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**EFFECT OF COMMUNITY –BASED PARTICIPATORY APPROACH ON RURAL
COMMUNITIES ENVIRONMENTAL KNOWLEDGE, ATTITUDE AND
PRACTICES IN OYO STATE, NIGERIA**

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Abstract

Purpose: This study, examined the effect of a Community-Based Participatory Approach (CBPA) on environmental knowledge, attitude and practices of rural communities' inhabitants in Oyo State, Nigeria. It was embarked upon to reveal the desirability of involving people at the community level in the environmental management as a means of enhancing their environmental knowledge, attitudes and practices. It is well documented that inhabitants of rural communities often exhibit low knowledge of and poor attitude towards the environment, a situation that diminishes quality of human life.

Methodology: The pretest-posttest, control group, quasi-experimental design with 2x2x2 factorial matrix was adopted. Four local government areas were purposively selected. Two rural communities were then selected from each local government areas, using stratified random sampling technique. Forty (40) members of Community Development Associations (CDAs) who reside in selected rural communities and whose age ranges between 25-55years were purposively selected from designed rural communities in four (04) local government areas of Oyo State. The participants were randomly assigned to CBPA (experimental) and direct teaching method (control) groups. Treatment lasted eight weeks.

Findings: Treatment had a significant main effect on participants' environmental knowledge ($F_{(1,126)} = 88.04$; $\eta^2 = 0.98$) but none on attitude and practices. Participants in the CBPA group had a higher posttest environmental score ($\bar{x} = 23.58$) than their counterparts in the control group ($\bar{x} = 10.57$). Participants with high level education had slightly higher environmental attitude ($\bar{x} = 60.48$) than those with low-level education ($\bar{x} = 59.34$). There was no significant main effect of gender on participants' environmental knowledge, attitude and practices. Level of education was not significant on participants' environmental knowledge, attitude and practices. The two-way interaction effects of treatment and gender on participants' environmental knowledge, attitude and practices were not significant. The three-way interaction effect of treatment, gender and level of education was significant on participants' environmental attitude ($F_{(1,126)} = 4.44$; $\eta^2 = 0.03$). Higher attitude score was recorded for low-level education males ($\bar{x} = 62.72$) compared with their high-level education counterparts ($\bar{x} = 62.00$) while high-level education females had higher attitude ($\bar{x} = 65.09$) than low-level education females ($\bar{x} = 64.73$).

Based on the findings of the study, it is recommended that more health personnel should be recruited in the rural communities to monitor environmental sanitation with an enhanced communal effort in solving environmental problems.

Unique Contribution to Theory, Practice and Policy: The study provides empirical evidence on the impact of the Community-Based Participatory Approach on the people of rural communities towards maintenance and sustenance of healthy environment.

Keywords: *Community-based participatory approaches, environmental knowledge, attitude and practices, rural communities' inhabitants.*

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INTRODUCTION

The quality of human environment has a direct impact on people's health and their quality of life. Human's life relies on the environment for survival because every act of living utilizes one resource or the other from the environment either for basic living exercises or as an input of production. For too long, the society has taken the environment for granted, utilizing resources rather than conserving it (Akintola, 2004). This has resulted in environmental problems now calling for special attention. These problems are related to soil and wind erosion, air and water pollution, as well as those arising from drought, agricultural activities, transport development and road building, mining, industrialization, and so on. Today, human being is living in a world of crisis. The environment is seriously threatened and fraught with all kinds of danger (Gbadamosi, 2012). The environmental crisis has become an important source of concern and has made people to think of its gravity.

Most communities in Oyo State, Nigeria have been battling with the challenges of environmental problems which have been attributed to the high level of ignorance about the importance of environmental resources and peoples' lack of awareness of the implications of their actions resulting from poor environmental literacy. Concerted efforts have been made in the area of environmental conservative strategies in environmental education to facilitate positive impact on citizens' environmental knowledge, attitude and practices but with minimal results (Gbadamosi, 2012). This has been linked to the fact that most of the strategies that have been experimented are largely indoors, and not participatory and community-based. Even, some previous participatory interventions were confined to market environmental situation while others in communities were limited due to the approach used which centred on environmental related activities of community-based organisations (CBOs) whose members may not necessarily reside in such communities. Besides, most environmental conservation and protection exercises exhibited by FEPA, SEPA and local NGOs were focused on urban centres to the detriment of rural communities where the bulk of the people live (Gbadamosi, 2012).

Environment, according to Segynola (2003), is the totality of places and surroundings, in which we live, work and interact with other people in the cultural, religious, political and socio-economic activities for self-fulfillment and advancement of communities, societies or nations. A healthy and beautiful environment is not a luxury but a basic human need both materially and non-materially. It is known to influence individual and community development because development evolves from people's increasing ability to utilize the environment and its resources in the production of needed goods and services. Bagne (2007) says that the growing concern about the quality of the global environment has made the imparting of knowledge and skill on environmental management imperative both in formal and informal educational systems. The contents of such knowledge and skills often differ with circumstances. The ultimate objectives in all cases coalesce to increase awareness of hazards involved in the indiscriminate use of the environment with the view to ensuring prudent management of the environment in the interest of the survival of humanity.

Concern for the environment is not an innate attribute, rather sensitivity towards the environment is developed through nurturing role models; education and life experience. Due to the dynamics of the society, planet is in need of an environmentally aware and concerned populace to make important, informed decisions about the future of the natural resources. All over the world, the subject of the environment is being addressed more seriously than before. Some believe that it is too late to reverse the order of decay caused by human's arrogance

which makes them believe that they can interfere with the balance of nature with impunity. Consequently, people may witness in the not far distant future catastrophe on a scale that they have never directed their attention to (Badejo, Ojo, Hamzat, Duru & Jayeola, 2009).

