

**NIGERIAN JOURNAL OF CURRICULUM
STUDIES,**

VOL.21 NO.2

ISSN:0189 - 9465

TEACHER PREPARATION FOR EFFECTIVE MANAGEMENT OF CLIMATE CHANGES IN SECONDARY SCHOOLS IN NIGERIA

By

**Onyeagwu, Friday Okonkwo; Moemeke, Clara Dumebi
& Efed, Obiajuru Evarista**

Department of Curriculum Studies and Educational Technology,
School of Education, College of Education, Agbor

Abstract

The study investigated secondary school teachers' awareness of the causes and effects of climate change and how teachers' preparation can help create awareness in Delta state. Three research questions and three null hypotheses were formulated. The population of the study consisted of 1900 secondary schools teachers from the three senatorial district of Delta State. The questionnaire titled Teachers Awareness and Management of Climate Change (TAMCC) was validated. Its reliability index is 0.85. Mean score and t-test analysis were used. Findings revealed that teachers are not aware of the causes and effects of climate change. Conclusions and recommendations were made that secondary school teachers should be encouraged to attend seminars, workshops and conferences to update their knowledge. It was further recommended that Guidance counselors should be used to collaborate with classroom teachers to create awareness on the issues of climate change between teachers and students.

Introduction

Teacher preparation refers to the policies and procedures designed to equip prospective teachers with the knowledge, attributes, behaviour and skills that they require to perform their tasks effectively not just in the classroom or school but also in the wider community. In other words, it relates to the development of teacher proficiency and competence that will enable and empower him to meet the requirements of the profession and face the challenges therein. The Federal Republic of Nigeria (FRN, 2004:3), Policy on Education stated that Education is charged to provide the most highly motivated and efficacious teachers to improve knowledge as that “no nation can rise above the quality of its education system” National policy formulators recommend, as a priority, the training of those responsible for facilitating the education of Nigerians in the development planning process. As a result, the Federal Republic of Nigeria (2004:10) unequivocally stated that “teacher education will continue to be given attention in all Nigerian education planning. This view was supported by Lassa (2000) when he noted that the importance of teachers and the roles they play in the educative process is central to basic education. However, the challenge of teacher training appears to be the most daunting in the education system in general. As Afe (2002) stated, out of all the educational problems that beset the nation today,

none is as persistent or as compelling as the one relating to the training of competent teachers who directly or indirectly influence the quality and quantity of services in the society.

According to Amedeker (2005), inadequate teacher preparation programmes in terms of creating awareness results in many teachers' inability to demonstrate adequate knowledge and understanding of the of the structure, function, development of their disciplines and adapting to the society or societal happenings. Therefore, an effective teacher preparation programme is a prerequisite for a reliant education which leads to a good level of confidence to both the teachers and their students as a result of which learning is coordinated effectively and professionally and problems inherent in the teacher education rectified and solved (Lawal, 2003). Nwite,(2011) further stressed that teacher preparation if accomplished will develop capacity building and keep the teachers abreast with latest teaching skill, development in the society. They will also be ready to interact with students in the classroom. Hence policies focused on increasing teachers' education, improve classroom quality, create awareness of the environmental issues and students academic gains are needed. In addition, raising the effectiveness of student's education requires a broad range of professional development activities and supports targeted towards teachers' interactions with students. Education is the right of every child, therefore no child should be denied of it for any reason. This is agreement with the assertion of the world summit on the state of global Education for all programme (EFA). Ajayi, (2008) Stated that Nigeria has pledged its commitment to this, with the inauguration of the policy on creating awareness about climate change.

Concept of Climate Change

Climate change is a change in the statistical distribution of weather elements and which is sustained for up to a decade or more. According to Houghton, (2001) climate change is a change in the statistical properties of the climate system when considered over periods of decades or longer, regardless of cause. For the United Nations Framework convention on climate change (2004), climate change is a change of climate which is attributed directly or indirectly to human activity that alter the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods. From these definitions, one can adduce that changes is climate can only be regarded as climate change if such changes are caused by a number of factors.

The factors responsible for climate change are classified into two, which as noted by Nwankwo and Unachukwu (2012) are:

- a. The climatic forcing and natural factors such as
 - Solar radiation
 - Mountain building and continental drift and
- b. The human factors which include;

- Activities of man that increase the emission of greenhouse gases like methane emitted during production of gas and transport of natural gas, oil, coal etc; nitrous oxide emitted during the combustion of fossil fuels.
- Persistent deforestation
- Land use
- Animal agriculture

These actions pose a lot of challenges to mankind. To respond effectively to these challenges, education has a key role to play in promoting, understanding and assisting individuals, the society and the government to make informed choices in relation to activities they take up. The teachers in the secondary school in Nigeria need to be abreast with all these challenges as they are the manager of the classroom. The classroom is said to be the most important unit of the educational system, as it is in the classroom that all policies of education are finally implemented (Emeh,1990). There is, therefore, every need for the classroom teacher to manage his classroom properly as this can have serious consequences on the achievement of the schools set goals and the challenges posed by climate change.

