Full Length Research

Environmental conservation awareness among secondary school students in Makurdi Local Government Area of Benue State

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The environment is of global concern today and is one of the most discussed topics, this is due to the rapid change in global environment   which is more now than any known time in history. It is believed that education had to respond appropriately to this pressing issue. Educating our young generations about the aspects of environment is like creating awareness that will enable them to face the challenges and carry out the responsibilities of the community. The study investigated environmental conservation awareness among secondary school students in Makurdi Local Government Area. Stratified random and purposive sampling techniques were employed for the study. A total of one hundred and forty-four students were selected from 12 schools for the study. Data were subjected to descriptive and inferential analysis. The study shows that 54.2% were females, the mean age of the respondents was 14years. The students were highly aware of environmental conservation issues and their major source of information was school. The mean weight score of students for environmental conservation awareness were all positive. There was a significant difference (P<0.05) between level of conservation awareness and class of the students. Also, there was a significant difference (P<0.05) between for level of conservation awareness and age of the students. It was recommended that more environmental related activities be organized frequently in the school. Teachers should also be exposed to more environmental issues to build up their capacity in the teaching of environmental related issues.

Key Words. Awareness, Conservation, Environmental, School, Students

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INTODUCTION

According to Ugulu (2013) human beings continue to engage in environmental unfriendly behaviours at the individual, corporate, governmental, and societal levels. These behaviours as explained by Gore (1993) contributes to the creation and exacerbation of several environmental problems that might pose serious threats to the well-being of humans and other species; this pose a great obstacle to the attainment of sustainable

development goals. To this end Godara and Khirwadkar (2017) opined that for nation to achieve sustainable development, it is necessary that it takes into consideration the environmental issues. In Nigeria environmental issues are of great concern, this is due to her worst environmental degradation records. Scholars believed that, the next generation will be at the receiving end of our today's action. According to World YOUTH Report (2003), young people constitute a large part of the world's population. Many, especially young children, are particularly vulnerable to environmental risks associated with, for example, access to clean and safe drinking water. In addition, young people will have to live longer with the consequences of current environmental decisions than will their elders. Future generations will also be affected by these decisions and the extent to which they have addressed concerns such as the depletion of resources, the loss of biodiversity, and long-lived radioactive wastes.

Since environment is a matter that involves us all, knowledge, skills and attitudinal changes are vital to realize the value of environment upon which depends the endurance of life. Environmental protection and improvement is a collective responsibility, it is not a task for a single individual, agency, group or even only Government, it is a task that required the involvement of everybody (Godara and Khirwadkar, 2017). In order to move closer to achieving ecologically sustainable development as a nation, every one of us need to continually refresh the knowledge and skills which can be applied to the environmental challenges we face (Godara and Khirwadkar, 2017).

Today's youth who are school children are future leaders of our society that can promote healthy environment. It is therefore pertinent for all children and teenagers to know about the environment and how human activities lead to its destruction and the decrease of its quality. Educating our young generations about the aspects of environment is like creating awareness that will enable them to face the challenges and carry out the responsibilities of the community. Also, it will help them to understand the complex nature of natural and manmade environment, resulting from the interaction of their biophysical, social and other aspects of the environment.

Studies have shown that despite increased media coverage and schools campaign being organised by some agencies on environmental issues, young people still do not consider environmental conservation issues very serious (NCF, 1994, Anthony, 2007; Schelhas and Pfeffer, 2007; Parker et al., 2007). However, (Zaleznik, 2012) opined that the development of environmentally sensitive attitudes among students is important for the development of positive environmental behaviours in later life. It is believed that, despite much information in the print and electronic media about environmental conservation practices, schools still have a key role to play in influencing environmental awareness and action among young people (Morris and Schagen, 1996). This is because many of these teenagers and children may not have or there may be very little formal opportunity for them to talk about or discuss of environmental issues outside class room, so it is likely that views held at this level will remain unchanged during adulthood. It is important, therefore, that classroom learning experiences are used meaningfully to shape the views of young people within the school context (Sharma, 2010).