Many reasons have been adduced as to how humankind in general, has found itself burdened by these myriad of environmental problems. Some of the reasons include poor planning; haphazard execution; the rush for short-term gains; the general treatment of resources as “gifts of nature with no value in exchange rather than as productive assets; and the notion that the world outside our door is a free garbage dump. The trend cannot simply continue and mankind has come to realise that fact (Kola-Olusanya, 2006).

It is obvious that there is no other shortcut to the awareness and or conscious evolution of a qualitative environment in Nigeria, than the acquisition of relevant knowledge, and of sustainable development of relevant environmental ethics. Such ethics, it is hoped, will foster positive environmental awareness and social action, which will also emphasize wise stewardship in the intimate relationship between humans and nature for the present and future generations. The environment is people’s way of life. As such, human beings must continue to seek ways to preserve the planet while making use of its resources. It is, therefore, people’s duty, as the highest of all living beings, to ensure the continuous and healthy existence of themselves. It is also people’s obligation to preserve the vegetation, soil, the planet earth and all therein (Bagne, 2007).

Nationally, for quite some time, there appeared to be no concerted action to deal with the problems of environmental degradation. Today, however, Nigeria has overcome the inertia and started to act at speed that shows that the nation truly cares, following the creation of the Federal Environmental Protection Agency (FEPA), as the autonomous body charged with the overall responsibility of protecting the Nigerian environment. Environmental protection is an important challenge for every community, whether small or large, rural or urban, because its long-term consequences affect people’s life significantly. Environmental degradation is a major stress on community life in both rural and urban settings. In rural areas, ecological problems such as deforestation can wreak havoc on a community in many ways. Urban dwellers do not have the direct link with the natural environment as rural people (Akea, Sayili, & Yilmazoban, 2006). The major environmental issues in urban settings revolve around land use and transportation, the quality and availability of water and sanitation services, air quality, solid and liquid waste management, as well as noise and the aesthetic role of the environment. Rural dwellers seem more environmentally oriented than urban residents when their interests are threatened by economic development and farmers tend to believe in stewardship of the land and conservation (Osibanjo, 2008).

Egunjobi (1989) asserts that health problems of the inhabitants of rural areas are much more serious than those of their urban counterparts. It is generally believed that diseases prevalent in rural areas are related to the environment and therefore, easily preventable. In addition to the health hazards to which these people are exposed, they face the inconvenience and risk of having to attend to the call of nature at night or in bad weather. The predominant sources of drinking water in the rural areas of Southern Nigeria include streams, wells, and pipe borne system. According to him, only 22.3% got water through piped systems; 17.6% obtained water from wells, most of which were shallow. The largest proportion (54.7%) used brooks or streams, while 3.6% collected rain- water. Other facilities and utilities such as refuse bins, drainage channels and electricity are also lacking in the study area. About 40% of the people surveyed dumped their refuse in open spaces where it remained uncollected, while 6 8.2%

had no electricity in their homes. These residential environmental conditions have serious implications for health, as housing is closely associated with people's health. Water supply, for example, is closely related to trachoma and skin diseases. Most of the health problems in rural areas can thus be overcome through improvement in environmental conditions in the home and personal hygiene.

Fakoya (1984) argued that community development provides avenue for people to organize themselves for planning action, define their common and individual plans to meet their needs and solve their problems, execute these plans with a maximum reliance upon community resources and supplement these resources when necessary with services and materials from government and non-governmental agencies outside their communities. On this, Ogunipe (2010) emphasized that what matters most is the development of the people's commitment through the mobilization of community efforts. Such efforts, according to Abegunde (2004), are harmonized towards protection of citizens, provision of infrastructures, furnishing communities with necessary information, materials and opportunities and general upliftment of communities images among others. This study, therefore, intend to determine the effect of a community-based approach on environmental knowledge, attitude and practices of inhabitants of rural communities in Oyo State.

Theoretical Framework

This study is premised on the Conscientization Theory and Community Action Model of Paulo Freire 1970, cited in Oyewale (2015). He explains critical consciousness as a socio-political educative tool that engages learners in questioning the nature of their historical and social situation. Therefore, Freire sought to provide these illiterate people with an alternative education which would take place outside a traditional school. The concept of conscientization is a foundation of community cultural development. In view of this, conscientization is perceived as an on-going process by which a learner moves towards critical consciousness. This process is the heart of liberatory education. It differs from 'consciousness raising' in that it latter may involve transmission of preselected knowledge. Conscientization means breaking through prevailing mythologies to reach new levels of awareness in particular, awareness of oppression, being an 'object' of others' will rather than a self determining 'subject'. The process of conscientization involves identifying contradictions in experience through dialogue and becoming part of the process of changing world (Freire, 1970).

Most community-based programs built on Freire principles are marginal to what is now a highly funded and widely respected adult education enterprise. Freirean, community-based adult education continues to provide a working model for resolving the problem of illiteracy in the United States, not because it incorporates more effective methods of instruction, not even because its connection with 'grass roots' organisations but also enhances recruitment efforts and ground learning in the day-to-day experience of the people, but also encourages community participation among rural inhabitants. His ideas on education reveal a new way of looking at education and social change. He has given literacy and education in general, the mission of awakening in people, a critical conscience which enables people not only to know what needs changing but be fully human, which is the right of every person and not for only the privileged few. It is this consciousness that create the will or the motivation in people to struggle for social change (Freire, 1970).

