

The Teacher and the Teaching of Climate Change: A Case Study of Obio-Akpor Local Government Area of Rivers State Nigeria

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Abstract- The study was a descriptive survey which investigated the factors influencing the teaching of climate change, and how equipped teachers are in terms of knowledge and teaching strategies, in Senior Secondary Schools in Nigeria. The population of the study were Curriculum specialists and the Secondary School teachers in Obio-Akpor Local Government Area. 90 teachers and 10 curriculum specialists formed the sample while four research questions and one null hypothesis guided the study. The instrument used was questionnaire which was developed by the researcher. The reliability coefficient of 0.85 was established using Pearson product moment correlation coefficient analysis. The data collected was analyzed using mean, and standard deviation and Z test was used to test the null hypothesis at 0.05 level of significance. Among the findings are those teachers require adequate knowledge and professional skills to teach climate change. Moreover, there is no climate change curriculum in Senior Secondary Schools in Nigeria. It was therefore recommended that teacher education programs should be restructured to include knowledge of climate change and professional skills to teach such practical life experience as Climate change and also develop climate change curriculum at all levels of education in Nigeria.

Index Terms—Climate change; professional skills; Senior Secondary; Teaching; Obio Akpor; Nigeria

I. Introduction

Teaching of climate change has become a necessity which needs attention of the curriculum planners in order to create awareness to people about what climate change is, its factors and effect on the environment. The loss of life and property due to flood, hurricane and storm and other unsuitable weather conditions have necessitated the cry to teach Climate Change in Senior Secondary Schools in Nigeria. Ignorance and lack of knowledge have dragged many people into practices that result in environmental hazard. In order to achieve a good result on educating people about climate change, school curriculum must be restructured to embrace climate change and the teacher has to be adequately prepared.

A teacher is that person who imparts knowledge, behavior pattern or concept into an individual. In this case parents are normally regarded as a child's first teacher. Teaching can be done by any individual but how well what is to be taught is imparted in the learner is a different ball game. Therefore a

teacher is expected to acquire all the knowledge and skills required of the person as a teacher for him or her to be accepted as a professional teacher. This coincides with Vikoo's view when he posited that a teacher by profession is referred to someone who has undergone training and has specialized knowledge of a certain discipline and knowledge of acceptable way of teaching the subject. Vikoo (2003).

Teachers' role are characterized by providing learning situations, developing, interpreting and implementing curriculum, transmitting of information and skills, facilitating learning, molding of attitude, improvising of learning material, evaluating of learning and playing loco parent. A professional teacher must have undergone certain training to be able to play the above mentioned roles required of him or her. He or she should be knowledgeable and must effectively motivate his students to learn.

A good teacher should be knowledgeable in curriculum, in the learners' characteristics and also knowledgeable in educational purpose and values. He or she should understand how to change the learners' feeling, thinking and negative actions. The positive change of behavior in the learners are the teachers' focus which is what is required to impart climate change education into secondary school students in Nigeria. However the formation of a sound and well-informed teacher starts during his or her training. Being grounded in the subject they are going to teach, curriculum organization of content of the subject and practice of using behavioral skills are qualities expected of a professional teacher. In the face of the problem of climate change effect which is hitting the country and the world at large, it is not certain how well-informed and well-groomed in teaching skills secondary school teachers are about climate change phenomenon.

Climate change is literally change in weather pattern of a place from what it is used to be. Ehezue (2011) in his lecture on global warming and climate change delivered on the AHIAJOKU festival in Imo state, Nigeria described global warming as 'consistent increase of our world temperatures scientifically explained to be caused by a number of factors relating to pollution of our atmosphere which serves to

distribute energy of sun's radiation received by the earth'. Most of the radiant energy coming from the sun passes through the various layers of the atmosphere and is converted in the process as the atmospheric heat before it radiate back into the space. The wind, ocean current and tides and topographic convections dissipate and redistribute thermal energy giving rise to short term fluctuation of atmospheric system called WEATHER and long term fluctuation referred to as CLIMATE(Ingersoll in Eheazu 2011). It was further stated in Eheazu that in spite of the redistribution of the sun's radiation, certain gases trap heat emitted from the earth's surface, there by insulating and warming our planet. Without this blanketing which is referred to as greenhouse effect, the earth surface temperature would have been too cold for most living organisms to survive. Naturally the blanketing greenhouse constitute only 1% of atmospheric composition. In the past few decades, human activities on earth have increased the atmospheric concentration of greenhouse above normal and constitute problems popularly referred to as climate change.

