.91		Agree	2.80		Agree

The analyzed data in table 2 above for research question two shows the mean response of residents and RIWAMA staff on the roles of public health campaign on waste management in Obio/Akpor Local Government Area of Rivers State. This is seen in the mean ratings of all the items in the table which are above the criterion mean of 2.50. With grand mean scores of 2.91 and 2.80 for residents and RIWAMA staff respectively, the answer to research question two is that organizing health campaigns promote better waste management practice, having health walks on dangers of poor waste

disposal will improve waste management practices among residents and organizing health workshops on the danger of improper waste disposal in churches will lead to better waste management practices among residents

**Research Question 3:** What are the roles of awareness programmes on recycling on waste management in Obio/Akpor Local Government Area of Rivers State?

**Table 3: Mean Response on Roles of Awareness Programmes on Recycling on Waste Management**

S/N	Items	Residents N = 290			RIWAMA Staff N = 49		
		$\bar{X}$	SD	Remark	$\bar{X}$	SD	Remark
11	Educating car owners and tyre sellers on how tyres can be used as chairs in sitting rooms reduces the improper disposal of these wastes.	3.10	0.50	Agree	3.15	0.52	Agree
12	Educating residents on how they can resell their papers for other uses reduces the improper disposal of paper wastes.	2.79	0.55	Agree	2.98	0.54	Agree
13.	The use of water bottles for the refilling palm oil and other liquid products reduces the disposal of such wastes.	2.88	0.69	Agree	2.91	0.50	Agree
14.	The recycling of chaffs from pap as feeds for birds by poultry owners helps in the management of such wastes.	3.02	0.67	Agree	2.81	0.66	Agree
15	The use of old cloths for other uses other than throwing it away reduces improper waste management.	2.99	0.71	Agree	2.84	0.72	Agree
	<b>Grand Mean</b>	<b>2.96</b>		<b>Agree</b>	<b>2.94</b>		<b>Agree</b>

The analyzed data in table 3 above on research question three showed the mean scores of residents and RIWAMA staff on the roles of awareness programmes on recycling on waste management in Obio/Akpor Local Government Area of Rivers State. The mean scores of items 11-15 were above the criterion mean of 2.50 which indicates that majority of the respondents agree with all the items. The grand mean scores of 2.96 and 2.94 for residents and RIWAMA staff indicates that educating car owners and tyre sellers on how tyres can be used as chairs in sitting rooms reduces the improper disposal of these wastes, educating residents on how they can resell their papers for other uses reduces the improper disposal of paper wastes and the recycling of chaffs from pap as feeds for birds by poultry owners helps in the management of such wastes.

## Discussion of Findings

The result of the findings in research question one revealed that media campaigns such as radio jingles, television interviews and drama help in changing residents' attitude towards waste management and improves waste management practices among residents in Obio/Akpo LGA of Rivers State. The corresponding hypothesis one revealed that there is no significant difference in the mean response of RIWAMA Staff and residents on the role of media campaigns on waste management in Obio/Akpor Local Area Rivers State. These findings are supported by the findings of Freimuth and Quinn (2014) which revealed that media campaign directed on policy makers helps set the ball rolling for good policies and laws to address the practice of indiscriminate dump of refuse and poor waste management. This can be done in the national, state and local government levels using the available media. The roots of health disparities often extend to social, economic, and political conditions, as such, media campaign moves beyond the focus on the individual, to mobilize the policy makers to address health disparities.

The result of the findings in research question two showed that organizing health campaigns promote better waste management practice, having health walks on dangers of poor waste disposal will improve waste management practices among residents and organizing health workshops on the danger of improper waste disposal in churches will lead to better waste management practices among residents. The corresponding hypothesis two revealed that there is no significant difference in the mean response of RIWAMA Staff and residents on the role of public health campaigns on waste management in Obio/Akpor Local Area Rivers State. This finding is in line with the findings of Kreps and Thornton (2012), which revealed that health campaign is the central pillar of communication skills and strategies employed to achieve maximum health result or outcome. It is the generality of communication strategies employed to in a way to achieve success in any public health intervention. It involves all human interaction carried out in the Health Care delivery processes. Similarly, the National Cancer Institute (2001) observed that public health campaign can increase the intended audience's knowledge and awareness of a health issue, problem, or solution; influence perceptions, beliefs, and attitudes that may change social norms; prompt action; demonstrate or illustrate healthy skills; reinforce knowledge, attitudes, or behaviour; show the benefit of behaviour change; advocate a position on a health issue or policy; increase demand or support for health services; refute myths and misconceptions; and strengthen organizational relationships.

