

AN INVESTIGATION OF ENVIRONMENTAL EDUCATION AWARENESS AMONG
SECONDARY SCHOOL SCIENCE TEACHERS AND STUDENTS: IMPLICATIONS FOR
SUSTAINABLE ENVIRONMENTAL DEVELOPMENT IN NIGER STATE

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ABSTRACT

This paper analyzed the level of awareness of environmental education among science teachers and science students in some selected secondary schools in Minna metropolis, Niger state. The design adopted for the purpose of data collection was a simple survey method. Two instruments namely Teachers Questionnaire (TQ) and Students Questionnaire (SQ) were designed and validated for data collection. Two hundred and fifty (250) respondents made up one hundred (100) teachers and one hundred and fifty (150) students from five (5) selected secondary schools were randomly selected for the study. The sampling technique adopted was the direct delivery technique or on the spot method. The data obtained were analyzed using statistical package for social science (SPSS) and Frequency Distribution (f_r), Mean (\bar{x}), percentage (%) scores statistics. An Alpha level of 0.05 of significant at 1 degree of freedom was set for data analysis. The finding indicates that teachers are more aware of environmental education than the students. However the finding shows that the much difference on awareness lies between the science teachers and science students with regardless to sex. Therefore sex has no effect on awareness of environmental education. The finding obtained from the study also showed that there is the need for environmental education curriculum in the primary, secondary school and tertiary institutions.

BACKGROUND of the study

Environmental education is a learning process that increases peoples knowledge and awareness about the environment and the associated challenges, develops necessary skills and expertise, motivation and commitments to make informed decisions take and responsible action (UNESCO 2005). Environmental education is a process of developing a world population that is aware of and concerned about the total environment and its associated problems, and one which has knowledge, attitudes, motivation, commitments and skills to work individually and the prevention of new ones (Jensen, 2002). Environmental education enhances critical thinking, -problem solving and effective decision making skills and teaches individuals to weigh various sides of an environmental issue to make informed and responsible decision, environmental education does not advocate a particular view point or course of action (Sens, James 2001).

From the definition given above, environment education can be seen to have consisted of five components, viz,

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

This definition emphasizes the awareness of values concept and attitudes that will enable man to realize the report between him and his environment. The international Union for the Conservation of nature and Natural Resources cited by EECO (2000) further amplifies the above definition, by emphasizing the skills necessary for understanding the relationship between man and his environment.

Therefore, environmental education programme involves educational processes and systems reconstructed as a means of a more human and ecological medium to address the consequences of the human activities on the environment. Understand how human factors such as values, politics, culture, history and economics related to appreciation of the environmental is endorsed in the definition of environmental education which sees it.

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As education that helps people to understand the forces that determine human behavior in relation to the environment, whether this be the education or in service training (Ohio E.E, 2000). According to Bonnett, (2002), Environmental education is part of the process by which deterioration of the environment can be retarded.

Every environmentally conscious citizen must have his 'home environment' in which he feels rooted which he loves, explores, understand and improves, and which he is ready to defend against every danger and deterioration. A sound global awareness can only grow out of such background, people lacking a 'home environment or deprived of it cannot acquire a proper awareness of environmental issue.

Statement of the problem

The lack of environmental education awareness among science teachers and science students and community at large yield a serious problem in environment as a result of unwise use of our natural environment due to ignorance, poverty, over population and greed among others had led to the degradation of environment which in turn compound human problems. Anderson(2004).

There are various environment- related topics in secondary school curricula. The topics are however integrated among various subjects some of which are only optional. This results in lack of cohesion among the topics and generality among the science teachers and science students. The outcome is that while some students are not opportune to study the topics, even those that are taught barely understand them in a comprehensive manner. This is because the topic are more or less taught as integral parts of some subject rather than in a unified form for the sake of their importance as they relate to the environment Anderson(2004).

Purpose of the study

The purpose of the study is to investigate the level of environmental education awareness of science teachers and science students. It will also strive to achieve the following objectives:

1. To find out the level of environmental education awareness of male and female science teachers and science students.
2. To determine the difference in environmental education awareness of sciences teachers and science students.

