Impact of Outdoor Educational Activities on Pupils' Environmental Knowledge and Attitude in Selected Primary Schools in Ibadan, Nigeria

Adu, E.O. Ph.D.

Faculty of Education, University of Fort Hare, South Africa
eadu@ufh.ac.za

Olatundun, S.A. Ph.D.

Oyo State Secretariat. Ibadan, P.O.BOX 21656 U.I.P.O Ibadan. Oyo State, Nigeria
Sunola41@yahoo.com

Oshati T. Ph.D.

Federal Productivity Centre, Oyo State Federal Secretariat, Ibadan, Nigeria
oshatiti@yaoo.com

Doi:10.5901/mjss.2014.v5n23p1393

Abstract

The study investigated the impact of outdoor educational activities and the interaction effect of location of pupils' residence and gender on pupils' knowledge of, and attitude, to selected environmental issues and problems. Treatment had significant main effect on pupils' environmental knowledge (F (1,471) = 137.37; p<0.05) and attitude to environmental issues and problems (F (1,471) = 23.35; p<0.05). Pupils exposed to outdoor educational activities performed better in knowledge ($\overline{X}$ =19.59; SD = 1.78) and attitude ($\overline{X}$ =26.61; SD = .30) than their counterparts in the control group. Location of pupils' residence had no significant effect on their knowledge and attitude. Pupils from the indigenous areas obtained higher environmental knowledge ($\overline{X}$ =17.89; SD=7.6 E-02) than those from planned areas ($\overline{X}$ = 17.67; SD = -.1424) and pupils from the planned areas had higher environmental attitude score ($\overline{X}$ =26.39; SD = 8.3E – 02) than their counterparts from the indigenous areas ($\overline{X}$ =26.26; SD = -4.4 E-02). Gender was found to have significant main effect on pupils' environmental knowledge (F (1,471) = 27.45; p<0.05) and attitude (F (1,471) = 17.18; p<0.05). Female pupils performed better ($\overline{X}$ =18.58; SD = .77) than their male counterparts ($\overline{X}$ =17.22; SD= -.59) in environmental knowledge. Similarly, females performed better in environmental attitude ($\overline{X}$ =26.52; SD =0.21) than their male counterparts ($\overline{X}$ =26.15; SD = -0.16). Outdoor educational activities with discussion proved more effective at improving pupils' knowledge and attitude of environmental issues and problems.

Keywords: *Outdoor educational activities, Environmental knowledge, Environmental attitude, primary schools, environmental education, Nigeria.*

1. Introduction

1.1 Background to the Problem

One of the outstanding features of the environment today from research evidence is the speed at which it is deteriorating. (Muyanda-Mutebi and Yiga-Matov, 1993). It is not that environmental problems are new but they are simply enlarging and threatening to become uncontrollable phenomena. All human efforts to support vast number of persons to check this social menace in an ever-shrinking agricultural base is intrinsically futile. This is especially noticed in a developing country like Nigeria with absence of effective population control. There are several reasons for this. Food production increased as a result of improvement in farming techniques brought about by the agricultural revolution. In addition, nowadays, people have started having small families by intention rather than because of fear of food shortages and environmental problems. The smaller family became a fashion, particularly in the developed countries and this is gradually creeping into the Nigerian setting (UNEP, 2006; Ajitoni, 2005; NEST 2005, Daka-Osika, 2005 and Oyetade, 2003).

In general, the environment provides all life-support systems in the air, on water and on land as well as the materials for fulfilling all developmental aspirations. However, the Nigerian environmental situation of today presents serious problems across the length and breadth of the country. Environmental problems manifest in several forms; for example sheet erosion is a phenomenon whereby a large area of surface soil is lost by almost even 'blank sheet' flows of surface or near surface water. Sheet erosion occurs nationwide, but it is least perceived because of its 'deceitful' slow progress, producing a devastating effect on agriculture. Gully erosion, in contrast to sheet erosion, is very obvious because of its disastrous nature and rapid progress. It is particularly severe in Abia, Imo, Anambra, Enugu, Ondo, Edo, Ebonyi, Kogi, Adamawa, Delta, Jigawa and Gombe States. Anambra and Enugu states alone have over 500 active gully complexes, with some extending over 100 metres long, 20 metres wide and 15 metres deep (FEPA, 2002).

Coastal and marine erosion occurs particularly in the coastal areas of Ogun, Ondo, Delta, Rivers, Bayelsa, Akwa Ibom and Cross River States. The most celebrated case of the effects of coastal erosion is the over-flow of the Bar Beach in Lagos by the surging waves of the Atlantic Ocean now a regular feature since 1990, threatening the prime property areas of the Ahmadu Bello way and Victoria Island, Lagos. Flooding occurs throughout Nigeria in three main forms, namely coastal flooding, river flooding and urban flooding. Urban flooding in towns located on flat or low-lying terrain especially where little or no provision has been made for surface drainage, or where existing drainage has been blocked with municipal waste, refuse and eroded soil sediments. Extensive urban flooding is a characteristic of the annual rainy season in Lagos, Maiduguri, Aba, Warri, Benin and Ibadan. Drought and desertification remain very serious ecological and environmental problems, affecting about 15 states in the northern part of the country. Currently, it renders the areas north of latitude 15^{o} either decertified or highly prone to desertification. The persistence of the problem continues to cripple the socio-economic life of the areas (FEPA, 2002).