Teacher Understanding and Preparation

The science of climate change is very difficult to teach, not only because of political pressures but because the content itself is difficult to comprehend. Students have difficulty grasping the complex, interactive systems involved, and teachers sometimes struggle as well. The controversy that has been a persistent factor in public opinion and policy related to climate change has also affected classroom teachers. Teachers also are reported on certain factors that obstruct their teaching about climate change these being;

- a. A real or perceived lack of alignment between climate change content and standards they are asked to follow;
- b. Their lack of content knowledge,
- c. The beliefs of parents and students
- d. The interference by federal, state or local school board members
- e. Attitude of parents and students whose beliefs resulted in resistance to teaching climate change (Hirabayashi, 2011).

It is a popular claim that climate change will result in increase in problem of flooding loss of biodiversity and changes in agricultural production among others. This implies that climate change would result to increase in the level of poverty. Education is seen as the key that unlocks the door to development and thus breaks the pangs of poverty. The teacher is indispensable in the education system as the extent of his awareness determines the degree of learning that can take place.

Teacher education management crucial for implementation of such educational programme as the teaching of issues about climate change. The major problems are the extent the teachers are aware of climate change and possible

causes and effects, and the strategies they can apply in the classrooms to be able to educate the students effectively.

In various parts of the world including Nigeria, effects of climate change have been seen. Instances abound, in Nigeria as the flooding in Lagos, Oyo, Sokoto, Kogi, Edo, Delta and many other parts of the country are testimonies. Also the wild fire in Australia, America and many other areas of the world are all instances of climate change. In all, human and material losses were incurred seriously. There is then the urgent need for Nigerians most especially secondary school teachers to be educated on the issues and problems of climate change with particular emphasis on how to prevent it or mitigate its adverse effects.

The following research question guided the study

1. What is the level of teachers' awareness about climate change?
2. How far are teachers aware of the effects of climate change in the society?
3. What are the management strategies teachers employ in respect of climate change?

Three null hypotheses were formulated thus

1. There is no significant difference between the awareness of teachers in urban and rural settings on the causes of climate change.
2. There is no significant difference between male and female teachers awareness on the causes of climate change
3. There is no significant difference between male and female teachers' preparation and classroom management on the effects of climate change.

Method

The study adopted a survey design and was carried out in secondary schools in Delta State of Nigerian. A population of 1900 teachers of secondary schools from the three senatorial districts of Delta state was selected through purposive sampling technique. The questionnaire used to collect data was titled Teacher Awareness and Management of Climate Change (TAMCC).The instrument was divided into two sections. The first section is on personal data while second section which has three parts in on awareness of climate change issues and teachers management strategies which are the 3rd part. A four-point scale of strongly agree (SA), agree(A), Disagree (D) and strongly disagreed (SD) instrument was used, while section C was on Always, Sometimes, Rarely and Never. The face content validity of the instrument was established. The reliability of the instruments was established using cronbach alpha and value obtained was 0.85. Mean scores were used for answering the research questions and t-test was employed in testing the null hypotheses at.05 level of significance.

Results

Research question 1: What is the level of teachers' awareness about climate change?

Table 1: mean score of teachers awareness on the issue of climate change

S/N	Items	Mean	Decision
1	Climate change is caused by climate and natural forces	1.95	NA
2	Climate change is as a result of solar radiation	2.01	NA
3	It is caused by activities of man	2.62	A
4	It is caused by continental drift	2.10	NA
5	It is caused by gas production	2.57	A
6	It is caused by nitrous oxide that is emitted via, combustion of fossil fuel	1.86	NA
7	It is caused by poor land use	2.52	A
8	It is caused by Methane emitted during gas production	2.04	NA
9	It is caused by persistent deforestation	2.60	A
10	It is caused by animal agriculture	1.76	NA
11	It is from carbon dioxide from industries and vehicles	2.55	A
12	It is as a result of transportation of natural gas, oil and coal	2.33	NA
	Grand mean	2.24	

Table 1 showed that teachers are only aware (A) of five causes of climate change with mean scores ranging from 2.52 to 2.62 while scores of 1.76 to 2.33 teachers are not aware (NA) ie seven(7)teachers out of 12 causes presented.