The theory of conscientization is relevant to this study because it is a theory of learning which encourages active participation and the content to be studied in the educative activities

are related to the interests and reality of group participant. It is very relevant to community education programme which is the focus of this study. The type of education that is being advocated in community education is education that will lead to the development of an all round person. In community education, communities should be allowed to take a major role in their own learning. This is to say that a group of people should not be made to think for the community members, they should think out things for themselves. It is then that participation in matters related to community development will be encouraged (Freire, 1970).

For education to be effective and impactful on a given set of persons, there is the need for citizen mobilization, which will enable them to be aware of what is going on in their environment. This is the emphasis of Freire 'conscientization' policy that the pessimistic and fatalistic attitude of people about their environment can change only through process of awareness which could be provided by community-based organizations and other Non-Governmental agencies at the grassroots. Conscientization, therefore, leads to people organizing themselves to take action so as to change their social realities. The concept of conscientization has attracted those who believed in humanistic implications for the participation of the masses and in the necessity of a rapid restructuring of society. It rests on value assumptions of equality of all people, their right to knowledge and culture, and their right to criticise their situation and act upon it. It also implies having a faith in the capacity of all people, including the illiterate, to engage in critical dialogue (Freire, 1970).

Dialogue is the means of achieving conscientization. It requires that an individual change his or her attitudes, perception or beliefs. In other words, individuals must not accept that social reality cannot be questioned and changed. As technology has become more complex and specialized, so has schooling at all levels. Not only must skills be developed in bodies and minds, but attitudes must be formed which are supportive within which adult labour is organized. Freire pedagogy for freedom, exemplified in his work in South America, found ready acceptance among many community-based, popular educators who organized adult learning outside established schools and institutions (Freire, 1970).

Implicit in this theory is that residents in poor communities can team together to attain socio economic development. This means that community action model involves participatory action research approaches and is asset based (that is, it builds on the strengths of a community to create changes from within. Its intent is to create changes by building community capacity, working in collaboration with communities and providing a framework for residents to acquire skills and resources necessary to assess their socio economic conditions. When they have done this, they can plan, implement and evaluate actions designed to improve those conditions (Freire, 1970).

Community-Based Organizations and Physical Development in Nigeria

Community-based organizations otherwise known as local organizations have been given names in different places. These include 'community development associations' 'neighbourhood councils' and united community among others (Agboola, 1996). Community-Based Organizations are set up by collective efforts of indigenous people of homo or heterogeneous attributes but living or working within the same environment. Their coming together create conditions which broaden the base of self governance and diffusion of power through a wider circle of the population (Adeyemo, 2002). It is seen as voluntary, non-profit making, non-governmental and highly localised or neighbourhood institutions whose membership is placed on equal level and whose main goal is the improvement of the social and economic well being of every member (Abegunde, 2004).

CBOs are localized institutions in that their spheres of influence hardly extend beyond their immediate communities or neighbourhood. They are non-profit and non-governmental because all members contribute economically towards the fulfilment of their responsibilities to the immediate environment and not depend on government before fulfilling these (Clandia, 2003). Benefits accrued from members' contributions to the associations are shared accordingly with fairness. They are concerned with the development problems of and development programme projects in their various areas (Bartone, 1990). They respond to community felt needs rather than market demand or pressure.

Distinction has been made between Community Based Organisations (CBO) and non-governmental organisations (NGO) (Agbola, 1998). However, both scholars agreed that CBO and NGO have common attributes and their difference is a matter of 'scale and location'. According to them, CBO suggests a simple institution that covers a relatively small area with local identity while NGO has a sophisticated and complex structure and covers a wider area and project. From the example made by one of them, the Rotary International qualifies as NGO but the rotary club of a community qualifies as CBO. In essence, community development is the essence of CBO. Through community development, efforts of the people are united with those of government authorities to improve the economic, social and cultural conditions of communities, so as to integrate them into the life of the nations and to enable their people to contribute fully to national progress.

Based on this, Fakoya (1984) argued that community development provides avenue for people to organize themselves for planning action, define their common and individual needs and problems, make group and individual meet their needs and solve their problems, execute these plans with a maximum reliance upon community resources and supplement these resources when necessary with services and materials from government and non-governmental agencies outside their communities. In the same vein, Bamidele (1994) saw it as a process whereby both urban and rural communities are assisted to provide for themselves, with deliberate and conscious speed, those service and amenities they need but which neither the state government nor local government can provide. Significant in these is that community development is first the joint efforts of the people who would be the direct beneficiaries before government and non- governmental organizations that could be termed initiators and supporters are involved and absorbed. The degree of involvement of the former therefore determines the level of development in any given area.

In other dimensions, community development is not real until there is individual's participation. Participation therefore embraces the initiators, supporters and the beneficiaries of any given development programme. According to Cary (1973), in Oyewale (2015), participation means open, popular and broad involvement of people of the community in decisions that affect their lives. To participate therefore means to share in decisions about goals and objectives, about what should be done, how and by whom. Participatory development is essential for sustainable development programme. It is an empowering process which seeks to change behaviour through.

Evidence from literature reveals the activities of community-based organizations in Nigeria. For instance, the study conducted by Osinbanjo (2008) in Lagos state revealed that CBOs in the state solely relied on internally generated revenue with very little aid from the government. This was why the CBO that won the best CBO award in 1988 emerged from Lagos State. The organization in 1998 built a primary school, bank, court hall, community hall, post office and opened up several roads for vehicular usage (Osinbanjo, 2008). A study

conducted by Abegunde (2004) on the activities of the CBOs in Olorunda local government area of Osun State revealed that there were about 160 CBOs in the area. About 40% of these CBOs provided social facilities worth 17.56million naira to their immediate community.

