

NIGERIAN TEACHERS' ATTITUDE TOWARD ENVIRONMENTAL SUSTAINABILITY ISSUES IN THE CURRICULUM

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ABSTRACT

The purpose of the study was to determine the nature and extent of teachers' attitude toward environmental sustainability issues in the school curriculum and the influence of their gender, teaching experience, educational qualification, and type of school where they teach (primary or secondary) on their attitude. Three hundred twenty-one teachers selected from 18 primary and secondary schools in Calabar Education Zone of Cross River State, Nigeria participated in the study. Data for the study were collected with a 36-item, modified Likert-type attitude questionnaire. The data collected were analyzed using one-sample *t*-test and four-way ANOVA. The results indicate that (i) the teachers have significantly positive attitudes toward environmental sustainability issues and the teaching of the environmental sustainability topics in the school curriculum; and (ii) the main effects of gender, teaching experience, educational qualification, and school type and their interactions are not significant ($p > .05$) for attitude toward environmental sustainability issues. The results are discussed and recommendations made.

INTRODUCTION

The earth is primarily a life support system. It consists essentially of biochemical processes that imbue it with the capacity to sustain life. As an ecosystem, the earth, however, has a threshold within which it can effectively absorb or withstand

interruptions and radical changes in the biochemical processes that help to sustain life. Unfortunately, development-oriented activities of humans over the last century or so have primarily restructured the environment and upset the delicate balance of nature. It has resulted in a number of changes on planet earth. These changes are essentially inimical to the continued existence of humans and other life forms here on earth. For example, the air we breathe is constantly being overloaded with carbon dioxide and other poisonous materials from vehicular emissions, exhausts of industrial and power plants, etc. The waters are rendered unsafe by a variety of chemical substances. Lands are stripped bare of vegetation or polluted with oil spills and human wastes. Rising sea levels as a result of global warming cause serious and immediate threat to people living in island countries and coastal areas. The use of ozone-depleting substances such as products with chlorofluorocarbons, halons, and methyl bromides (from which plastics and foams are made) allow excessive levels of harmful ultraviolet rays to reach the earth, resulting in increased rates of skin cancer, eye damage, and weakened immune systems. There is a higher rate of exploitation and use of natural resources and higher levels of waste generation apparently due to increased human population. Pimentel and others, in Segelken (1998), report that an estimated 40% of world deaths can be attributed to various environmental factors, especially organic and chemical pollutants.

The environmental effects of human activities are most often not localized. In other words, the environmental problems created in many parts of the world are hardly delimited by local or national boundaries. Thus, there is global concern about the increasing incidences of environmental damage. As a result, sustainable development has become a global issue.

According to the Council of Ministers of Education (2000) sustainable development is both a goal and a concept. As a goal, it is an idea of a world where people protect the environment as they carry out their daily activities. As a concept, it involves probing of limits on natural resources, capacities of ecosystems, and interactions among social, economic, political, and environmental systems. Essentially, it works toward a sustainable quality of life, now and in the future. Thus, Noibi and Lawal (1993) sees it as a development strategy wherein the physical assets, natural and human resources, as well as available funds are managed in a manner that ensures increasing health and wealth for both the present and future generations on planet earth. The essence of sustainable development is to meet the needs and aspirations of the present generations of man and other living creatures, both plants and animals, without compromising the capacity of future generations to meet their own needs and aspirations (NEST, 1991).

Sustainability is the destination of sustainable development (Council Ministers of Education, 2000). Its aim is to make decisions and conduct activities in a manner as to ensure persistence over an apparently indefinite future in the improvement and maintenance of ecosystems, the economy, and the health and well-being of people on the earth. The index of the attainment of sustainability

is constancy of the natural capital stock. Of primacy in this regard is the avoidance of negative changes in the stock of natural resources and in the quality of the environment.