Problem of Climate change is a major challenge for the whole world. The problem facing the world is how to mitigate the impact of global climate change. Mkpa (2013) suggested global-scale concerted effort beginning with raising awareness and properly educating people about climate change phenomenon. He posited that heightened awareness, sensitization and clear understanding of the problem will change human attitudes and behavior in order to address climate change and other environmental issues.

Developing climate change curriculum which deal with content, youth training and adaptability mechanism is the best way to mitigate the problem of climate change. This coincides with Fortner's observation that Science curriculum restructuring effort in the United States insists that reform should involve aspects that favor instruction on global climate change (Fortner2011). Therefore the restructuring of the curriculum which includes climate change and effectively teaching it in senior secondary schools in Nigeria calls for the attention of the teachers but it is not certain the preparedness of teachers in the teaching of climate change.

The study specifically investigates teachers' preparedness in terms of knowledge and skills and the factors influencing the teaching of climate change in Senior Secondary School in Nigeria.

II. Objectives

1. To ascertain the factors influencing the teaching of climate change in senior secondary schools in Nigeria.
2. To ascertain the teachers knowledge and professional skill required to teach climate change in senior secondary schools.
3. To investigate the best strategies useful in teaching of climate change.
4. To investigate the constraint militating against teaching of climate change in senior secondary schools in Nigeria.

The study is guided by the following research questions;

III. Research Questions

1. What are the factors influencing the teaching of climate change in Senior Secondary Schools in Nigeria?
2. What knowledge and professional skills are required by the teacher to teach climate change in senior secondary schools in Nigeria?
3. What are best strategies useful in teaching of climate change in senior secondary schools?
4. What are the constraint militating against teaching of climate change in senior secondary school.

The hypothesis Ho: There is no statistical significant difference in the mean rating of female and male respondents on the knowledge and professional skills required to teach climate change in senior secondary schools in Nigeria.

IV. Research Methodology

The study was a descriptive survey research which sought to ascertain the mean response of curriculum specialists and the teachers on teachers' preparedness and the factors influencing the teaching of climate change in Senior Secondary Schools in Nigeria.

V. Area of the Study

The study was done in Obio-Akpor Local government Area in Rivers State Nigeria.

VI. Population of the Study

The population for the study was drawn from Secondary School teachers in Obio-Akpor Local Government Area and curriculum specialists identified from university of Port Harcourt and University of education In Rivers State.

Sample and Sample Technique

A simple random sampling technique was adopted to select ten schools. Five of the schools are private and the rest are government schools. Nine teachers were selected from each of the ten schools making a total of 90 samples in addition to ten identified curriculum teachers in two university making a total of 100 samples

Instrument

The instrument for the study was a likert scale questionnaire developed by the researcher. The rating of the response were: Strongly Agree =4 Agree=3 Disagree=2 Strongly Disagree=1

The expert in Curriculum Studies and Educational Technology in the University of Port Harcourt validated the instrument. The corrections which were made were effected in the final draft of the instrument.

Reliability of the Instrument

Test Re-test method for testing reliability was applied. The researcher administered 5 copies of the instrument to curriculum experts and 20 copies to the secondary school teacher in private and government schools that were not part

of the sampled schools. The same instrument was re-administered to the same group after 3week after rearranging the items. The two results were correlated using Pearson product Moment Correlation Coefficient analysis. A reliability of 0.85 which was high was obtained.

Validation of the Instrument

Two experts from department of Curriculum Studies and Educational Technology in the University of Port Harcourt validated the instrument. They made some correction in some items which seem ambiguous. The correction was effected in the final draft.