Similarly, CBOs in Anambra state were said to be economically buoyant enough to have constructed access roads within neighbourhoods, built schools and health centres, provide potable water and see to the general welfare of their members without government's assistance (Adejumobi, 1991). It was even recorded that the ultra-modern maternity centre built by CBOs in Udi local government area of the state aroused no governments' interest, in that the maternity could not take off for over 10 years after construction because of lack of personnel and equipments from the government of that area (Osinbanjo, 2008). The experiences of CBOs in Kano state differed. Government assisted them in discharging their responsibilities to the communities through fund provision. Their problems were the conflict of interest level of education of community development workers among the two tiers of government (state and local), low and poor public acceptance. Unlike in Oyo state, the people were receptive to CBOs activities but inadequate government support and economic status of members limited their operations (Adejumobi, 1991).

Despite the shortcomings of CBOs in some of the states in Nigeria, the fact remains that significant efforts have been made by the people in contributing to the socio-economic development of their immediate vicinity. If social and economic problems that impede effective participation of people are addressed, CBOs in Nigeria can contribute toward poverty alleviation and physical development of Nigerian communities. It is equally obvious that careless use of resources and violent or destructive interaction with nature give rise to a series of environmental problems such as soil erosion and deterioration, shortage and pollution of land, exhaustion of minerals, shortage and pollution of water resources, deforestation, desertification, extinction of plant and animal species as well as air pollution. These problems whenever and wherever they exist are evidences of bad management of natural resources. If such a situation continues, the result would be an environment that would no longer support human beings which would in turn mean poverty and low quality of life for the present and future generations.

Objectives of the Study

Based on the above, the specific objectives of this study are to:

1. Assess the extent to which Community-Based Participatory Approach influence participants' acquisition of environmental knowledge in rural communities in Oyo State;
2. Assess the extent to which Community-Based Participatory Approach influence participants' attitudinal change towards environmental issues in rural communities in Oyo State;
3. Assess the effect of community's environmental situation on participants' healthy living in rural communities in Oyo State; and,
4. Assess the extent to which collaborative environmental activities in the community influence participants' environmental practices in rural communities in Oyo State.

Significance of the study

Findings from this study would provide empirical evidence on the impact of the Community-Based Participatory Approach on the people of rural communities towards maintenance and sustenance of healthy environment. The use of rural communities became necessary

considering the caliber of people residing there and the perennial environmental problems being manifested in the areas. It is evident, most especially in developing countries like Nigeria, that much environmental problems are more pronounced in the rural areas than urban centres. Therefore, the creation of environmental awareness in the rural communities would promote community spirit and a sense of belonging among the people.

It is hoped that the study would create atmosphere of friendliness, which would engender co-operation of all people towards maintaining sustainable environment not only in Community Development Scheme, but also in the programmes and policies of Oyo State government on environmental management. It is therefore expected that findings from this study would offer our people the opportunity to be actively involved in the management of their environment through a practical but all embracing process. Moreover, governments at both State and Local level would understand the importance of directing their environmental policies towards the sustenance of Community-Development Associations (CDAS) through adequate funding in order to strengthen them in performing their necessary activities for the maintenance of healthy environment in the rural communities.

Also, findings from this study would provide empirical data to all Stakeholders such as Non-governmental Organizations (NGOs) on environmental aspects, pupils, market men and women who constitute the agents of major environmental problems, Environmental Health Officers in Environmental Education (EE) and the officials of Ministry of Environment and Habitat in Oyo State, Nigeria on the alternative ways of disseminating information on 'Environmental Awareness' Campaign in the rural areas through community development schemes as opposed to Environment Planning for sustainable Urban development that have been the focus of research in recent times.

The study would motivate inhabitants of rural communities to provide and maintain functional facilities to meet their environmental needs through communal efforts in order to supplement and complement development efforts of government agencies. In view of this, residents of rural community can establish a collective platform whereby they would meet regularly to discuss on how best to improve the environmental condition within their neighbourhood.

Hypotheses

The following hypotheses were tested by the study:

HO₁: There is no significant main effect of treatment on participants'

- a. Environmental Knowledge
- b. Environmental Attitude, and
- c. Environmental Practices

HO₂: There is no significant main effect of gender on participants'

- a. Environmental Knowledge
- b. Environmental Attitude, and
- c. Environmental Practices

Research Instruments

The following instruments were used for the collection of data for the study.

(i) **Guide on Community-Based Participatory Approach (GCBPA)**

The guide was designed to educate the leaders of Community-Development Association and the participating community members in order to ascertain its impact on the people's environmental knowledge, attitude and practices. This guide was adapted from the Environmental Checklist and Procedures Manual for Community Micro Projects developed by Federal Ministry of Environment (2006). After draft had been constructed, it was made available to experts in the Ministry of Environment and Habitat, Secretariat, Ibadan for both content and face validity.

(ii) Environmental Knowledge Test (EKT)

This is a multiple choice test adapted from Vanass and Doris (2006). The instrument was designed to test the respondents' environmental knowledge. It consists of two sections A and B. Section A comprises the personal data of people involved (inhabitants of communities in the three local government areas in Ibadan) gender, name, occupation, marital status, educational qualifications etc. Section B consists of set of 15-item multiple choice objective test. The Environmental Knowledge Test ($r = 0.80$) had been validated by the Vanass and Doris (2006). It was revalidated by two experts in Environmental Education, and two lecturers in Test Evaluation and Measurement. The corrected version was administered to 25 adults (not in the sample) and analysed using Kuder-Richardson 20 (KR20). It yielded a reliability value of 0.86.