Nigeria also has to contend with global environmental issues such as climatic change and ozone layer depletion. Climatic change or global warming is due to the increasing concentration of atmospheric warming gases or greenhouse gases (GHG), especially carbon dioxide (CO_2), whose concentrations have increased from 280 parts per million (PPM) in the 1990s to about 370 PPM now (Okebukola, 2001). Pollution from spill oil well, blow-outs, oil ballast discharges and improper disposal of drilling mud from petroleum exploration have resulted in problems such as loss of the aesthetic values of natural beaches due to unsightly oil slicks, damage to marine wildlife, modification of the ecosystem through species (fauna and flora) elimination succession as well as decrease in fishery resources. There is also an excessive pressure on available urban resources, infrastructure and space evident in some cities in Nigeria (Busari, 2006, Augustine, 1990 & Okebukola, 2001).

In another dimension, industrial pollution from over 5,000 industrial facilities and perhaps another 10,000 small-scale industries, some operating illegally within residential premises, are a growing problem in Nigeria. In places like Kano, Kaduna, Port Harcourt, Warri, Lagos and Ibadan, hot and heavy metal-laden effluent, especially those from the textile, tannery, petrochemicals and paint industries, is discharged directly into open drainages and channels, constituting severe dangers to water users. Also disturbing is the practice where some industries bury their expired chemicals and hazardous waste in their backyards, threatening the water quality of innocent neighbours who rely on their dug-out wells for drinking (Adedipe, 1999). Municipal solid waste heaps in several parts of Nigerian major cities, blocking motorways and making passages along alleys and pavements. Municipal waste disposal and sewage problems are particularly serious in all urban centres. Specifically, the major urban centres are characterized by the various non-biodegradable household petrochemical products such as polythene bags, plastic containers, Styrofoam packages and tires which litter Nigerian cities and about 80 million litres of crankcase oil disposed from mechanic workshops, industries, power stations and commercial houses, discharged carelessly into drains and ground surfaces in the cities (Gbamanja, Okebukola & Akpan 2001).

In many cities, plants are no longer used for home landscaping. High rise buildings and other commercial centres have displaced areas earlier earmarked as low density residential areas in Ikoyi and Victoria Island. The country's showcase capital city of Abuja is a pathetic example of this development where insufficient efforts are made to ensure adherence to the provisions of the Master Plan. The areas earmarked for green belts are being taken over by corner shops (Taiwo, 2006). However, with the intervention of the Federal Capital Development Authority (FCDA) through the demolition of illegal structures and revocation of fake Certificates of Occupancy (C of O) in Abuja, the capital city of Nigeria is gradually being restored to its original conception. Again, through the Private Public Partnership (PPP) in Environmental Planning and Management which has led to the establishment of Amusement Parks, Recreational centres and restoration of green areas in Abuja, the capital city is now adorning a new look which is environmental friendly.

The recent erection of buildings at Agala forest (Igbo Agala) in the heart of Ibadan is a typical example of non-adherence to Master Plan. Initially this place was designated as green area. This has exposed areas like Oniyanrin, Inalende Omitowoju, Ode-Olo, Yemetu, Adeoyo Agbadagbudu, Labiran and other adjourning quarters in Ibadan to

continual flooding and erosion. Nigeria's wildlife is rapidly disappearing due to various environmental malpractices. Animals that have disappeared from Nigeria in recent times include the cheetah, the pygmy hippopotamus, the giraffe, the black rhinoceros and the giant eland. An estimated 484 plant species in 112 families including many medicinal and fruit trees, are also threatened with extinction because of habitat destruction and deforestation (FEPA, 2002).

1.2 Statement of the Problem

Traditionally, the role which education plays in any environmental crisis is that of awareness and advocacy. Hence, this study investigated primary school pupils' knowledge and attitude towards environmental related issues and problems resulting from their participation in some Outdoor Educational Activities (OEA). The study also investigated the moderating effects of location of pupils' residence (Indigenous and Planned Areas) and gender on the pupils' environmental knowledge and attitude.

1.3 Hypotheses

The following null hypotheses were tested at .05 level of significance

$H0_1$: There is no significant main effect of treatment on pupils
(a) Environmental Knowledge and
(b) Environmental Attitude
$H0_2$: There is no significant main effect of location of pupils' residence on pupils'.
(a) Environmental Knowledge and
(b) Environmental Attitude
$H0_3$: There is no significant main effect of gender on pupils'
(a) Environmental Knowledge and
(b) Environmental Attitude
$H0_4$: There is no significant interaction effect of treatment and location of pupils' residence on pupils'.
(a) Environmental knowledge and
(b) Environmental attitude
$H0_5$: There is no significant interaction effect of treatment and gender on pupils'.
(a) Environmental Knowledge and
(b) Environmental Attitude
$H0_6$: There is no significant interaction effect of location of pupils' residence and gender on pupils'.
a. Environmental knowledge and
b. Environmental attitude
$H0_7$: There is no significant interaction effect of treatment, location of pupils' residence and gender on pupils':
(a) Environmental Knowledge and
(b) Environmental Attitude