In Nigeria, the National Conservation Foundation (NCF) has its campaign to many Schools across the nation, to assist the pupils, teachers and members of the community take action to conserve natural resources including wildlife (NCF, 1994). Despite this effort by NCF, environmental education has not received research attention in many parts of Nigeria. It therefore, became important to assess environmental awareness among secondary school pupils in Makurdi metropolis.
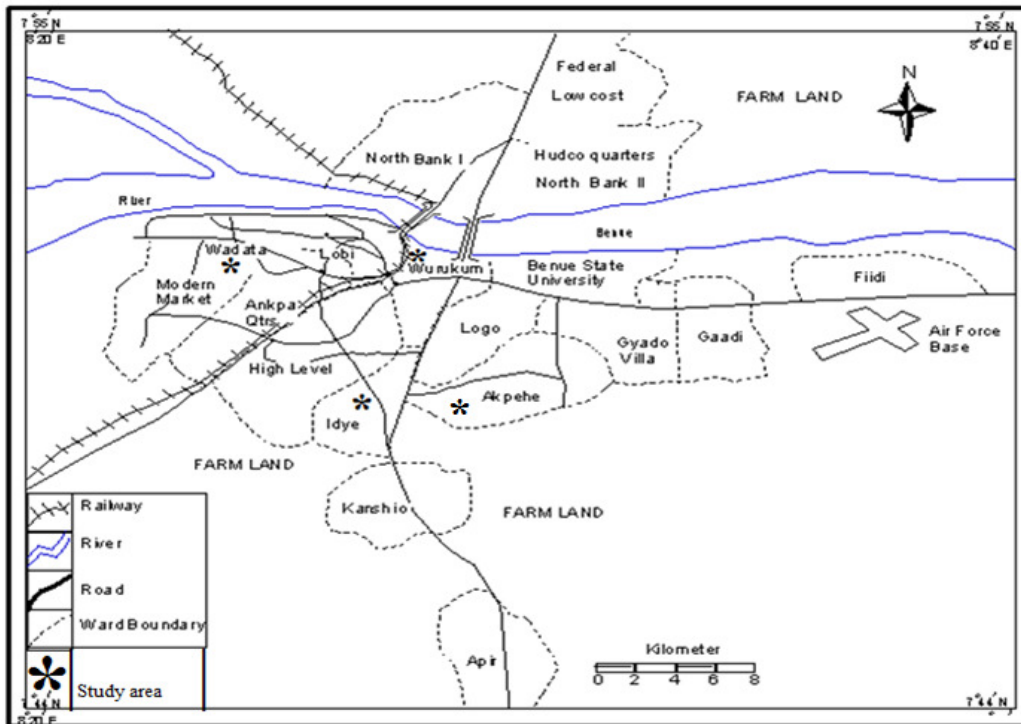
Study Area

The research was carried out in Makurdi metropolis, Benue State Nigeria. Makurdi is the capital of Benue State, Nigeria; the city is located in central Nigeria along the Benue River. Makurdi has the coordinates of latitude 7°38'N - 7°50'N, and longitude 8°24'E and 8°38'E. As of 2007 Makurdi had an estimated population of 500,797. The major ethnic groups of Makurdi are the Tiv, Idoma, Igede and Etulo. The total area of Makurdi is 34,059km2 (13,150 sq.mi). Makurdi Local Government area has over 380 persons per km2, the males are 49.8% while the females constitute 50.2%.

Makurdi (Figure 1) is located in the valley of River Benue hence experiences warm temperature most of the year. The period from November to January when the harmattan weather is experience is, however relatively cool. The vegetation of Makurdi is typically guinea savannah and this coupled with the climate of Makurdi favours the cultivation and extraction of agricultural and forest products.