(iii) Environmental Attitude Scale (EAS)

The Environmental Attitude Scale adapted from George Street Research Limited (2006) was designed to measure necessary environmental attitudes for identifying environmental problems and working towards solution to such problems and issues, individually and / or collectively. The instrument is divided into two parts. Part A is made up of the personal data of the subjects (Local Communities/populace) name of the community, gender, occupation, marital status etc. Part B has 20 items questions that were used to assess local communities/populace view or attitude towards environmental issues and problems. Environmental Attitude Scale which had been validated by the George Street Research Limited (2006) yielded 0.70 reliability coefficient. The instrument was revalidated by two experts in Environmental Education, two lecturers in Test Evaluation and Measurement. The corrected version was administered on a group of 25 adult members (not in the study), data collected were analysed using Guttman split-half which yielded a reliability value of 0.76.

(iv) Environmental Practices Questionnaire (EPQ)

The instrument is a 15-item questionnaire patterned along a 4-point likert adapted from Mansaray and Ajiboye (1997). Environmental Practices Questionnaire has been validated by Mansaray and Ajiboye (1997) with reliability coefficient 0.75. It was presented to two experts in Environmental Education and two lecturers in Test Evaluation and Measurement. The approved version was trial tested on a group of 25 adults (not in the study). Data collected were analysed using Cronbach alpha which yielded a reliability value of 0.78.

Population of the Study

The study population comprises all rural communities with the existence of Community-Based Organizations (CBOs) involved in environmental related activities in Oyo State.

Sample and Sampling Techniques of the Study

Considering the nature of the study, members of Community Development Associations (CDAs) who reside in selected rural communities and whose age ranges between 25-55years

were purposively selected. Four local governments were purposively selected from each of the three senatorial districts in Oyo State, making twelve (12) local government areas. They are: Afijio, Akinyele, Oluyole, and Surulere local governments from Oyo Central Senatorial zone; Ido, Ibarapa Central, Ibadan South West and Ibadan South East local governments from Oyo South Senatorial zone; and Atisbo, Iseyin, Saki West and Ogbomoso South local governments from Oyo North Senatorial zone. Three (3) rural communities were then purposively selected from each local government areas based on these criteria:

- (i) Existence of Community-Based Organizations (CBOs) involved in environmental related activities.
- (ii) Location in terms of appreciable distance from one another to prevent participants' interaction across the rural communities selected.
- (iii) Existence of perennial environmental problem(s) being examined in the study.

Forty (40) members of Community Development Associations (CDAs) who reside in selected rural communities and whose age ranges between 25-55years were purposively selected from the identified rural communities in four (04) local government areas of Oyo State. Thus, a total of one hundred and sixty (160) participants were used for the study.

Methods of Data Analysis

Data collected were analyzed using descriptive statistics including frequency counts and mean scores of the participants in the two groups at both pretest and posttest stages. Also, inferential statistics of Analysis of Covariance (ANCOVA) was used in testing the differences among groups, using pretest scores as covariates. The Estimated Marginal Mean (EMM) was used to determine the group performances. All the hypotheses were tested at 0.05 significant levels.

RESULTS AND FINDINGS

This section presented the results of the data obtained in the study.

Ho1a: There is no significant main effect of treatment on participants' environmental knowledge.

Table 1: Summary of 2x2x2 Factorial ANCOVA of Environmental Knowledge by Treatment, Gender and Level of Education

Source	Test	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	Hypothesis	5913.80	1	5913.80	.22	.28	.83
	Error	228.11	14.22	16.04			
Pretest	Hypothesis	1.82	1	1.82	.33	.56	.00
	Error	684.24	126	5.43			
Treatment	Hypothesis	2214.53	1	2214.53	88.04	.03*	.98
	Error	36.778	1.46	25.15			
Gender	Hypothesis	1.86	1	1.86	.07	.83	.04
	Error	43.85	1.56	28.05			
Education	Hypothesis	.04	1	.04	.00	.97	.00
	Error	27.76	1.43	19.38			
Treatment x gender	Hypothesis	18.70	1	18.70	6.54	.24	.87
	Error	2.83	.99	2.86			
Treatment x education	Hypothesis	9.78	1	9.78	3.24	.28	.72
	Error	3.82	1.26	3.02			
Gender x education	Hypothesis	12.39	1	12.39	4.33	.28	.81
	Error	2.84	.99	2.86			
Treatment x gender x education	Hypothesis	2.86	1	2.86	.53	.47	.00
	Error	684.24	126	5.43			

*significant at $p < .05$

From table 1, treatment had significant effect on participants' environmental knowledge ($F_{(1,126)} = 88.04$; $p < .05$). Hypothesis 1a is therefore not accepted.

H01b: There is no significant main effect of treatment on participants' environmental attitude

Table 2: Summary of 2x2x2 Factorial ANCOVA of Environmental Attitude by Treatment, Gender and Education

Source	Test	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	Hypothesis	13201.70	1	13201.70	928.16	.00	.98
	Error	238.06	16.74	14.22			
Pretest	Hypothesis	.06	1	.06	.00	.95	.00
	Error	2086.36	126	16.56			
Treatment	Hypothesis	754.41	1	754.41	7.65	.48	.96
	Error	34.20	.35	98.61			
Gender	Hypothesis	7.69	1	7.69	.07	.87	.12
	Error	56.65	.48	188.57			
Education	Hypothesis	17.56	1	17.56	.01	.39	.10
	Error	8.38	1.02	3.28			
Treatment x gender	Hypothesis	148.55	1	148.55	2.02	.39	.67
	Error	73.53	1.00	73.55			
Treatment x education	Hypothesis	23.57	1	23.58	.32	.67	.24
	Error	73.39	1.00	73.20			
Gender x education	Hypothesis	43.48	1	43.48	.59	.58	.37
	Error	73.54	1.00	73.57			
Treatment x gender x education	Hypothesis	73.53	1	73.53	4.44	.04*	.03
	Error	2086.35	126	16.56			

*significant at $p < .05$

From table 2, there was no significant effect of treatment on participants' environmental attitude ($F_{(1,126)} = 7.65; p > .05$). Hypothesis 1b is therefore accepted.