The United Nations (1992), Uche (1995), UNESCO (1997), and Inyang Abia (1998, 2001) all assert that education is humanity's best hope and most effective means for the quest to achieve sustainable development at national or global levels. This may be due to the fact that sustainable development calls for particular skills, knowledge, values, and attitudes regarding the environment, the economy, and the well-being of people. Perhaps, in response to the calls by UNESCO and United Nations, education for sustainability has become the norm in most countries of the world in recent years.

In Nigeria, there have been some activities aimed at creating awareness and educating the masses on environmental issues. Initially the mass media, various non-governmental organizations (NGOs), and Government Agencies were used to create awareness of the nature of the environment and the need for its sustainability. As Uche (1995) observed:

The birth of the Nigerian Conservation Foundation (NCF) in the 1980's, the rising interest among policy makers on the need for a sound environmental base for development, the launching of the National Conservation Strategy (NCS) in 1986, the Natural Resources Conservation Council (NRCC) in 1988, . . . and the ultimate launching of the National Policy on the Environment in 1989 were all critical steps in the national drive towards environmental awareness and resources conservation. (pp. 16-17)

In order to facilitate the education of the citizenry for sustainability, the Nigeria Government has infused environmental sustainability topics into the 2003 version of the National Curriculum for Primary Schools (NERDC, 2003). The topics infused include population, pollution, soil management, waste and waste disposal, drugs and drug abuse, etc. The idea is to start education for sustainability from the foundation. While arrangements are made to do the same in higher levels of education, teachers are encouraged to incorporate environmental sustainability issues in their instruction.

Teacher characteristics (knowledge, attitude, values, etc.) are critical factors in the successful implementation of any curriculum (Kalu & Ali, 2004). Unfortunately, the content of teacher education curricula in Nigerian Teacher Training Colleges, Colleges of Education, and even University Faculties of Education, until recently, has little or nothing on environmental sustainability. This means that the serving teachers may not have the background knowledge needed for effective teaching of topics related to environmental sustainability. Consequently, they may not be positively disposed to teaching the infused sustainability topics or to incorporate sustainability issues in their instruction. It therefore becomes apposite to ask the question, what is the nature and extent of Nigerian teachers' attitude toward environmental sustainability topics and issues in the school curriculum?

Attempts have been made to assess attitude of people toward environmental sustainability issues. For example, Lindstrom (2003) interviewed 160 people in four municipalities in the southeast of Sweden regarding their attitude toward sustainable development and found that they considered sustainable development as being more important to the world than the municipality or family. The responsibility for sustainable development was mostly allocated to governments and global organizations. Dennis, Ekanem, Singh, and Tegene (1998) also found that though a majority of small farmers in Tennessee described sustainable agriculture as environmentally sound practices, only 10% described it as socially acceptable. There is no study known to the authors that has been conducted on teachers' attitude toward environmental issues and the teaching of environmental sustainability. The present study is meant to fill this yawning gap.

Purpose of the Study

The purpose of the study was to determine:

1. the nature and extent of teachers' attitude toward environmental sustainability issues in the school curriculum; and
2. the extent to which teacher gender, teaching experience, type of school where teacher is teaching (Primary or Secondary) and educational qualification influence teachers' attitude toward environmental sustainability topics and issues in the curriculum.

Hypothesis

1. Teachers' attitude toward environmental sustainability issues in the school curriculum is not significantly positive.
2. Teacher gender, teaching experience, educational qualification, and school type where she/he is teaching (Primary or secondary) and their interaction do not significantly influence their attitude toward environmental sustainability issues in the school curriculum

RESEARCH METHOD

Sample

The sample consisted of 321 teachers (129 males and 192 females) selected from 18 schools (10 primary and 8 secondary schools) in Calabar Education Zone of Cross River State, Nigeria. The sample is made up of 160 primary school teachers and 161 secondary school teachers. Though there are three Education Zones in Cross River State, only schools in Calabar Education Zone were used because of proximity to researchers. Out of the five Local Government Areas (LGAs) in Calabar Education Zone, schools in four LGAs were used for the study. Questionnaires sent to the fifth LGA were not returned.