Study design

The study employed stratified random and purposive sampling techniques. The Secondary School in Makurdi Local Government area were stratified into public and private secondary school, mixed and single sex secondary school. The mixed sex schools were randomly selected while single sex schools were purposively selected. A data containing the names of all the approved secondary schools in Makurdi was obtained from the Ministry of Education. The Secondary Schools were divided into public and Private Schools and the names of the schools were written in papers and subjected to

Figure. 1: Map of Makurdi Town showing the study areas.
Source: Benue State Ministry for Land and Survey, 2011.

random sampling via balloting so that each school has an equal chance of being selected so as to reduce bias. Three girls only schools and three boys only schools were selected so as to test for the variation in the awareness level of the schools. Also in the Mixed Schools one male and one female student was selected in each class so as test for the role played by gender in environmental conservation awareness among the student of the study area. The main target population of the study were secondary School pupils. It was from this population that one hundred and forty- four pupils were selected from twelve secondary school. Three boys only and three girl's only secondary school were purposively selected and six mixed secondary school (comprising of 3 public and 3 private schools) were randomly selected, this give a total of 12 schools.

Data analysis

Data were analysed using SPSS. Descriptive Statistics were applied to measure the mean score and standard deviation on the environmental awareness test. A one – way ANOVA was used to compare the differences in the level of environmental awareness of the student. All the empirical statistics were calculated at 0.05 level of significance. A five point Likert scale rating was used to measure the students environmental conservation awareness in the study area. The weighted scale was derived based on the following values for specific questions put forward to the respondent, Strongly Agree(SA)=5, Agree(A)=4, Undecided(UN)=3, Disagree (D)=2 and Strongly Disagree(SD)=1 (Emaikwu, 2011).

The Mean Score (MS) of the farmers is expressed as:

$$MS = \frac{\sum f}{n} \quad \text{......................(1)}$$

Where :

f = Summation of the five point rating scale and
n = Number of the points

$$MS = \frac{1 + 2 + 3 + 4 + 5}{5}$$

$$MS = 3.0$$

The Likert Weighted Mean Score (WMS) is expressed

$$\text{as : } WMS = \frac{\sum_{i=1}^{n} f_i x_i}{N} \quad \text{..........(2)}$$

Where:

f = frequency of respondent
x = Likert scale point

N= Total Number of respondents
Using the interval scale of 0.05 :

The Upper Limit (UL) cut-off is MS+0.05 (3.0+0.05 = 3.05)
The Lower Limit (LL) cut-off is MS - 0.05 (3.0-0.05 = 2.95).
Based on these two extreme limits any variable with WMS below 2.95 (WMS<2.95) is considered : Low
Variable with MWS between 2.95 and 3.05 Moderate
Variable MWS greater than 3.05 (MWS>3.05) Large
Kruskal-Walis (H) test was used to test for significant difference between level of environmental conservation awareness and Class of the students as well as School status of students awareness . Kruskal-Walis is express

as:
$$H = (N - 1) \frac{\sum_{i=1}^{g} n_i (\bar{r}_i - \bar{r})^2}{\sum_{i=1}^{g} \sum_{j=1}^{n_i} (r_{ij} - \bar{r})^2} \quad ....(3)$$

Where :

H = Kruskal-Walis
n_i = Number of obsrvations in group i
r_{ij} = the rank of obsrvations j from group i
N = Total number of obervations acroos all groups
The Mann-Whitney U test (U) was used to test for the difference between Gender and the students level of conservation awareness in the Study Area. The Mann-Whitney U test (U) is expressed as:

$$U = n_1 n_2 + \frac{n_2 (n_2 + 1)}{2} - \sum_{i=n_{11}+1}^{n_2} R_i \quad ....(4)$$

Where:

U=Mann-Whitney U test

N_1 = sample size one

N2= Sample size two

R_i = Rank of the sample size

HYPOTHESIS:

$H_{O1}=$ Secondary school students do not differ significantly in level of conservation awareness in the study area.
$H_{02}=$There is no significant different in the socioeconomic variables of the student and their level of environmental conservation awareness in the study area.