2. Literature Review

2.1 The Concept of Environmental Education

Environment refers to all surroundings that are capable of affecting the behavior, growth and development of the interacting living things within the system. Education, on the other hand has been described as an act or a process of imparting or acquiring knowledge, skills and attitude to prepare a person intellectually for a profession or a stand goal. Environmental Education means the knowledge acquired about the environment. It has been defined in several but similar ways by educationists and environmentalists. Okebukola (1993) defined Environmental Education (EE) as the process of acquiring or transmitting knowledge, attitude and skills for the sustainable use of natural and man-made resources. The Tbilisi Conference on EE (as quoted by Adara, 1993) defined EE as a process aimed at developing a world population that is aware of and concerned about the total environment and its associated problems and which has the knowledge, attitudes, motivations, commitments and skills to work individually and collectively towards solutions of current problems and the prevention of new ones.

Furthermore, Lawal (1991) quoted Schnieder (1977) summarized the various definitions of EE as follows:

- Education from the environment (experience learnt from the environment)

- Education about the environment (teaching about the environment)
- Education for the environment (commitment to environmental protection and conservation for sustainable development).

Environmental education is a learning process that increases people's knowledge and awareness about the environment and associated challenges, developing the necessary skills and expertise to address the challenges, and fosters attitude, motivations, and commitments to make informed decisions and take responsible action as stated in the UNESCO Tbilisi Declaration, 1978. Environmental education enhances critical thinking, problem-solving, and effective decision-making skills, and teaches individuals to weigh various sides of an environmental issues to make informed and responsible decision. Environmental education does not advocate a particular viewpoint or course of action. The components of environmental education are:

- Awareness and sensitivity to the environment and environmental challenges
- Knowledge and understanding of the environment and environmental challenges.
- Attitude of concern for the environment and motivation to improve or maintain environmental quality
- Skills to identify and help resolve environmental challenges.
- Participation in activities that lead to the resolution of environmental challenges (Olagunju, 2005).

2.2 Environmental Knowledge

Environmental knowledge is the acquisition of idea and experience on environmental problems, conservation of resources, and how to solve the social ills and problems created by human in the course of satisfying his needs through the exploration and exploitation of the environment (Mansarray & Ajiboye, 1997). The guiding trend throughout the history of the concept of knowledge has been "linguistic ness" the ways in which we are able to recognize or express cognition in language. Over past centuries incredible emphasis has been placed on understanding knowledge as allowing the facts to take the floor, letting them speak for themselves. Experts and scientifically trained people will no longer be an elite vested with special power and authority by virtue of their knowledge and skills but an elect few who perform their work solely though language (Drucker, 1993).

Knowledge is both supplied and acquired in the same process. For, after all, it is impossible to advise someone without also learning something about their problems and hence acquiring knowledge. But an ability to conceptualize and interpret is required to assemble components into meaningful entities – what someone has called narrative. The sources as a metaphor can therefore be supplemented with the work of harvesting, where that which grows sparsely in the fields is gathered together and through a number of processing operations is transformed into useful products such as bread and beer. It is these transformational or spiritual processing operations that will be central in future.

Efforts will be required from the whole gamut of competences for which historical developments in the concept of knowledge have created scope. We move, then, from a uni-paradigmatic exemplification of the knowledge worker – the scientific working expert – to a multi-paradigmatic exemplification with a whole repertoire of instrumentalities and modes of operation, whose competence is based quite fundamentally on the ability to administrate those instrumentalities and modes of operation – competence of another order (Drucker,1993).The previous studies on environmental knowledge in America shows that old people could be asked to think about or examine pollution, trees, animals, water and global warming all fit under this rubric. Keeping this wide definition in mind, it is encouraging to see what over 1 in 7 students overall (14%) say they know 'a lot' about environmental issues and problems, while another 48% say they know "a fair amount" about the environment.

2.3 Environmental Attitude

Attitude is defined as a mental predisposition to act and it expressed by evaluating a particular entity with some degree of favor or disfavor (Ajiboye, Adu & Amosun, 2005). Individuals generally have attitude that focus on objects, people or institutions. Attitudes are also attached to mental categories. Mental orientations towards concepts are generally referred to as values. Attitudes consist of four components namely; cognition, affective, behavioral and evaluation. Cognitions are our beliefs, theories, expectancies, cause and effect beliefs, and perceptions relative to the focal object. Affective component refers to our feeling with respect to the focal object such as fear, liking, or anger. Behavioral Intentions are our goals, aspirations, and our expected responses to the attitude object. Evaluations are often considered the central component of attitude. Evaluations consist of the imputation of some degree of goodness or badness to an attitude object.

When we speak of a positive or negative attitude toward an object, we are referring to the evaluative component. Evaluations are function of cognitive, affective and behavioral intentions of the object. It is most often the evaluation that is stored in memory, often without the corresponding cognitions and affect that were responsible for its formation (Scholl, 2002). Attitude has many attributes. It implies an established state of readiness and action tendencies. Attitude can be learned or acquired. Attitude can exert a potent influence on an individual, serving as motives, incentives and drives in attaining a goal. Attitude grows and develops just as other mental and emotional behavioral patterns in terms of an individual's reaction to his environment. Attitude may be positive or negative towards certain objects.