The schools used in each LGA were randomly selected. Three schools were selected from each of the two LGAs, while six schools were selected from each of the remaining two LGAs. Accidental sampling technique was used in selecting respondents in each school. Only teachers who were available and willing to fill out the Questionnaire were used for the study.

Instrument

A 36-item, 4-point Likert-type attitude questionnaire was used in collecting data for the study. In designing the instrument, the researchers differentiated between attitude toward the teaching of environmental sustainability topics in the school curriculum and attitude toward environmental sustainability issues generally. The authors believe that the two, though related, can impact differentially on how teachers implement the curriculum on environmental sustainability. Thus, 16 items measured teacher's attitude toward teaching of environmental sustainability topics while 20 items measured their attitude toward environmental sustainability issues. Sample item statements are as follows: Environmental quality issues should be taught in every class in schools; Teaching environmental sustainability issues should be the concern of all teachers; Environmental education should be the responsibility of parents at home and not the school; Government should leave environmental education to workshops and seminars and not as a curriculum content; It is irresponsible to have more than four children; The tax system should be redesigned to encourage small families; All product containers should be made recyclable; Commuters should not be allowed to drive to work alone so as to save fuel that will be used by each person having a car; The use of pesticides should be banned; etc. The respondents were expected to tick any of the response options: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) as it reflects their level of agreement or disagreement with the statements. By administering the questionnaire to 20 teachers in a school, the reliability of the two parts of the instrument was estimated to be .75 and .72 respectively, using the Cronbach alpha technique.

Data Collection Procedure

Four research assistants were deployed to administer the printed questionnaires to the teachers in their respective schools. In some cases the filled-out questionnaires were returned on the spot while in other cases the research assistants went back on a different day to collect the completed questionnaires.

DATA ANALYSIS AND RESULTS

For positively stated items, the responses of the subjects were scored as follows: SA – 4 points, A – 3 points, D – 2 points, and SD – 1 point. Negatively stated items were scored in reverse order. The total scores for each respondent

were obtained separately for attitude toward the teaching of environmental sustainability topics and attitude toward environmental sustainability issues. Subsequent analyses were done separately for the two types of attitude. The data collected were analyzed to test the hypotheses using one-sample *t*-test and four-way (gender × school type × teaching experience × educational qualification) analysis of variance (ANOVA). The results are shown in Tables 1 and 2.

The results presented in Table 1 indicate that mean scores for the two variables are respectively significantly ($p < .01$) greater than the expected or population mean (μ). This means that, on the average, the teachers' attitude toward the teaching of environmental sustainability topics in the school curriculum and attitude toward environmental issues are encouragingly positive.

The results presented in Table 2 indicate that none of the main effects and interactions for teachers' attitudes toward environmental sustainability issues is significant ($p > .05$). However, for teachers' attitude toward the teaching of environmental sustainability topics in the school curriculum, whereas none of the main effects is significant ($p > .05$), the following interactions are significant: school type × gender × teaching experience ($p < .01$), gender × educational qualification ($p < .05$), school type × teaching experience × educational qualification ($p < .05$), and gender × teaching experience × educational qualification ($p < .01$).

A post hoc comparison using Fisher's least significant difference (not shown) indicates that: (i) male teachers with masters degree have a significantly ($p < .05$) more positive attitude toward the teaching of environmental sustainability issues than male teachers with NCE/OND, and female teachers with grade II certificate, NCE/OND and first degree; (ii) female secondary school teachers with 16-20 years experience have significantly ($p < .05$) more positive attitude than their counterparts with 6-10 years experience; (iii) secondary school teachers with masters degree, 16-21 years and above 21 years experience respectively have significantly more positive attitudes than their counterparts with first degree and 11-15 years and above 21 years experience, NCE/OND holders with 6-10 years experience as well as primary school teachers with first degree and 11-15 years experience; and (iv) male teachers with masters degree, and 6-10 years,