RESULTS

Demographic characteristics of the respondents

The result on demography of the study area is presented in Table 1. It shows that 54.2% of respondents were female while 45.8% were Male, 70.1% of the respondents were below the age of 15 while 29.9% of the respondents were between the age ranges of 16-30. Also 67.4% of the respondents were from public schools while 32.6% were from Private Schools, 93.1 % of the respondents were Christians while only 6.9% were Muslims. Hundred percent of respondents reside in the Town. Students in JSS 1-3 were 54.1% while students in SSS1-3 were 45.9%.

Knowledge and source of information on environmental conservation

The result of the study indicated that 85.4% of the respondents were aware of conservation while 14.6% were not aware of conservation (Table 2). Table 3 also revealed that school was the major sources of information about environmental conservation. This was followed by print media, electronic media was ranked 3rd while parents and friends were ranked 4th.

Environmental Conservation Awareness among the Students

In Table 2 the level of Conservation Awareness among the Respondents, show that majority of the respondents (MWS=1.96) disagree with the fact that there is no need to care for animals and trees when they are injured hence they feel animals should be taken good care of when they are sick and plants deserve also good treatment. They also believe that animals and trees that are alive today have possibility of going into extinction in the future. This is in accordance with MWS of 3.5. The respondents disagree with the fact that if animals such as wolves that eat other smaller animals are killed it will not increase the population of the smaller animals (MWS=2.63). Most of the respondent worry about environmental problems (MWS=1.66), The respondents are not ready to stop buying some animal by-products like hides and skin so as to reduce the pressure put on the animals (MWS=2.68). It makes the respondent sad to see that houses are being built in the places where animals used to reside (MWS=3.18), Many of the respondents believe that the primary purpose of planting tree is to beautify the environment (MWS=3.86), Human waste contribute to making the environment dirty(MWS=1.72). Also they believe that the extinction of flies even though they are disgusting is not useful to the environment.(MWS=2.41). Again, most of them have not participated in conservation projects before.

Table 1: Socio-economic characteristics of secondary school students in the study area.

Characteristics	Category	F(n=144)	Percentage (%)
Age	Below 15	101	70.1
	16-30	43	29.9
School type	Private	47	32.6
	Public	97	67.4
Gender	Male	72	50
	Female	72	50
Place of Residence	Town	144	100
	Village	0.0	0.0
Religion	Christian	134	93.1
	Muslim	10	6.9
Class	JSS1	26	18.1
	JSS2	26	18.1
	JSS3	26	18.1
	SSS1	22	15.3
	SSS2	22	15.3
	SSS3	22	15.3

Source: Field Survey (2018)

Table 2: Knowledge of Environmental Conservation among Students in the Study Area

Variables	FREQUENCY	PERCENT
YES	123	85.4
NO	21	14.6
TOTAL	144	100.0

Table3: Source of Information about Environmental Conservation among Students in the Study Area

S/N	Variable	FREQUENCY	Ranked
1	School	102	1
2	Printed Media	53	2
3	Electronic media	52	3
4	Parent	16	4
5	Friends	16	4

Awareness of the Consequences of Unsustainable use of Environmental Resources by the Students

The result of the study revealed in Table 4 and 5 agree that some of the consequences of unsustainable use of environmental resources include extinction of wildlife (MWS=4.10), depletion of ozone layer (MWS=3.72); climate change(3.72), washing away of top soil(MWS 3.85); loss of soil fertility(MWS 3.90); reduction in the quantity of food(MWS=3.64); conflict among community member(MWS=3.34)

Suggested ways by which Conservation Awareness will be Improved in Secondary Schools in Makurdi, Benue State.