H01c: There is no significant main effect of treatment on participants' environmental practices.

Table 3: Summary of 2x2x2 Factorial ANCOVA of Environmental Practices by Treatment, Gender and Education

	Test	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	Hypothesis	8884.64	1	8884.64	570.66	.00	.82
	Error	1978.32	127.07	15.57			
Pretest	Hypothesis	17.74	1	17.74	1.06	.31	.00
	Error	2104.13	126	16.70			
Treatment	Hypothesis	580.95	1	580.95	8.55	.22	.90
	Error	64.10	.94	67.95			
Gender	Hypothesis	1.00	1	1.01	2.30	.99	1.00
	Error	.00	.00	.44			
Education	Hypothesis	1.09	1	1.09	.02	.92	.03
	Error	38.48	.68	56.82			
Treatment ^x gender	Hypothesis	11.65	1	11.65	.99	.50	.50
	Error	11.62	.99	11.67			
Treatment ^x education	Hypothesis	67.96	1	67.96	5.83	.25	.85
	Error	11.54	.99	11.66			
Gender ^x education	Hypothesis	.48	1	.48	.04	.87	.04
	Error	11.55	.99	11.66			
Treatment ^x gender ^x education	Hypothesis	11.68	1	11.68	.69	.40	.01
	Error	2104.13	126	16.70			

Table 3 shows that the main effect of treatment on participants' environmental practices is not significant ($F_{(1,126)} = 8.55$; $p > .05$). On this basis, hypothesis 1c is accepted.

Ho2a: There is no significant main effect of gender on participants' environmental knowledge.

Table 4: Estimated Marginal Mean for Environmental Knowledge by Gender

Gender	N	Mean	Std. Error	95% Confidence interval	
				Lower Bound	Upper Bound
Male	77	17.26	.47	16.33	18.20
Female	83	16.89	.42	16.06	17.72

Table 4 shows that males had slightly higher environmental knowledge score ($M = 17.26$) than their female peers ($M = 16.89$).

Ho2b: There is no significant main effect of gender on participants' environmental attitude.

Table 5: Estimated Marginal Mean for Environmental Attitude by Gender

Gender	N	Mean	Std. Error	95% Confidence interval	
				Lower Bound	Upper Bound
Male	77	60.29	.82	58.66	61.93
Female	83	59.54	.73	58.09	60.99

Table 5 reveals that male participants had slightly higher attitude score ($M = 60.29$) than their female counterparts ($M = 59.54$).

Ho2c: There is no significant main effect of treatment and gender on participants' environmental practices.

Table 6: Estimated Marginal Means for Environmental Practices by Gender

Gender	N	Mean	Std. Error	95% Confidence interval	
				Lower Bound	Upper Bound
Male	77	44.72	.82	43.08	46.35
Female	83	44.45	.73	42.99	45.89

From table 6, males had slightly higher environmental practices score ($M = 44.72$) than their female peers ($M = 44.45$).

Discussion of Findings

Findings revealed significant differences in the environmental knowledge of participants in the experimental group (the community-based) and their counterparts in the control group. The magnitude of environmental knowledge scores favoured the community-based group followed by the control group. The findings showed that the experimental strategy, that is, community-based, was more effective than the conventional instructional strategy in improving the environmental knowledge in their respective communities. The community-based approach gave the opportunities for participants to have an on-the-spot assessment of environmental issues since it involved practical accessibility to strategic locations where environmental problems exist. They are participatory in nature and allowed participants to make connections between social issues and environmental problems. This connection assisted the community members to understand the nature and core causes of environmental issues involved in the study and their solution.

The higher environmental knowledge recorded by participants in the community-based group (experimental) may be due to the fact that participants were moved from their base to places where there are both natural and human-made perennial environmental problems impinging the community members' healthful living. The Environmental Health Officers (Research Assistants) were able to sensitize the participants that burning of the refuse dump do cause air pollution which is dangerous to human health. Likewise, the decayed wastes that were not well managed could result to ground water pollution that can have adverse effect on their well-water that might have been unduly contaminated. As a result of this participatory approach, the community members were made to identify the necessity of requesting

occasional treatment of their well-water with chemical by Health Officers to reduce the effect of infiltration.

The participants were also made to understand the importance of covering their nose whenever there is environmental air pollution in their locality and they should always close their windows and doors of their houses to prevent flame from gaining access to their residence. This was as a result of the absence of preventive measures by the government to avoid being impinged the healthy-living of the community members. This lends credence to the submission of Visvanathan (2005), Achankeng (2004) and Muttamara and Leong (1996) that the dumpsites are usually not provided with liners, fences compactors or soil cover. The states of the dumps were seen with heaps of uncovered wastes, open burning and exposed to disease vectors and scavengers. The practice of open dumping often creates adverse environmental impacts, by not only threatening the health of the people nearby but also their immediate surroundings, which in turn affects their economic and social life.