Attitude is evaluative in nature, and such evaluations are based on beliefs. With the above elements in mind, "environmental" attitude can then be defined as a learned predisposition to respond in a consistently favorable or unfavorable manner with respect: to the environment. As this will demonstrate, there are many scales available that attempt to measure many aspects of people's attitude toward the environment, wildlife, pollution and habitat just to mention but a few.

2.4 Outdoor Educational Activities (OEA)

Outdoor Educational Activities (OEA) has two definition elements. These are: a learning that takes place outdoors and a method of teaching (problem solving). Outdoor education has been defined by different scholars based on their different perspectives and for the purpose of this study some of these definitions will be highlighted. Bookes and Richard (2004) proposed that the measuring of Outdoor Educational Activities (OEA) is relative to time and place. Hattie, Marsh, Neil and Richards (1997) posited that Outdoor Educational Activities (OEA) are "when small groups of people participate in organized adventurous activities in natural settings and primarily use themselves as the resource for solving problem".

Edward (2000) as posited by Ford (2003) defines Outdoor Educational Activities (OEA) as means of curriculum enrichment, whereby the process of learning takes place out of doors. Outdoor education broadly includes environmental education, adventure education, school camping, wilderness therapy and some aspects of outdoor recreation. Outdoor Educational Activities (OEA) is experiential method of learning with use of all senses. It takes place primarily, but not exclusively, through exposure to the environment (Lund, 2002) as observed by Ford (2003). In outdoor education, the emphasis for the subject of learning is placed on relationships concerning people and natural resources. Outdoor Educational Activities (OEA) covers the different types of education that take place in the outdoors. These include:

- Environmental Education
- Conservation Education
- Nature study/Mature education
- Environmental Interpretation
- Outdoor Living skills
- Outdoor Adventure Education
- Resident outdoor school/camping Education

The role of outdoor and Environmental Education has been well reported over the years with plenty of research to support its impact on personal and social development as well as reinforcing the learning outcomes of classroom led work (Smith, 2002). Despite this, many working in and around the field have felt increasingly threatened by the constant need to 'make the case' for this work against a background of performance and attainment targets.

3. Results

3.1 Effect of Treatment on Pupils' Environmental Knowledge

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

Table I: Summary of ANCOVA of Post Test Environmental Knowledge by Treatment, Location and Gender

Source of variance		Hierarchical Method				
		Sum of Squares	Df	Square	F	Sig
Covariates	PREKNOW	2144.248	1	2144.248	273.593	.000*
Main Effects	(combined)	1308.008	3	436.003	55.631	.000*
	TREATMENT	1076.634	1	1076.634	137.372	.000*
	LOCATION	16.203	1	16.203	2.067	.151*
	GENDER	215.170	1	215.170	27.454	.000*
2-Way Interactions	(Combined)	444.091	3	148.030	18.888	.000*
	TREATMENT/LOCATION	338.469	1	338.469	43.187	.000*
	TREATMENT/GENDER	53.290	1	53.290	6.800	.000*
	LOCATION/GENDER	18.916	1	18.916	2.414	.009*
3-Way Interactions	TRTMT * LOC *GENDER	150.616	1	150.616	19.218	.121*
Model		4046.962	8	505.870	64.546	.000*
Residual		3691.404	471	7.837		
Total		7738.367	479	16.155		.000

*Significant at p<.05.

From table 1, the main effect of treatment on pupils' environmental knowledge was significant ($F_{(1,471)} = 137.372$; $p<.05$). Therefore there was a significant difference in the environmental knowledge of pupils taught using the Outdoor Educational Activities (OEA) with discussion and those taught with the conventional teaching method only. Based on this, hypothesis 1a was rejected. Table 2 further provides the magnitude of the mean scores and standard deviations of pupils across the experiment and groups.

Table II: Multiple Classification Analysis (MCA) on Posttest Environmental Knowledge by Treatment, Location and Gender GRAND MEAN = 17.81

Treatment + Category		N	Unadjusted	Adjusted for factors and covariates	Unadjusted	Eta	Adjusted for factors and covariates	Beta
Treatment	OEA	240	20.2333	19.5924	2.4250	.604	1.7840	.444
	CTM	240	15.3833	16.0243	-2.4250		-1.7840	
Location	Indigenous	312	18.1282	17.8850	.3199	.109	7.668E-02	.026
	Planned	168	17.2143	17.6659	-.5940		-.1424	
Gender	Male	272	17.2500	17.2179	-.5583	.159	-.5904	.168
	Female	208	17.5385	18.5385	.7301		.7721	
	R							.668
	R square							.446

Table 2 shows that pupils exposed to the Outdoor Educational Activities (OEA) with discussion obtained higher adjusted environmental knowledge mean score ($\bar{x}$ =19.59; SD = 1.78) with their counterparts taught with the conventional Teaching method obtained a ($\bar{x}$ =16.02; SD = -1.78). This implies that the Outdoor Educational Activities (OEA) with discussion was more effective than the conventional teaching method at improving pupils' environmental knowledge. With this, treatment accounted for 44.4% of the total variance in the pupils' environmental knowledge (β =0.444). Thus value is the highest of the Beta weight for the three variables investigated in the study.