The result of the study as presented in Table 6 shows that, respondents agree that Conservation topics should be incorporated into other subjects (MWS=4.05), and that school management should occasionally conduct seminars and workshop on conservation related issues (MWS=4.31). They disagree with the statement that says that conservation is only a national issue that has no

Table 4: Conservation Awareness

Variables	SA	A	UN	DA	SDA	N	WS	MWS	DECISION
There is no need to care for animals and trees when they are injured	19(95)	6(24)	2(6)	41(82)	76(76)	144	283	1.96	Disagree
Animals and tress alive today are most likely to become extinct in the nearest future	36(180)	47(188)	27(81)	21(42)	13(13)	144	504	3.5	Agree
Killing animals like wolves and lions that eat others may increase the number of other animals	24(120)	19(76)	23(69)	37(74)	41(41)	144	380	2.63	Disagree
I do not worry about environmental problem	5(25)	9(36)	4(12)	41(82)	85(85)	144	240	1.66	Disagree
I will be willing to stop buying some products to save animals' lives	21(105)	22(88)	21(63)	51(102)	29(29)	144	387	2.68	Disagree
It makes me sad to see houses being built where animals used to live	29(145)	43(172)	15(45)	39(78)	18(18)	144	458	3.18	Agree
The primary purpose of tree planting is to beautify the environment	58(290)	54(216)	3(9)	13(26)	16(16)	144	557	3.86	Agree
Since the environment can clean itself, human waste does not cause a problem	9(45)	10(40)	3(9)	32(64)	90(90)	144	248	1.72	Disagree
The extinction of the insects such as flies is safe for environment.	23(115)	18(72)	12(36)	34(68)	57(57)	144	348	2.41	Disagree
I have participated in conservation projects before	28(140)	23(92)	14(42)	47(94)	32(32)	144	400	2.77	Disagree

SA-Strongly Agree, A-Agree, UN-Uncertain, DA-Disagree, SDA-strongly Disagree, N=frequency, WS=Weighted Score, MWS= Mean Weighted Score Figures outside the bracket are frequencies of the respondents while figures in the brackets are product of Likert Scale values Number of Respondents (N)=144, Mean Score (MS)=3.0, Upper Limit(UL)=3.05,and Lower Limit(LL)=2.95

Table 5: Some of the Consequences of Unsustainable use of Environmental Resources

Variables	SA	A	UN	DA	SDA	N	WS	MWS	Decision
Extinction of wildlife	73(365)	34(136)	22(66)	9(18)	6(6)	144	591	4.10	Agree
Depletion of ozone layer	52(260)	42(168)	22(66)	14(28)	14(14)	144	536	3.72	Agree
Climate change	42(210)	52(208)	29(87)	11(22)	10(10)	144	537	3.72	Agree
Washing away of top soil	53(265)	57(228)	9(27)	10(20)	15(15)	144	555	3.85	Agree
Loss of soil fertility	58(290)	48(192)	14(42)	14(28)	10(10)	144	562	3.90	Agree
Reduction in the quantity of food	52(260)	39(156)	17(51)	22(44)	14(14)	144	525	3.64	Agree
Conflict among community members	33(165)	44(176)	26(78)	22(44)	19(19)	144	482	3.34	Agree

Note: SA=Strongly Agree, A=Agree, UN=Uncertain, DA=Disagree, SDA=strongly Disagree, N=frequency, WS-Weighted Score, MWS- Mean Weighted Score. Figures outside the bracket are frequencies of the respondents while figures in the brackets are product of Likert Scale values
Number of Respondents (N) =144, Mean Score (MS)=3.0, Upper Limit(UL)=3.05,and Lower Limit(LL)=2.95

individual consequences, hence; conservation problems will affect everybody (MWS=2.22). They also believe that conservation awareness has significant relationship with school management (1.97) and ineffective teaching has a role to play in determining the level of environmental awareness(MWS=3.78).