Research questions

1. Are there any differences between male and female science teachers and science students' awareness on environmental education?
2. Are there any differences between science teachers and science students' awareness on environmental education?

Research Hypotheses

- HO₁: There is no significant difference between male and female science teachers and science students' awareness on environmental education.
- HO₂: There is no significant difference between science teachers and male and female science students' awareness on environmental education.

METHODOLOGY

The design for this study is descriptive research design using survey method. Descriptive research describes and interprets the nature or statues of present conditions, trends or situations in a way that will permit the development of valid knowledge and purposeful action, (Oguniyi: 1984). The population for this study was secondary schools science teachers (males and females) and their science student (males and females). Science teachers and Science students from five schools are randomly selected within Minna metropolis. One hundred (100) science teachers and one hundred and fifty (150) science students were randomly selected from Federal Government College Minna, Ahmadu Bahago Secondary school Minna, Bosso Secondary School Minna, Government Secondary School Minna and Maryam Babangida Girls Science College Minna.

The questionnaire (instrument) used for the study was adopted from (Mikaili 2005). It requires science teachers and students to provide demographic information such as date, sex, qualification and subject taught as well as level of awareness of environment. The researcher administered the instrument to the subject personally with the help of school teachers.

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The instrument was validated by two science education experts in the department of science Education Department federal University of technology Minna. The instrument was pilot tested using split half; reliability coefficient of 0.78 was obtained which was considered suitable for this research. The questionnaire was administered to the respondents with the help of appointed teacher in each of the school concerned. One hundred (100) science teachers and one hundred and fifty (150) science students' questionnaires were administered. The method of data analysis employed was Analysis of Variance (ANOVA)

RESULTS

Hypothesis One

HO₁: There is no significance difference between male, female science teachers and mal, female science students Awareness on Environment Education

Table 4.1: ANOVA comparison of the mean responses of male, female science teachers and male, female science students on awareness of environmental education

	Sum of squares	Df	Mean square	F-value calculated	F-value critical	Sig.
Between groups	7761.741	3	2587.238	95.905*	2.65	.0001
Within groups	6636.350	246	26.997			
Total	14398.064	249				

NB ASTARIS (*) Significant at 0.05 level of significance.

TABLE 4.1: Shows the ANOVA Comparison of the mean responses of male, female science teachers and male, female science students Awareness on Environmental Education. From the table there is significance difference in the mean responses of Male, Female science teachers and Male, Female science students with regard to the Awareness of Environmental Education at 0.05 level of significance. ($F_{cal} = 95.905$, $F_{crit} = 2.65$; $df = 3, 246$; $P, 0.05$). Therefore hypothesis two is rejected. Hence there is significance difference between Male, Female science teachers and Male, Female science students on Awareness of Environmental Education.

Hypothesis Two

HO₂: There is no significance Difference between science teachers and science students Awareness on environmental education.

Table 4.2: ANOVA comparison of the mean responses of science teachers and science students awareness on environmental education.

	Sum of squares	Df	Mean square	F-value calculated	F-value critical	Sig
Between groups	7625.283	1	7625.283	276.941	3.89	0.0001
Within groups	6828.413	248	27.534			
Total	14453.696	249				

NB: ASTARIS (*) → Significant at 0.05 level of significance.

Table 4.2: Shows the ANOVA comparison of The Mean responses of Science Teachers and science students Awareness in Environmental Education from the table there is significance difference in the mean responses of science Teachers and science students with regard to the Awareness of Environmental Education at 0.05 level of significance ($F_{cal} = 276.941 > f_{crit} = 3.89$; $df = 1, 248$; $P < 0.05$). Therefore Hypothesis one is rejected. Hence there is significance difference between science teachers and sciences students on Awareness of Environmental Education.

To establish the point where the significance difference lies in the four variables; Male and female science teacher; male and female science students on Awareness of Environmental Education, Scheffe Post Hoc Tests was carried as presented in table 4.2b and 4.2c. the tables showed Scheffe Multiple Comparison result on the Scheffe Post Hoc Test.

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Table 4.2b: Post HOC multiple comparison tests of the mean responses of male, female science teachers and male, female science students on awareness of environmental education.