3.2 Effect of Treatment on Pupils' Environmental Attitude

To determine the effect of outdoor educational activities (OEA) with discussion on pupils' environmental attitude, reference would be made to Table 5.

Ho1b: There is no significant. Main effect of treatment on pupils' environmental attitude

Table III: Summary of 2 x 2 x 2 Analysis of Covariance (ANCOVA) of Post Test Environmental Attitude According to Treatment, Location and Gender

Source of variance		Hierarchical Method				
		Sum of squares	Df	Mean Square	F	Sig
Covariates		8499.735	1	8499.735	9195.903	.000
Main Effects	(combined)	38.338	3	12.779	13.826	.000
	TREATMENT	21.590	1	21.590	23.359	.000*
	LOCATION	.859	1	.859	.930	.335
	GENDER	15.888	1	15.888	17.189	.000*
2-Way Interactions	(Combined)	22.486	3	7.495	8.109	.000
	TREATMENT X LOCATION	14.536	1	14.536	15.726	.000*
	TREATMENT X GENDER	.232	1	.232	.251	.617
	LOCATION X /GENDER	5.523	1	5.523	5.975	.015*
3-Way Interactions	TRTMT X LOC X GENDER	26.465	1	26.465	28.633	.000
Model		8587.023	8	1073.378	1161.293	.000
Residual		435.343	471	.924		
Total		9022.367	479	18.836		

* Significant at p<.05

From table 3, it is shown that treatment had a significant main effect on pupils' environmental attitude ($F_{(1,471)} = 23.359$; p<.05). Hence, Ho1b was rejected. This means that the difference in the environmental attitude scores of pupils in the experimental and control groups was significant. Table 4 further shows the magnitude of the mean scores and standard deviations of pupils across the experimental and control groups.

Table IV: Multiple Classification Analysis (MCA) on Environmental Attitude According to Treatment, Location and Gender. GRAND MEAN = 26.31

Treatment + Category		N	Unadjusted Dev.	Eta	Adjusted for factors and covariates	Beta
Treatment	OEA	240	2.9250	.675	.3049	.070
	CTM	240	-2.9250		-.3049	
Location	INDIGENOUS	312	.3455	.109	-4.47E-02	.014
	PLANNED	168	-.6417		8.302E-02	
Gender	MALE	272	-.5583	.147	-.1618	.043
	FEMALE	208	.7301		.2116	
R		.973				
R square		.946				

Table 4 shows that the experimental group (Outdoor Educational Activities (OEA) with discussion) obtained higher environmental attitude mean score ($\bar{x}$=26.61; SD = .30) while the control group had a ($\bar{x}$=26.00; SD=-30). This implies that the Outdoor Educational Activities (OEA) with discussion proved more effective at effecting better environmental attitude than the conventional teaching method. With this, treatment accounted for 7% of the table variance on the pupils' environmental attitude (β=0.070). Thus, value is the highest of the Beta weight for the three variables investigated in the study.

3.3 Effect of Location of Pupils' Residence on Pupils' Environmental Knowledge

H02a: There is no significant main effect of location of residence on pupils' Environmental Knowledge.

From table 1, there was no significant main effect of location of pupils' residence on their environmental knowledge ($F_{(1,471)} = 2.067$; p>.05). Therefore, Ho2a was not rejected. Table 2 showed that pupils resident in indigenous areas obtained the higher mean score in environmental knowledge than pupils resident in planned areas. As indicated in the table, location of pupils' residence had a Beta value of 0.026. This implies that location of pupils' residence accounted for 2.6% of the variation in pupils' environmental knowledge. However, from table 4, it could be observed that pupils from the indigenous areas obtained higher adjusted mean environmental knowledge score ($\bar{x}$=17.89; SD =.7.668E-02) than those

from the planned areas of the town ($\bar{x}$=17.67; SD=-.1424). This difference is, however, not significant.

3.4 Effect of Location of Pupils' Residence on Pupils' Environmental Attitude

H02b: There is no significant main effect of location of residence on pupils' environmental attitude.

From Table 4, pupils' location had no significant effect on pupils' environmental attitude (F (1,471) = .930, p>.05). Ho2b is therefore, not rejected. Furthermore, Table 4 showed that pupils who live in planned areas had a higher adjusted environmental attitude mean score ($\bar{x}$=25.69; SD = 8.302E-02) than their counterparts from the indigenous areas ($\bar{x}$ =26.65; SD = -4.47E-02). This difference was however not significant. Thus, location of pupils' residence accounted for 1.4% of the total variance in pupils' environmental attitude

3.5 Effect of Gender on Pupils' Environmental Knowledge

Ho3a: There is no significant main effect of gender on pupils' environmental knowledge.