The result of the findings in research question three revealed that educating car owners and tyre sellers on how tyres can be used as chairs in sitting rooms reduces the improper disposal of these wastes, educating residents on how they can resell their papers for other uses reduces the improper disposal of paper wastes and the recycling of chaffs from pap as feeds for birds by poultry owners helps in the management of such wastes. The corresponding hypothesis three revealed that there is no significant difference in the mean response of RIWAMA Staff and residents on the role of awareness programmes on recycling on waste management in Obio/Akpor Local Area Rivers State. This finding is supported by the findings of Lumen (2013) which revealed that recycling of wastes directly conserves natural resources, reduces energy consumption and emissions generated by extraction of virgin materials and their subsequent manufacture into finished products, reduces overall energy consumption and greenhouse gas emissions that contribute to the global climate change, and reduces the incineration or landfilling of the materials that have been recycled.

## Recommendations

Based on the findings of the study, it was recommended that:

1. The Rivers State Waste Management Agency should explore the use of mass media platforms such as television, radio and social media to educate residents on the dangers of improper waste management as this will reduce the practice to a large extent.
2. The Ministry of Health should partner with Non-Governmental Organisations to organize periodic health programmes on the dangers of smell on their health
3. RIWAMA should organize periodic conferences on how to recycle wastes as this will help reduce improper waste management.

#### REFERENCES :

1. Adger, N. W. (2013). Social Capital, Collective Action, and Adaptation to Climate Change. *Economic Geography*, 79 (4), 387- 404.
2. Amirize, B., and Kobani, D. (2020). The Adult Educator as Disaster Manager. Owerri: Beauty Concepts.
3. Association for the Development of Education in Africa (ADEA). (2010). Critical Basic Skills for Lifelong Learning', Concept Note for the ADEA 2011 Triennale, held 27 November–2 December 2011, Ouagadougou, Burkina Faso.
4. Blakk, O., Lawal-Are, A.O., Onyema, I.C. and Akande, T.R. (2010). Lawal, A. (2004). The water chemistry, Crustacean Zooplankton and some faunal species of a Tropical Tidal Creeks in Lagos, *Nigeria, Journal of American Science*, 6(1): 81-90 (2022) Influence of Environmental Education Programmes on Solid Waste Management among residents in Port Harcourt Metropolis, Rivers State. Unpublished Masters Dissertation.
5. Bernhardt, J. M. (2004). Communication at the Core of Effective Public Health. *American Journal of Public Health*, 94(12), 2051–2053.
6. Carter, R.L. & Simons, B. (2010). The History and Philosophy of Environmental change across scales. *Global Environmental Change*, 1577–86.
7. Demirbas, A. (2011) Waste Management, Waste Resource Facilities and Waste Conversion Processes. *Energy Conversion and Management*, 52, 1280-1287. <http://dx.doi.org/10.1016/j.enconman.2010.09.025>.
8. Donsbach, W. (2014). Journalism as the new knowledge profession and consequences for Journalism education. *Journalism*, 15(6): 661-667. <https://doi.org/10.1177/1464884913491347>.
9. Demirbas, A. (2011). Waste management, waste resource facilities and waste conversion processes. *Energy Conversion & Management*, 52(2), 1280-1287. <https://doi.org/10.1016/j.enconman.2010.09.025>
10. D
11. D
12. Demirbas, A. (2011). Waste management, waste resource facilities and waste conversion processes. *Energy Conversion & Management*, 52(2), 1280-1287. <https://doi.org/10.1016/j.enconman.2010.09.025>
13. D
14. D
15. Demirbas, A. (2011). Waste management, waste resource facilities and waste conversion processes. *Energy Conversion & Management*, 52(2), 1280-1287. <https://doi.org/10.1016/j.enconman.2010.09.025>
16. D
17. D
18. Demirbas, A. (2011). Waste management, waste resource facilities and waste conversion processes. *Energy Conversion & Management*, 52(2), 1280-1287. <https://doi.org/10.1016/j.enconman.2010.09.025>
19. D
20. D
21. Demirbas, A. (2011). Waste management, waste resource facilities and waste conversion processes. *Energy Conversion & Management*, 52(2), 1280-1287. <https://doi.org/10.1016/j.enconman.2010.09.025>
22. D
23. D
24. Eheazu, C.L. (2010). *Environmental literacy levels of Nigerian university Students: A study of selected institutions in Nigeria the South-South geopolitical Zone*. Unpublished Ph.D thesis. Faculty of education, University of Port Harcourt.
25. Eheazu, B. A. (2013). Antecedents of Environmental Adult Education. In B. A. Eheazu, C. N. Barikor, & I. I. Nzeneri (eds) *Readings in Adult and Non Formal Education*. Port Harcourt: University of Port Harcourt Press. 19-33.
26. Eheazu, B. A. (2016) *Fundamentals of Environmental Adult Education*. Port Harcourt: University of Port Harcourt Press.
27. Freimuth, V. S. & Quinn, S. C. (2004). The Contributions of Health Communication to Eliminating Health Disparities. *American Journal of Public Health*, 94(12): 2053- 2055.
28. Furedy, C., Maclaren, V., & Whitney, J. (1999). Waste reuse for food production in Asian cities: health and economic perspectives. In Mustafa Koc, Rod MacRea, Luc Mougeot and Jennifer Welsh (eds) *For Hunger-proof Cities*. Ottawa: International Development Research Centre and Centre for Studies in Food Security, Ryerson Polytechnic University, Toronto 1999, pp 136-145.
29. Griffiths, W. & Knutson, A. L. (2019). The Role of Mass Media in Public Health. *American Journal of Public Health*. 50(4):515– 523.
30. Havard School of Public Health (2014). The field of Health Communication. Retrieved on 26 March, 2023 from: <http://www.hsph.harvard.edu/health-communication>.
31. Hornik, R. C. (2002). *Public Health Communication: Evidence for Behavior Change*. New Jersey: Lawrence Erlbaum Associate Publishers.
32. Igbokwe, A.B. (2012). Environmental Literacy Assessment: Exploring the Potentials or the Assessment of Environmental Education Programme in Ontario schools. *International Journals for Cross-Disciplinary Subjects in Education*, 3(1).
33. Lawal, A. (2004). The water chemistry, Crustacean Zooplankton and some faunal species of a Tropical Tidal Creeks in Lagos, *Nigeria, Journal of American Science*, 6(1): 81-90.