Factors Influencing Students Awareness of Environmental Conservation

The results of the study as presented in Table 7 show significant mean value of student's environmental awareness based on their Class (U.=542.50, p<0.00), as well as age (U.=912.00, p<0.01), which is an indication that class and age influences students awareness . However, there were no significant difference among schools, vs school status (U.= 1213.50, p<0.66), Table 8 revealed that gender have no influence on the student's environmental conservation awareness (U.= 1246.00, p<0.77),

Table 6: Suggested ways by which Conservation Awareness will be Improved in Secondary Schools in Makurdi, Benue State.

Variables	SA	A	UN	DA	SDA	N	WS	MWS	Decision
Conservation topics should be incorporated in other subjects	66(330)	50(200)	4(12)	18(36)	6(6)	144	584	4.05	Agree
School management should occasionally conduct seminars and workshop on conservation related issues in my school.	79(395)	49(196)	3(9)	9(18)	4(4)	144	622	4.31	Agree
Conservation is only a national issue with no individual consequences	9(45)	23(92)	8(24)	56(112)	48(48)	144	321	2.22	Disagree
Conservation awareness has no significant relationship with school management	4(20)	17(68)	8(24)	57(114)	58(58)	144	284	1.97	Disagree
Ineffective teaching contribute to the low level of awareness among Secondary School Students	60(300)	42(168)	9(27)	17(34)	16(16)	144	545	3.78	Agree

SA-Strongly Agree, A-Agree, UN-Uncertain, DA-Disagree, SDA-strongly Disagree, N-frequency, WS-Weighted Score, MWS- Mean Weighted Score
Figures outside the bracket are frequencies of the respondents while figures in the brackets are product of Likert Scale values. Number of Respondents (N)=144, Mean Score (MS)=3.0, Upper Limit(UL)=3.05,and Lower Limit(LL)=2.95

Table 7: Spearman Rank Correlation Analysis for the Relationship between the Respondents' Socio-economic Characteristics and their level of Environmental Conservation Awareness in the Study Area

S/N	Test variables	U-value	P-value	Decision
1	Awareness of Environmental Conservation VS School Status	1213.50	0.66	Non-Significant
2	Awareness of Environmental Conservation VS Class	542.50	0.00	Significant
3	Awareness of Environmental Conservation VS Age	912.00	0.01	Significant

Table 8: Mann-Whitney U test (U) test for the Differences between Gender and Students level of Conservation Awareness.

S/N	Test variables	U-value	P-value	Decision
1	Awareness of Environmental Conservation vs Gender	1246.50	0.77	Non-Significant

DISCUSSION

Socio- economic Characteristics of the Respondents

The high number of female respondents recorded in the study area is an indication that there is an improvement in the girls-child education in the study area and hence the high level of female students enrolment. This finding differs with the submission of Ogunjimi et al., (2015) in Akure South Local Government Area of Ondo State, Nigeria. Where there were more male enrolment. The mean age of the respondents were below the country's estimated median age of 18.2 (CIA 2014). This is an indication that majority of the respondents were teenagers and falls into

group that is considered as the future leaders of our society.

The selection of schools during the sampling process was responsible for the high number of the respondents in the public school. The selection of six mixed school and six single sex school and most of the single sex schools were public schools, All the respondents were residents in the town. This was due to the fact that the study was conducted in the city and the respondents were staying with their parents.

The high number of Christian respondents recorded in the study area is an indication that the study area is located in a Christian state. This agree with the submission of Sampson (2014) who stated that Benue State is composed almost entirely of Christians.

Source of Information about Environmental Conservation

Several studies have reported the effectiveness of the mass media, particularly the radio and television in creating awareness concerning environmental issues (Ugboma, 2002; McCarthy and Brennan, 2009; Babalola et al., 2010). This they linked with their wide geographical coverage and the relatively cheap cost of acquiring and using them in contrast to the print media. This study however reported that school was the major source of information about environment. This contradicts the findings of Ali et al. (2017) who linked the low level of students awareness to poor knowledge of teachers about environmental issues. This is an indication that there is an improvement in teachers knowledge about environment in the study area.