Table 1 shows that the main effect of gender on pupils' environmental knowledge was significant ($F_{(1.\ 471)}$ = 27.454; p<.05). Therefore, Ho3a was rejected. This means that there was a significant difference in the environmental knowledge scores of male and female pupils. Findings in table 2 also shows that the female pupils had the higher adjusted environmental knowledge mean score ($\bar{x}$ =18.58; SD = .7721) while Male had ($\bar{x}$ =17.22; SD = -.5904). However, gender accounted for 16.8% of the total variance in pupils' environmental knowledge score as given by the Beta value of 0.168.

3.6 Effect of Gender on Pupils' Environmental Attitude

Ho3b: There is no significant main effect of gender on pupils' environmental attitude**.**

From Table 3, it could be observed that there was a significant main effect of gender on pupils' environmental attitude (F (1,471) = 17.189; p<.05). Thus, hypothesis 3b was rejected. Table 6 further showed that female pupils obtained had a higher means environmental attitude scores ($\bar{x}$=27.04; SD = .2116) while their male counterparts had ($\bar{x}$ =25.75; SD = -.1618). However, gender accounted for 4.3% of the total variance in pupils' environmental attitude as shown by Beta value of 0.043.

3.7 Interaction Effect of Treatment and Location of Residence on Pupils' Environmental Knowledge

Ho4a: There is no significant interaction effect of treatment and location of residence on pupils' environmental knowledge.

Results in table 1 shows that there was a significant interaction effect of treatment and location of pupils' residence on pupils' environmental knowledge ($F_{(1.471)}$ = 43.187; p<.05). Hence, Ho4a was rejected.

3.8 Interaction Effects of Treatment and Location of Residence on Pupils' Environmental Attitude

Ho4b: There is no significant interaction effect of treatment and location of residence on pupils' environmental attitude.

Results in table 3 shows that the 2-way interaction effect of treatment and location on pupils' environmental attitude was significant ($F_{(1,471)}$ = 15.726; p<.05). Hence, Ho4b was rejected. This interaction is explained in Figure V below

3.9 Interaction effects of Treatment and Location of Residence on Pupils' Environmental Attitude.

The experimental group obtained higher environmental attitude score ($\bar{x}$=30.27) than the control group ($\bar{x}$=22.65). This trend is the same for the pupils from planned areas as the experimental group obtained higher environmental attitude score ($\bar{x}$=27.00) than the control group ($\bar{x}$ =24.57). This is an ordinal interaction.

3.10 Interaction Effect of Treatment and Gender on Pupils' Environmental Knowledge

Ho5a: There is no significant interaction effect of treatment and gender on pupils' environmental knowledge

Table 1 shows that there was a significant interaction effect of treatment and gender on pupils' environmental knowledge ($F_{(1,471)}$ = 6.800; p<.05). Ho5a is therefore rejected.

Ho5b: There is no significant interaction effect of treatment and gender on pupils' Environmental Attitude.

Table 1 shows that there was no significant interaction effect of treatment and gender on pupils' environmental attitude ($F_{(1,471)}$ =.251; p>.05). Ho3b was, therefore, not rejected.

3.11 Interaction Effect of Location of Pupils' Residence and Gender on Pupils' Environmental Knowledge and Attitude

Ho6a: There is no significant interaction effect of location of pupils' residence and gender on pupils' Environmental knowledge

Results in table 1 shows that the interaction effect of location and gender on pupils' environmental knowledge was not significant ($F_{(1,471)}$ =2.414; p>.05). Hypothesis 6a was therefore not rejected.

Ho6b: There is no significant interaction effect of location of pupils' residence and gender on pupils' environmental attitude

It could be noted that from Table 1, the interaction effect of location and gender on pupils' environmental attitude was significant ($F_{(1,471)}$ =5.975; p<.05). Ho6b was thus rejected.

3.12 Interaction Effect of Treatment, Location of pupils' Residence and Gender on Pupils' Environmental Knowledge and Attitude

Ho7a: There is no significant interaction effect of treatment, location of pupils' residence and Gender on pupils' Environmental Knowledge

From table 1, there was a significant 3-way interaction effect of Treatment, location and gender on pupils' environmental knowledge ($F_{(1,471)}$ =19.218; p<.05). Ho7a was therefore rejected.

Ho7b: There is no significant interaction effect of treatment, location of pupils' residence and Gender on pupils' Environmental Attitude

From Table 1, the 3-way interaction effect of treatment, location and gender on pupils' environmental attitude was significant ($F_{(1,471)}$ =28.633; p<.05). Therefore, H7b was rejected.