I VARIABLE CODE	J VARIABLE CODE	MEAN DIFFERENCE (I-J)	SIGNIFICANCE	REMARK
1.00	2.00	.22489	.997	Not significant
	3.00	12.38554*	.000	Significant
	4.00	10.30554*	.000	Significant
2.00	1.00	-.22489	.997	Not significant
	3.00	12.16065*	.000	Significant
	4.00	10.08065*	.000	Significant
3.00	1.00	-12.38554*	.000	Significant
	2.00	-12.16065*	.000	Significant
	4.00	-2.08000	.114	Not significant
4.00	1.00	-10.30554*	.000	Significant
	2.00	-10.08065*	.000	Significant
	3.00	2.08000	.114	Not significant

*Significant at 0.05 level of significance
 CODE 1.00 Stand for Male Teachers, 2.00 Stand for Female teachers, 3.00 Stand for Male Students, 4.00 stands for Female Students

Table 4.2C: Scheffe result of mean responses of male, female science teachers and male, female science students on awareness of environmental education

VARIABLE CODE	N	SUBSET FOR ALPHA =0.05	
		1	2
3.00	75	31.5467	
4.00	75	33.6267	
2.00	41		43.7073
1.00	59		43.9322
Significance		.197	.997

Table 4.2b and 4.2c show that there is no significance difference in the mean responses of Male, Female science teachers on Awareness of environmental education. However, there is significance difference between the mean responses of male science teachers and male science students, as well as female science teachers and female science students. Furthermore, there is no significance difference between mean responses of male science students and female science students.

DISCUSSION OF RESULTS

The discussion is done based on the findings from the tested hypotheses. The result of the ANOVA comparison of the mean responses of the science teachers and sciences students of awareness of environmental education in hypothesis one indicates that there is a significant difference in their mean responses this result shows that there is difference in the awareness of science teachers and science students with regard to environmental education. This finding agrees with the earlier result of Muzafer (1992). The result shows that science teachers are more aware on environmental education than the science students. This could be done due to the fact that environmental education is a new area of education and only few teachers and male and female science students are aware of the area. There is no significant difference between male and female science teachers and male and female science students on the awareness of environmental education. Although the result of the analysis on hypothesis two shows that there is significant difference in the mean responses of male and female science teachers and male, female science students. The difference still lies between the teacher and the students with regardless of sex. Therefore, sex has no effect on awareness of environmental education. This finding is in accordance with the findings of (Gurung, 1997) who indicated that the gender division of tasks is not very clear.

Implications for Sustainable Environmental Development in Niger State

Man sometimes have careless attitude to the environment. Sometimes, he is not aware or is ignorant of the consequences of his action on the environment which might destroys him if he is not educated. Environmental awareness in this case becomes very necessary in order to achieve sustainable environment:

- a) To motivate Nigerians to observe and study their environment
- b) To realize that members of the society must indulge in responsible actions that will preserve the environment for healthy existence
- c) To be aware of environmental pollution and consequences on Man's health and existence.

CONCLUSION

This research work is to be concluded in the sense that there is need for the introduction of environmental education as a core subject in Nigeria secondary schools since the environmental relation topics that are dispersed in various subjects do not suffice in provision of basic awareness on the environment. This is supported by the responses obtained from the science students on basic questions on environmental education and by the positive response obtained from science teachers to that effect.

RECOMMENDATIONS

From the findings of this work, the following recommendations are hereby put forward:

- 1. Curriculum planners and designers should plan an environmental educational curricular for primary, secondary and tertiary levels.
- 2. Federal Environmental Protection Agency FEPA should establish a national data bank for environmental monitoring/management and acquisition of mobile monitoring equipment for air, land and water.
- 3. The National Education Research and Development Council (NERDC) should collaborate with international organization such as UNESCO, for a more detailed formation/adoption of national strategy for environmental education.
- 4. Environmental education should be introduced and made compulsory at all levels of our educational system.
- 5. Establishment of environmental education units in federal and state ministries of education that will be responsible in setting up conservation clubs in schools and establishing conservation resources centres.

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