Method of Data collection

Copies of the questionnaire were distributed and collected. They were correctly filled by the respondents.

Method of Data Analysis

The items of the instrument were responded to on a 4 point scale. Mean score was used in answering the research questions. Any item with a mean score of 2.5 is accepted while item with a mean score below 2.5 is rejected. A Z test statistics was used to test the null hypothesis at 0.05 level of significance which says that there is no significant difference in the response of male and female respondents on the teacher’s knowledge and professional skills required to teach climate change in senior secondary schools. This statistics is appropriate because two groups were compared and the sample is above 30.

VII. Results

The result is presented based on research questions

Table 1 Mean rating on the factor which necessitates the teaching of climate change in senior secondary schools in Nigeria.

S/N	The factors influencing the teaching of climate change in senior sec school	N	M	S	Criterion Mean	R
1.	Lack of awareness about climate change	100	3.7	0.5	2.5	A
2.	Inadequate knowledge about causes and effect of climate change	100	3.7	0.4	2.5	A
3.	Lack of adaptability	100	3.3	0.6	2.5	A

	mechanism					
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Table 1 revealed that all the items in numbers 1`-3 scored 2.5 and above which are the acceptable mean. This indicates that all the items are factor influencing the teaching of Climate Change in Secondary Schools in Nigeria.

Table 2 Mean Rating on the knowledge and professional skills required by teachers in order to teach Climate Change in Senior Secondary Schools in Nigeria.

Teachers’ knowledge and professional skills required to teach climate change in senior sec school	N	M	S	Criterion Mean	R
Knowledge of the subject matter(climate change)	100	2.5	0.2	2.5	A
Knowledge of the curriculum content.		3.4	0.8	2.5	A
Knowledge of the learner.		3.3	0.3	2.5	A
Understanding of how to change the learners thinking and feeling.		3.6	0.8	2.5	A
Knowledge of curriculum organization.		3.2	0.4	2.5	A

Table 2 reveal that item 4 to 8 scored 2.5 and above which is acceptable mean indicating that all the items are professional skills required by the teacher to teach climate change in senior secondary schools in Nigeria

Table 3: Mean Rating of best strategies in teaching of climate change in senior secondary in Nigeria. –

S/N	Best strategies in teaching of Climate Change	N	N	S	Criterion M	R

9	Use of electronic teaching to simulate weather condition	100	36	37	0	2.5	A
10	Use of project method	100	38	34	0	2.5	A
11	Use of videos and C, Ds	100	36	37	0	2.5	A
12	Field trips to hazard sites	100	38	30	1	2.5	A

Table 3 reveals that all the items in 9 to 12 scored up to 2.5 and above indicating that all the items are teaching strategies in teaching of climate change in senior secondary schools in Nigeria.

Table 4: Mean Rating of the constraints militating against teaching of climate change in senior secondary schools in Nigeria.

S/N	Constraints against teaching of climate change.	N	M	SD	Criterion M	RM
3	Lack of basic knowledge of climate change phenomenon by teachers	100	31	30	2.5	A
4	Inadequate knowledge of causes of climate change.	100	39	34	2.5	A

5	Lack of structured curriculum of climate change education.	100	32	30	1	2.5	A
6	Lack of teaching equipment such as e-classroom.	100	37	34	0	2.5	A
7	Lack of power.	100	32	31	1	2.5	A

Table 4 revealed that all the items from AAno.13-17 scored above 2.5 which are acceptable mean. This indicates that the items are constraints militating against climate change.

Table 5: Z test of difference between the mean ratings of male and female respondents on teachers' professional skills required to teach climate change in senior secondary schools in Nigeria.

		M	SD	S/L	Z cal	Z table
Female Respondents	6	7.1	2.8	.05	.00	.2
Male Respondents	4	6.6	2.4			

Table 5 revealed that Z calculated is less than Z table. Since the Z calculated is less than Z table it is accepted that there is no significant statistical difference between the mean responses of male and female respondents on the teachers' knowledge and professional skills required to teach climate change in senior secondary schools in Nigeria.