4. Summary of Findings

- The main effect of treatment on pupils' environmental knowledge was significant. It showed that pupils exposed to the Outdoor Educational Activities (OEA) with discussion obtained higher adjusted environmental mean score than their counterparts taught with the conventional teaching method. Similarly, treatment had a significant main effect on pupils' environmental attitude. In essence, it showed that the pupils' in experimental group (Outdoor Educational Activities (OEA) with discussion) obtained higher environmental attitude scores than the control group.
- There was no significant effect of location of pupils' residence on their environmental knowledge. The findings also showed that pupils' location had no significant effect on pupils' environmental attitude.
- The study revealed that the main effect of gender on pupils' environmental knowledge was significant. Also there was a significant main effect of gender on pupils' environmental attitude.
- There was a significant interaction effect of treatment and location of pupils' residence on pupils' environmental knowledge. It was obtained that among pupils' from indigenous area, the experimental group (Outdoor Educational Activities (OEA) with discussion) obtained higher environmental knowledge score than the control group. The two-way (2-way) interaction effect of treatment and location on pupils' environmental attitude was significant, that is, among pupils' from indigenous area, the experimental group obtained higher environmental attitude score.
- From the study, the finding also showed that there was a significant interaction effect of treatment and gender on pupils' environmental knowledge. That is, within each of the two gender groupings (male and female), the experimental group performed better in environmental knowledge than their counterparts in the control group. There was no significant interaction effect of treatment and gender on pupils' environmental attitude.
- The interaction effect of location and gender on pupils' environmental knowledge was not significant while the interaction effect of location and gender on pupils' environmental attitude was significant. Male pupils from indigenous areas obtained higher environmental attitudes score than the female pupils from the same area. Also, among the female pupils, those from the indigenous areas obtained higher mean score in attitude than

those from the planned areas.

- There was a significant three-way (3-way) interaction of treatment, location and gender on pupils' environmental knowledge. Also, the three-way (3-way) interaction effect of treatment, location and gender on pupils' environmental attitude was significant.

5. Discussion

From the previous research studies, Outdoor Education Activities (OEA) has played a great role as part of active education, especially in helping pupils and young people learn about assessing and managing risk, in offering them new techniques and exciting challenges, and in helping them to gain skills in leadership and team work that would be of huge value in their progression to adulthood. This present study extended this work in another way. It investigated the impact of outdoor educational activities (OEA) on primary school pupils' environmental knowledge and attitude. It also examined the moderating influence of location of pupils' residence and gender on pupils' environmental learning outcomes. The study offered the pupils opportunity to participate actively in outdoor environmental educational activities (OEA). During the nine-week experiment, the learning space being moved out into life society, the natural and cultural environments were explored. Outdoor educational activities (OEA) are an approach that aims to provide learning in interplay between experience and reflection based on concrete experience in authentic situations.

6. Recommendations

Based on the findings of the study the following recommendations are made.

6.1 Curriculum Planners

The result of this study could be found useful by curriculum planners while formulating the curriculum in that they should include the Outdoor Educational Activities (OEA) in the list of recommended methods for teaching and learning of environmental education in social studies. Outdoors educational activities, apart from role model, discovery, inquiry, excursion, field trips, have been found to be very effective at improving environmental knowledge and attitude of pupils. The research further recommends that the Ministry of Education should set up a structure to champion education outside the classroom in primary schools. Within the department, a dedicated team of officials should have responsibility for outdoor teaching across curriculum areas. A high profile 'champion' for outdoor learning should be appointed to lead this team.

There should be a balanced representation between indoor and outdoor educational activities with discussion in order to expose pupils to first hand learning experiences in direct contact in an outdoor setting, which can also foster higher understanding, permanent retentive knowledge, motivation and application to solve subsequent environmental issues and problems. Curriculum developers should update the performance objectives for the attainment of environmental knowledge and attitude for solving environmental problems.

6.2 Teachers' and Classroom Practice

Teachers are encouraged to use the Outdoor Educational Activities (OEA) in the teaching of environmental issues and concepts instead of staying in the classroom to teach the pupils all the time. They should take the children to environmental problems sites like pollution, deforestation (loss of vegetation), erosion, flooding areas, instead of staying in the classroom using only conventional teaching method. However, they should avoid risk; take necessary approval from the appropriate authorities to avoid litigation. Risk is often cited as the main factor deterring schools from organizing Outdoor Educational Activities (OEA). Visits and Outdoor Educational Activities (OEA) organized in accordance with health and safety guidance should not lead to avoidable accidents or unfounded legal claims against teachers. The Outdoor Educational Activities (OEA) is equally good for both indigenous and planned areas; therefore, teachers should use the method for pupils of these areas. Based on the potency of the OEA there should be special provision for its inclusion in the school time-table, particularly in the morning, since it could be designed as part and parcel of the school programme.

6.3 Parents

The finding of this study is very useful to parents especially those living in planned areas. They should endeavor to expose their pupils to environmental issues and problems in their environments in order to make them (pupils) more interested and even concerned about environmental problems in their locality. In addition, male pupils should not be pampered in terms of sweeping the surroundings, washing of plates, washing of clothes, gathering of firewood. Parents should make their male pupils more involved in the cleaning of the environment. Gender stereotyping in favor of female, should be equally extended to male both in school and home.

6.4 Pupils

Knowledge of Outdoor Educational Activities (OEA) had significant and meaningful direct and indirect effects on pupils' environmental knowledge and attitude. For instance, pupils' exposed to Outdoor Educational Activities (OEA) with discussion in the teaching of environmental issues and problems obtained higher adjusted environmental mean score than their counterparts taught with conventional teaching method (CTM) only. Therefore, outdoor educational activities (OEA) with discussion and conventional teaching are recommended for teaching environmental education in Social Studies.