Table 1. One-Sample *t*-Test of Teachers' Attitude Toward the Teaching of Environmental Sustainability Topics in the School Curriculum (TEACHATT) and Attitude Toward Environmental Sustainability Issues (ISSUESATT)

| Variable | <i>N</i> | <i>X</i> | <i>S</i> | μ | <i>t</i> |
|-----------|----------|----------|----------|-------|----------|
| TEACHATT | 321 | 44.875 | 5.351 | 40 | 16.323* |
| ISSUESATT | 321 | 55.642 | 7.132 | 50 | 14.173* |

* $p < .01$.

Table 2. Four-Way ANOVA of the Influence of School Type (School), Gender (Sex), Teaching Experience (Exp), and Educational Qualification (Qualific) on Environmental Sustainability Topics (TEACHATT) and Attitude Toward Environmental Sustainability Issues (ISSUESATT)

| Source of Variation | TEACHATT | | | | ISSUESATT | | | |
|--------------------------|----------------|-----|--------------|---------|----------------|-----|--------------|---------|
| | Sum of squares | df | Mean squares | F | Sum of squares | df | Mean squares | F |
| Model | 648075.653 | 49 | 13226.034 | 478.557 | 996705.552 | 49 | 20340.930 | 413.278 |
| SCHOOL | 19.658 | 1 | 19.658 | .711 | 15.622 | 1 | 15.622 | .317 |
| SEX | 26.403 | 1 | 26.403 | .955 | 47.310 | 1 | 47.310 | .961 |
| TEACHEXP | 108.956 | 4 | 27.239 | .986 | 52.271 | 4 | 13.068 | .266 |
| QUALIFIC | 175.497 | 3 | 58.499 | 2.117 | 139.729 | 3 | 46.576 | .946 |
| SCHOOL*SEX | 102.882 | 1 | 102.882 | 3.723 | 175.230 | 1 | 175.230 | 3.560 |
| SCHOOL*TEACHEXP | 224.146 | 4 | 56.037 | 2.028 | 67.852 | 4 | 16.963 | .345 |
| SEX*TEACHEXP | 102.974 | 4 | 25.744 | .931 | 214.489 | 4 | 53.622 | 1.089 |
| SCHOOL*SEX*TEACHEXP | 288.160 | 2 | 144.080 | 5.213** | 42.051 | 2 | 21.025 | .427 |
| SCHOOL*QUALIFIC | 32.069 | 3 | 10.690 | .387 | 193.041 | 3 | 64.347 | 1.307 |
| SEX*QUALIFIC | 223.569 | 3 | 74.523 | 2.696* | 128.825 | 3 | 42.942 | .872 |
| SCHOOL*SEX*QUALIFIC | 10.699 | 1 | 10.699 | .387 | 90.310 | 1 | 90.310 | 1.835 |
| TEACH EXP*QUALIFIC | 560.967 | 12 | 46.747 | 1.691 | 162.531 | 12 | 13.544 | .275 |
| SCHOOL*TEACHEXP*QUALIFIC | 222.135 | 2 | 111.068 | 4.019* | 55.010 | 2 | 27.505 | .559 |
| SEX*TEACHEXP*QUALIFIC | 364.460 | 3 | 121.487 | 4.396** | 142.869 | 3 | 47.623 | .968 |
| Error | 7517.347 | 272 | 27.637 | | 13387.448 | 272 | 49.219 | |
| Total | 655593.000 | 321 | | | 1010093.000 | 321 | | |

*p < .05. **p < .01.

16-20 years, and above 21 years experience respectively have significantly ($p < .05$) more positive attitudes than male and females teachers with lower qualifications even when the teaching experience is the same in some cases.