VIII. Discussion of Findings

Table one showed that all the items which are lack of awareness, inadequate knowledge about causes and effects of climate change, lack of adaptability mechanism influenced the teaching of climate change in senior secondary school. This is in line with the study reported by UNDP (2010) in Umosen, Archibong, & Alsa (2013) which indicated that the level of awareness on climate change was rather low in Nigeria and it is likely to continue if no intervention measures were taken. In

another study by Olorunfemi in Umosen et al (2013), it was noted that perhaps the biggest obstacle to reducing the impact of climate change is the lack of awareness and the knowledge. On a closer look, it is observed that many people cannot explain what climate change is. They have attributed the effect to punishment from God without knowing that people are the cause of the problem of global warming.

The study in table 2 revealed that all the respondent accepted that Knowledge of the subject matter (climate change), curriculum content, the knowledge of the learner, understanding of how to change the learners' feeling and attitude and knowledge of curriculum organization which are the items in table 2 are what the teacher requires to teach climate change in senior secondary schools in Nigeria. The fact is that most teachers do not seem to have these knowledge. That could be the reason why Igbokwe (2013) raised some fundamental question on the quality of training some teachers these days received. Does the teacher education program adequately cater for the challenges that might arise in the society? Curriculum planners of teacher education program should restructure the program.

In table 3, it was revealed that all the respondents accepted that the following are best strategies in teaching climate change: use of electronics to simulate weather condition, use of project method, use of videos and CDs and field trips to hazard areas. This was supported by fortner(2001) who posited that all earth system studies are based on principle of Learning by becoming involved in inquiry.

Table 4 revealed that lack of basic knowledge of climate change phenomenon by the teacher, lack of the knowledge of the causes of climate change, lack of structured curriculum on climate change, lack of teaching equipment (e- classroom) and lack of power are some of the major constraint of teaching climate change. It is believed that no teacher can impart the knowledge he or she does not have and even if he or she is adequately prepared and curriculum content does not capture climate change, he or she will not be able to teach it. However Eric (2013) posited in his paper titled Enterprise education that young people need to be prepared for a world which is changing rapidly. Many of the jobs which they will do when they leave school do not yet exist and they will probably have several jobs during their life time. They need a well-structured curriculum, teachers and coordinators who will provide them with skills and attitude to cope with unpredicted future to be able to deal with setbacks and disappointment in positive way and to continue learning for the rest of their lives. (Enterprise Training and learning in Eric (2013).

Table 5 revealed Z test for null hypothesis which showed that there is no significant statistical difference in the mean rating of male and female respondent. This also an indication that the items responded to are all accepted by the respondents as the knowledge and professional skills required by the teacher to teach climate change. There was no gender factor which could influence the responses.

Implications

The implication of the findings is that teachers need knowledge, professional skills and strategies to teach climate change successfully. It also implies that curriculum content of

teacher education program should be restructured in other to train quality teachers. Also there should be climate change curriculum in all levels of education in Nigeria to cater for the training of youths to face the challenges of climate change. The best strategies to teach climate change is getting the learners involve in practical through field trips. This finding also implies that despite the Opinion of Okorie(2013) who posited that climate change impact men and women differently all the respondents agreed that the teachers need knowledge and professional skills in other to teach climate change in senior sec school.

IX. Conclusion

The study X-rayed the factors which influenced the teaching of climate change among which was inadequate awareness and knowledge of climate change. It was concluded that teachers do not have enough knowledge and skills required to impact climate change education and other life experience perfectly, therefore doubt the adequacy of teachers Education program in Nigeria. It was acceptable that Nigeria senior secondary school curriculum does not include climate change at all levels of education. It was also noted that the best strategy in teaching climate change is by field trips to affected sites or by simulation of the environment to get the learner involve in practical.

X. Recommendations

- Teacher education program should be restructured to include the knowledge and skills the teachers need to impact the required knowledge, skills and attitude into the learners especially in the case of climate change.
- It is necessary to introduce climate change curriculum in all levels of education in Nigeria.
- There should be climate change awareness program to educate the public about causes and effects of climate change.

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