It was established by Wilson, Costa and Chris (2006) that common methods of waste disposal in developing countries were observed to be open dumping, burying and burning of waste in open spaces. Finding of this study is similar to their submission in the sense that the most common of waste disposal in the study areas is open dumping. Submission of Master and Kirk (2006) justify the improved environmental knowledge of community-based group when they say, community environmental education underpinned by an environmental education framework aimed at educating communities and empowering them with the skills, values, knowledge, and awareness to critically assess and take action over local environmental issues. The principles and practices of community-based environmental education ensure programmes are focused on local issues, promote voluntary participation and provide citizens with the skills and knowledge required to help communities become environmentally active.

In the control group, the participants were only passive listeners to the Environmental Health officers' 'reservoir' of knowledge, as they (Health Officers) dominated the lesson. The conventional instructional method did not afford the participants in this group to take practical approach on environmental issues. They were subjected to passive learning without practical activities that involve community-based participatory approach by the inhabitants of a particular community. Effective methods centred on appropriate communication strategy is very essential in fostering adequate environmental knowledge on adult members of any communities. This can be attributed to the submission of Master and Kirk (2006) which states that communication strategies form an integral part of community environmental education programmes by helping to increase public awareness and knowledge of local environmental issues, helping to foster effective public participation and promoting environmental action. It may therefore be reasonable to assert that community based approach encouraged active participation of inhabitants of a particular community to co-jointly address what seems bothering their healthy and conducive living in their locality. These results are in agreement with the result obtained by Agbanigo, Adubi and Aluko (2008), Adubi, Agbanigo and Omojogberun (2006) on impact of community-based instruction, which showed that treatment groups scored significantly higher than the control in environmental studies. However, there were improvements in the score of the participants in the two groups in environmental knowledge.

Findings in respect of environmental attitude revealed that there was no significant main effect of treatment on participants' environmental attitude. The Community-Based Approach was only fairly effective than the control. This slight superiority of the community-based

instruction over the conventional instruction of the control group in acquisition of environmental attitude is probably because participants exposed to the treatment engaged in various fun creating activities. Active participation of the community members in various environmental issues within the locality in real life, real-world context must have instilled in them a great deal of concern for the environment. This result supports the findings of Anyawu (1997), Musa and Ifatimehin (2009) who stressed the importance of community participation in environmental issues and problems in clear terms. They suggest that the members of the community should be adequately involved in finding solutions to the environmental issues and problems in their environment.

Result obtained showed that participants exposed to the community-based approach obtained better environmental attitude. The community-based approach was more effective than the Direct Teaching Methods. This might be as a result of the opportunity of experiencing practical community issues. This finding is in agreement with the submission of Osibanjo (2008) who opines that the concern for the environment is not an innate attribute, sensitivity towards the environment is developed through nurturing role models, education and life experiences. It is obvious that there is no shortcut to the awareness and or conscious evolution of a qualitative environment than the acquisition of relevant knowledge, and acquisition of sustainable development of relevant environmental ethics. Such ethics, it is hoped would foster positive environmental attitude and social action, which will also emphasize wise stewardship in the intimate relationship between human and nature for the present and future generation. Conventional environmental activities did little to ensure that much attention is paid to the natural world. People are generally given few opportunities to learn in any deep way about the locales that are their homes or to experience those places directly. When we speak of a positive or negative attitude toward an object, we are referring to the evaluative component. Evaluation is a function of cognitive, affective and behavioural intentions of the object. Attitude grows and develops just as other mental and emotional behaviour patterns in terms of an individual's reaction to the environment.

Findings further showed that the participants exposed to the Community-Based Approach (CBA) obtained higher environmental practices mean score than their counterparts in the control group. This probably might be due to the fact that activities involved in community-based, gave people the opportunity to inquire from the environmental health officers (resource persons) about the fundamental causes of particular environmental problems and liaised the information acquired with the environmental practices of the inhabitants of their community. In view of this, the community members were able to identify the fact that dumping refuse on the moving water during the rain or otherwise may eventually block waterways at a particular point in time, but water will eventually find its way. Having been exposed to this practical example, members were advised to be environmental friendly by taking practical approach towards problem free environment. This eventually reflected in their environmental practices after the treatment.

It was observed during the intervention that a majority of the residential houses in most said communities were without toilet facilities. In view of this situation, the Environmental Health Officers (Resource Persons) ensured that activities were structured to promote knowledge acquisition to be environmental friendly and facilitate people's reflection and analysis of their experiences. Efforts were made during intervention to expatiate the fact that the inadequate and unsanitary disposal of human faeces often lead to the contamination of soil, food and unprotected sources of water. Furthermore, the community members were made to understand that domestic animals such as dogs, cats, etc, rodents and other vermin

may also carry infections agents thus increasing the potential for contamination and disease transmission. It is an established fact that access to functional, basic sanitation facilities is grossly inadequate in rural communities in Nigeria. According to the 2003 Nigerian Demographic and Health Survey (NDHS), about one-third of rural households had no toilet facilities at all and consequently, made use of bushes, streams and rivers. Open defecation is a common practice in rural areas whilst in semi-urban centres, children and adults defecate indiscriminately at refuse dump sites, open drains (gutters) or any available secluded space in the late hours of the night and early hours of the morning. This unhygienic defecation practices in rural and semi-urban areas have had serious adverse effects on public health.