7. Conclusions

This study sought to determine the impact of Outdoor Educational Activities (OEA) on pupils' environmental knowledge and attitude in selected primary schools. The study also sought to determine the effects of location of pupils' residence and gender on pupils' environmental knowledge and attitude. Major findings included that Outdoor Educational Activities (OEA) with discussion was more effective in improving pupils' knowledge and attitude in the teaching and learning of environmental issues and problems in Social Studies than the conventional teaching method. Also, this research established that gender was considered crucial factor, which had great impact on the pupils' environmental knowledge and attitude while location of pupils' residence was not a strong determinants of pupils' knowledge and attitude in environmental issues and problems. Hence, Outdoor Educational Activities (OEA) combined with discussion is being recommended for use as a way of improving teaching and learning about environmental issues and problems in Social Studies for the Nigerian schools.

References

Adara, O.A. 1996. Strategies of environmental education in social studies in Nigeria by the Year 2000. *Environmental Education Research*, Volume 2, Issue 2. 9.5:237-246.

Adedipe, N.O. 1998. Environmental pollution: *Paper Presented at the 7th Obafemi Awolowo foundation dialogue on Nigeria's endangered environment: agenda for a new millennium Nigeria institute of International Affairs, Lagos, December 2-3, 1998.*

Augustine I. A. 1990. *The Impact of Oil on a developing country. The case of Nigeria.* New York: Praeger Publishers.

Brookes, O.K., and Richard, O. 2004. *The wilderness as therapy*" *Journal of Experiential Education.* 6:6-9.

Busari, T. 2007. *Environmental pollution*. Ibadan: Nigerian Tribune. June 9:22-23.

Daka-Osika, G. 2005. *Information education and communication strategies for sustainable management of Nigeria's oil producing areas*. Voice of Nigeria, Nigeria, UNESCO Publications.

Dolk, Helen. 2002. *Methodological issues related to epidemiological assessment of health risks of waste management*. Environmental and health impact of solid waste management activities. 195-210.

Drucker, Peter F. 1993. Post-Capitalist. Oxford Butterworth: Heinemann.

Engelking, P. 2000. "*Hazardous Wastes*." Microsoft Encarta Encyclopedia 2000, Microsoft Corporation.

FEPA, 1990. *Federal environmental protection agency act*, 1990 Lagos: Government Printer.

FEPA, 2002. *Causes of environmental problems in Nigeria*. Abuja: FEPA Publications.

FEPA. 2002. *Where we are, where we want to be*: How to get there. Abuja: FEPA Publications.

Ford, P. 2003. Outdoor Education: Definition and Philosophy. *ERIC clearing house a Rural Education and small schools*, (ED 267941).

Gbamanja, S.P.T. Okebukola P.O.A and Akpan, B.B. 2001. *Strategies for teaching waste management to higher education students*. Strategies for teaching waste management. *STAN EE project series* 5:73-85.

Griffen, K, Lewis, S. and Williams, G. H. 1984. *Evaluation of a Residential Therapeutic Camping Programme for Disturbed Children.* Pensacola, FL: West Florida University Education Research and Development Centre, ED 200 041.

Lawal, M.B., Aniah, E.J; Uche, S.C and Animashaun I.A 1995. *Education for Sustainable Development. Module 4*. NCF. Ibadan: Macmillan Nigeria Limited.

Mansaray, A. and Ajiboye, J.O. 1997. Environmental education and Nigerian Students knowledge, attitude and practices (KAP): Implications for curriculum development. *The International Journal of Environmental Education and Information, 16. 3:* 317 – 324.

NEST, 2005. Nigeria climate change: Regional climate modeling and climate scenarios development in support of vulnerability and adaptation, Canada-Nigeria climate change capacity development project, *NEST Publication (2006), Ibadan, Nigeria*. Retrieved Oct., 26, 2005, from nestinig@nest.org.ng.www.nest_ interaction.org.

Okebukola, P.A.O. 1993. Our environment: Our destiny. *A paper delivered at the distinguished lecture series of Adeniran Ogunsanya College Education (AOCOED).*

Okebukola, P.A.O. 2001 *advancing a pragmatic approach towards environment protection in Nigeria.* Research studies on environment. 1. 7:8-10.

Olagunju, A.M. 2005. The effects of environmental education module, gender and subject specialization on students' problem-solving and cognitive achievement in Biology. *Proceeding of the international conference on education, 6th -9th December, 2005, National University of Singapore, 2005.* Francis, E.H.J, Tay, S.C. and Shen, H. Eds. Singapore: NATIONAL UNIVERSITY OF SINGAPORE. 314-319.

Oyetade, E.M. 2003. *Development of a participatory environmental education programme for college of education pupils in Lagos State, Nigeria.* Ph. D Thesis. Department of Teacher Education, University of Ibadan.XIX+ 234.

Scholl, W. R. 2002. *Attitude and attitude change,* University of Rhode Island, U.S.A.

Seongwon, S. 2004. Environmental impact of solid waste treatment methods in Korea. *Journal of Environmental Engineering*. 130. 1:81-89.

Taiwo, D. 2006: *Environmental Problems in Ibadan*. Sustainable Ibadan Project.

UNEP 2006. Deserts and desertification. World environment day. 5th June, 2006, UNEP Publication 2006