Environmental Conservation Awareness among the Students

The study revealed high level of environmental conservation awareness among the students in Makurdi metropolis. The finding contradicts with the findings of Ali et al. (2017) who reported low level of environmental awareness among secondary school students in Kano metropolis attributed to the poor knowledge of teachers concerning environmental issues. Anijaobi-Idem et al. (2015) also reported low level of awareness in schools due improper implementation of environmental education at all levels of education. This is an indication that there is an improvement in students awareness of environmental issues in developing countries which Trumper (2010) considered to be moderate. According to Trumper (2010) students that are actively involved in environmental issues, demonstrate interest to learn about environmental topics and possess enthusiasm to work with environmental protection agencies as their future job. This suggest that students are generally passionate about the environment and they are prepared to take

action against behaviour that will constitute danger to environment(Shivar and Patil, 2007). This finding agrees with the findings in other countries like Estonia (Pata and Metsalu, 2008), India (Bhatnagar, 2012), Pakistan (Yousuf and Bhutta, 2012), Türkiye (Altin et al., 2014). The findings from the study is an indication that students are concerned with the environmental and ecological changes that happened around them which means that students are cautious about what goes on around them.

Factors influencing students awareness of environmental conservation

The result of the study showed that gender has no significant role in determining the level of awareness of environmental conservation (P=0.77). The result of this research study is consistent with the observation of Akomolafe (2011) that the gender of students was not important in their environmental awareness. On the other hand, in similar research, by. Yildiz et al., (2011) sex was not an important factor in environmental awareness. Ezeudu et al. (2016) presented a similar case where gender did not influence students awareness of climate change in Abia state, Nigeria. The level of concern the students have towards environment and the responsibility they feel for it showed no relationship with sex in a study by Yilmaz (2004). This result however disagrees with the findings of Yilmaz *et al.* (2004), Jenkins and Pell (2006) Ugulu and Erkol (2013) which stated that gender is an influential factor in gaining environmental knowledge, and gender of students influenced their attitudes toward the environment.

The study shows no variation between private and public secondary school students knowledge about the topic. This agreed with the findings of Akomolafe (2011) which shows that the school status of the students did not significantly influence their Environmental awareness. In other words, the students' environmental knowledge was not dependent upon whether they attended public or private secondary schools. That means that the students that attended both public and private schools were given the same teaching in environmental education and that means the public schools have improved in their teaching capability and are gradually striving to impact the same knowledge like those of the private schools. The finding of the present study contradict with the previous findings of Shobeiri et al. (2007), who reported that there is significant difference between the public and private school students in the level of environmental awareness. This implies that interest and awareness of students about environment will depend on the level of exposure and encouragement by teachers (Ali et al., 2017).

The result of the study indicated that class of the student has a Significant role in determining the student's level of environmental awareness. The higher the class the higher the level of environmental awareness. Hence,

the student in the senior secondary schools tends to be more aware of environmental conservation than the students in the junior secondary schools. Hence awareness increases with class. This result agreed with the study carried out by Mahajan and Darbari (2014) who observed that class of students determines their level of environmental awareness.

From this research age was a demographic factors that have influence on attitude and practice of individuals towards environmental management, as the age of the student increases the class of the student also increases and hence a corresponding increase in the level of awareness of the student. This disagreed with the submission of Ogunjinmi et al. (2015) where age was not a factor in the students' knowledge and attitudes toward environment.

CONCLUSION

The study revealed a high level of environmental conservation awareness among the secondary school students with the school being the major source of information on environmental conservation. The school whether private and public play a similar role in creating the awareness. Class and age were major factor that play a significant role in determining the student's level of environmental awareness, Despite the high level of awareness among students, they still feel there is room for improvement. They suggested that inclusion of conservation topics in school curriculum, holding of conservation seminars and improvement of mode of teaching environmental related subjects. Celebration of environmental days such as World Environmental Day, Earth Day and World Wetlands Day, Forestry day should be encouraged in school as this will help remind them about the importance of the environment in which they live in.

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