The community-based participatory approach was more effective than the conventional instructional strategy simply because participants were exposed to environmental problem around them. They were able to recognize environmental problems in their locality so also the causes and more importantly have the opportunity to acquire technical ‘know-how’ to solve these problems more than people exposed to conventional strategy. This finding is in line with the findings of Oladapo (2012), Isigozu (2006) and Nair (2003) who reported that environmental awareness and understanding of environmental challenges is only possible through practical environmental education. The objective of any kind of education is to bring about permanent changes in the behaviour of its recipients. A knowledge system including education, form the essential framework for the interaction of society and nature and to a large extent its development is linked to the characteristics of society and their changes over time.

Findings further showed that there was no significant effect of gender on participants’ environmental knowledge, attitude and practices. Although, there are differences in the mean scores of male and female participants in environmental knowledge, attitude and practices with the male participants slightly obtaining higher scores than their female peers across the three dependent variables. The treatment had about equal effect on both male and female participants in the study. This could be attributed to the fact that the treatment provided equal exposure to community environmental education on environmental related issues for both sexes. This finding is in line with the findings of Nkire (2011), Wang and Cheng (2010) and Abiona (2008), who in separate studies in environmental education found no significant effect of gender on learning activities.

It is also in line with Oladapo (2012) and Nkire (2011) findings that there was no significant main effects of gender on the participants’ knowledge, attitude and practices on waste management, though female participants had better practice towards solid waste management than their male counterparts. Olagunju (2005) and Ogunleye (2003) found no significant effect of gender on students’ knowledge and attitude towards environmental education. Their findings revealed that females possessed more verbal commitment to the environment than the males. On the other hand this, finding contradicted the findings of Macdonald and Hara (2010) and Adekunle (2005) who claimed that there was a significant gender difference in environmental knowledge and attitude of male and female, this could be attributed to gender “stereotyping” whereby different roles that are attached to girls and boys influenced their performances.

Summary

Findings of the study are summarised as follows:

Treatment had significant effect on participants’ environmental knowledge. Participants in the community-based group had higher environmental score than their counterparts in the

control group. However, there was significant effect of treatment on participants' environmental attitude and practices. In both cases, the CBS was only slightly more effective than the control. Gender had no significant effect on participants' environmental knowledge, attitude and practices with the male participants slightly obtaining higher scores than their female peers across the three dependent variables. There was no significant effect of level of education on participants' environmental knowledge, attitudes and practices. The non-literates were slightly better in environmental knowledge and practices while literates obtained higher scores than the non-literates in environmental attitude.

There was no significant effect of treatment and gender on participants' environmental knowledge, attitude and practices. There was no significant effect of treatment and level of education on participants' environmental knowledge, attitudes and practices. There was no significant effect of gender and level of education on participants' environmental knowledge, attitude and practices. The 3-way interaction effect of treatment, gender and level of education on participants' environmental attitude was significant but not significant on environmental knowledge and practices. On attitude, in the community based group, low-level education males had better attitude than the high-level education males while high-level education females had higher attitude than the low-level education females. In the control group, high-level education males had higher attitude score than their low-level education counterparts while the low-level education females had higher attitude score than their counterparts with high-level education.

Conclusion

The study determined the impact of community-based participatory approach on environmental knowledge, attitude and practices of inhabitants of rural communities in Ibadan area. Major findings include that Community-Based Approach (CBA) with discussion was more effective in improving participants' knowledge and attitude towards environmental sustainability than the conventional instructional strategy. The study established that if members of a particular community were subjected to practical approach as regards environmental awareness irrespective of their gender and level of education positive result would be the outcome in the area of environmental knowledge, attitude and practices.

In view of this result, it could be adduced that improving the quality of our environment is a desideratum that should not be confined only to the formal schooling process. The bulk of the problems are in the wider society where there is a preponderance of people who are bereft of positive attitudes, habits and values germane to creating an environment that is human habitation friendly. This class of people needs more reorientation and re-socialization on environmental friendly virtues and values than the school-based clients whose environmental education programme is environmental deterioration preventive. The former group with their entrenched behaviour and social practices to the environment needs ameliorative therapies capable of genuinely revisiting those social practices in our homes and communities that culminate in the abuse of the environment. Since human beings have no other place than the environments, sanctity and appreciation should not be jettisoned.

Recommendations

Based on the findings of this study, the following suggestions are made:

The Environmental Protection Agency (EPA), the Environmental Impact Assessment (EIA) and State Environmental Protection Agency (SEPA) should add to their responsibility of providing environmental protection services for enhanced sustainable development, the

principle and practice of CBPA. These bodies should organise the communities on how to pay attention to those activities capable of undermining and fouling the air or degrading the environment at large.

The government in association and collaboration with the non-governmental organization and community-based organizations should promote and encourage community participatory approach to the conservation of the environment and its resources as against the use offence-and-fine method.

Government should organize a form of re-training programme for Community Development Inspectors and Environmental Health Officers at the local government levels in the effective use of community-based participatory approach through organization of workshops, seminars and conferences.

In order to save Nigeria's bio-physical environment from total destruction, the Federal Environment Protection Agency (FEPA) established in 1988 by Decree 58 should identify all sources of environmental abuse in Nigeria and device well-articulated control systems to stem the tide, and the document be made available to CBP. This entails, among other things, effective waste management and monitoring, enforcing the environmental protection regulations and imposing drastic sanctions on violators in accordance with the enabling law establishing the FEPA.

Whatever roles the government and FEPA have played, and are still playing, to check environmental abuse in Nigeria, they have to be complemented with the introduction of CBP and a distinct environmental system in order to inculcate in Nigerians an "environmental appreciation culture". Furthermore, the war against environmental degradation should not be exclusive of FEPA, the government and formal schooling. Informal, adult and non-formal education should be utilized in enhancing environmental awareness and its sanctity.

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