DISCUSSION AND IMPLICATIONS

The results of data analyses indicate that teachers' attitude toward the teaching of environmental sustainability topics in the curriculum and their attitude toward environmental issues are significantly ($p < .01$) positive. In other words, they are favorably disposed to the environmental sustainability issues and its teaching. This means that the teachers are not only predisposed to teaching the environment sustainability topics in the curriculum, but they will teach the correct thing, motivate and persuade the learners to be conscious of the environment in whatever they do. With such a positive attitude they are likely to teach with enthusiasm. The positive attitude of the teachers may be an indication that the attempts made to sensitize the Nigerian populace on environmental problems were fairly successful.

The results in Table 2 indicate that the main effects for school type, gender, teaching experience, and educational qualification and their interactions are not significant with regard to attitude toward environmental sustainability issues. This means that the teacher's attitude toward environmental sustainability issues does not depend on the type of school where they teach (primary or secondary), their gender, teaching experience, and educational qualification. Given the fact that the curricula content for Teacher Education is very low on environmental sustainability, the observed homogeneity of the teachers' attitude toward environmental sustainability issues only shows that they were sensitized to the same degree, may be due to the commonality of the means of sensitization, viz, mass media, workshops, and seminars; albeit formal education on sustainable development and environmental sustainability is very necessary. The infusion of various subject matter curricula with environmental sustainability topics at the primary school level is laudable. The same should be done for secondary school subjects. Already one of the general studies courses in tertiary institutions, citizenship education, is loaded with topics on environmental sustainability. It is still necessary to do the same in some other courses that students take before graduation in tertiary institutions.

With regard to teachers' attitude toward the teaching of environmental sustainability topics in the school curriculum, the results have shown that only four of the interactions are significant. A close study of the results of the post hoc analyses indicate that male teachers with masters degree or masters degree holders with high teaching experience recurrently have significantly more positive attitude than other categories of teachers. This may be as a result of the fact that the masters degree program extended the scope (both breadth and depth) of the teachers' experience in sustainable development and environmental sustainability. Perhaps

masters degree holders who are males or highly experienced may have embraced the idea of teaching environmental sustainability to youths much more than others. The implications of this finding for the implementation of the curricula infused with topics on environmental sustainability are far reaching. Incorporation of environmental sustainability issues into the teaching of subject matter which has not been so infused is necessary so as to facilitate and increase the awareness of female teachers. Such female teachers who may have lower educational qualifications and teaching experience, need more access to information and education in environmental sustainability and sustainable development. Appropriate options to fill this gap include in-service education, workshops, and seminars.

SUMMARY

Sustainable development and environmental sustainability have become global issues. It is generally believed that they can be achieved through education. In response, the Nigerian government infused topics on environmental sustainability into the primary school curriculum. But most of the teachers have little or no background education in environmental sustainability. The purpose of the study was therefore to determine the attitude of Nigerian teachers to environmental sustainability issues in the school curriculum.

A 36-item, modified Likert-type attitude questionnaire was administered to 321 primary and secondary school teachers in Calabar Education Zone of Cross River State, Nigeria. The data collected were analyzed using one-sample *t*-test and four-way ANOVA. The results indicate that:

1. Teacher's attitude toward the teaching of environmental sustainability topics in the school curriculum and their attitude toward environmental sustainability issues are respectively significantly greater than expectation. These imply that they have more positive attitudes.
2. The main effects for school type, gender, teaching experience, and educational qualification and their interactions are not significant with regard to attitude toward environmental sustainability issues.
3. With attitude toward the teaching of environmental sustainability topics in the school curriculum as dependent variable, only the following interactions are significant: Gender \times Educational Qualification, school type \times gender \times teaching experience, school type \times teaching experience \times educational qualification, and gender \times teaching experience \times educational qualification.

The implications of the findings were discussed and the following recommendations seem pertinent:

1. The existing curriculum at all levels of education should be reviewed to richly include environmental sustainability and sustainable development concepts.

2. Such curricula should be backed up with culturally relevant educational inputs such as motivated personnel who are committed to sustainability, and relevant resources (equipment materials, space and funds).
3. The need to create awareness in environmental sustainability should be translated into action through sustained environmental education through both formal and informal education.

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