34. Kobani, D. and Wami, K.C. (2022). Environmental Education Strategies in curbing Global Changes for Sustainable Development in Nigeria, *International Journal of Advance Research and Innovative Ideas in Education (IJARIIE)*, 8(2): 211-219.
35. Kobani, D. and Alozie, K. (2019). *Essentials of Community Development in Nigeria. Second Edition*. Owerri: Beauty Concepts.
36. Kobani, D. and Alozie, K. (2016). *Adult Education: Principles and Practice*. Owerri: Beauty Concepts.
37. Kreps, G. L. and Thornton, B. C. (1992). *Health communication: theory and practice*. New York: Waveland Press.
38. Kreps, G.L., Bonaguro, E. W. and Query, G. L. (2018). The history and development of the field of health communication. In L.D. Jackson and B.K. Duffy (Eds.). *Health Communication Research: Guide to Developments and Directions*. Westport, CT:
39. Mbalisi, O.F. (2008). Incorporation of Environmental Education in Primary and Secondary Schools Curricula: A recommended approach to environmental protection. *Trends in Educational studies*, 3 (1), 168-173.
40. Mbalisi, O.F. (2010). "Effectiveness of environmental education in the development of responsible environmental behaviours among adult learners in Rivers state". Doctoral Dissertation, University of Port Harcourt.
41. Mbalisi, O.F. (2013). Effectiveness of Environmental education in the development of responsible environmental behaviour among adult learners in Rivers State. Unpublished PhD Thesis. University of Port Harcourt, Port Harcourt.
42. Mbalisi, O. F. (2014). *Environmental adult education: Principles and Practices* in G. Adekola and B. Vikoo (eds). Themes in Adult and Non-Formal Education. Port Harcourt: Pearl Publishers.
43. Mbalisi, O. F. (2018). Methods and Materials for Environmental Adult Education, Unpublished Manuscript, University of Port Harcourt.
44. McKeown, R. and C. Hopkins. (2010). 'Rethinking Climate Change Education: Everyone wants it, but what is it?' *Green Teacher*, 89: 17–21.
45. Nworgu, B.G. (2016). *Educational Research Basic issues and Methodology*. Ibadan Wisdom Publishers Limited.
46. Okorie, C.U (2016). Environmental Adult Education Pogrammes for environmental sustainability. In Adekola G and Oyebamiji M.A (Eds). Adult education and the environment. University of Port Harcourt. Pearl publishers international Ltd (1) 156-164.
47. Stapp, W. B. (1969). The Concept of Environmental Education. *The Journal of Environmental Education*,1(1):30-31. <https://doi.org/10.1080/00139254.1969.10801479>
48. UNESCO (2009). UNESCO International Seminar on Climate Change Education.Report. 27–29July2009atUNESCO,Paris.Availableat[http://www.unesco.org/science/doc/cc/CC\\_seminar\\_report\\_071209.pdf](http://www.unesco.org/science/doc/cc/CC_seminar_report_071209.pdf).
49. Wakefield, M. A., Loken, B., & Hornik, R. C. (2010). Use of mass media campaigns to change health behaviour. *Lancet*, 376(9748): 1261–1271.
50. Wan, T., Shen, J. and Yu, G., (2015). The Impact of the Policy and Behaviour of Public Participation on Environmental Governance Performance: Empirical Analysis based on Provincial Panel Data in China, *Energy Policy*, 129, 1347-54.
51. World Bank. (2021). What a waste: A Global snapshot of Solid Waste Management to 2050,
52. Page 66, Accessed October 27, 2021.