Research Questions 2: How far are teachers aware of the effects of climate change in the society?

Table 2: Mean scores on how far teachers are aware of the effects of climate

S/N	Items	Mean	Decision
13	Climate change causes diseases	1.96	NA
14	Climate change leads to high temperature	2.16	NA
15	,Climate change brings about flooding thereby causing loss of lives and properties	2.57	A
16	It brings about excessive heat resulting to wild fire	2.14	NA
17	It exposes human body to danger	2.63	A
18	It leads to severe body heat burns	2.37	NA
19	Climate change leads to changes in the atmospheric temperature	2.58	A
20	Climate changes causes poverty which in due to its activities	2.03	NA
	Grand mean	2.31	

Table 2 reveals that only 3 out of 8 items presented with mean scores ranging from 2.57 to 2.63 are aware(A) of the effect of climate change while 5 out of 8 teachers are not aware(NA) with scores of 1.96 to 2.37.

Research Question 3: What are the management strategies teachers employ to educate students on the issue of climate change?

Table 3: Mean scores on the management strategies teachers can employ to educate students

S/N	Items	Mean	Decision
21	Teacher discusses climate change with student	2.13	RU
22	Students are directed on how to guide against climate change	1.25	NU
23	Teacher instructs students on the effect of carbon monoxide from vehicles and fire wood	2.47	RU
24	Teacher directing students to clear drains and erosion sites in their area	3.30	MU
25	Teacher directing students to always plant trees in their environment	2.16	RU
Grand mean		2.26	

Result from table 3 reveals that teachers sometimes make use (MU) of only one strategy of (3.30), rarely make use (RU) of three strategies (2.13, 2.47) and Never make use (NU) of one strategy (1.25).

Ho1: There is no significant difference between the awareness of teachers in Urban and Rural settings on the causes of climate change

Table 4: t-test results on teachers' awareness on causes of climate change based on location

Location	N	\bar{x}	SD	df	t _{cal}	t _{crit}	Decision
Urban	912	2.75	0.96	1898	2.78	1.96	sig
Rural	988	2.47	0.91				

Significant level $p \geq .05$

Table 4 reveals that calculated t value i.e. t_{cal}=2.78 at.05 is greater than table value (t_{crit}) = 1.96. Hence the hypothesis is rejected. Therefore there is significant difference in the mean scores of the teachers in their level of awareness on the causes of climate change in terms of their location.

Ho₂: There is no significant difference between male and female teachers awareness on the causes of climate change.

Table 5: t-test results on teachers' awareness on the causes of climate change based on their gender

Gender	N	\bar{x}	SD	df	t _{cal}	t _{crit}	Decision
Male	868	2.52	1.26	1898	1.06	1.96	NS
Female	1022	2.37	0.98				

Significant level $p \geq .05$

Table 5 reveals that t_{cal} of 1.06 is less than t_{crit} of 1.96. Hypothesis is therefore accepted. Hence there is no significant difference between male and female teachers' awareness on the causes of climate change.

H_{03} : There is no significant difference between teachers' preparation and classroom management on the effects of climate change.

Table 6: t-test result on male and female teachers preparation and classroom management strategies on the effect of climate change

Source	N	\bar{x}	SD	df	t_{cal}	t_{crit}	Decision
Male	868	2.46	0.95	1898	0.37	1.96	NS
Female	1022	2.51	1.06				

Significant level $p \geq .05$

Table 6 reveals that the calculated t-(t_{cal}) of 0.37 is less than $t_{crit}=1.96$ Therefore the hypothesis is accepted. Hence, there is no significant difference between male and female teachers' preparation and classroom management on the effects of climate change.

The findings of this study with respect to research questions and hypotheses revealed that majority of secondary school teachers are not aware of the causes of climate change and the resultant effects of it. It is true that the issue and problems of climate change have been on air and are seriously viewed by the Western World, Asia and Europe, most Nigerians see climate change as alien problem. This has resulted in poor teacher preparation and understanding of the causes and effects of climate change. The result of hypothesis one (1) revealed that there is significant difference in the mean scores of Urban and Rural teachers' location on their level of awareness on the causes of climate change. This is sad as reports have it that since 2004, United Nations Framework convention on climate change started emphasizing on the causes and changes associated with climate change. Teacher preparation (staff development) should focus on improving the conceptual skills and the intellectual abilities needed to handle complex situation and do the job better no matter their location.

Results of hypothesis two (2) showed that there is no significant difference between male and female teachers' awareness on the issue of climate change. This means that sex of teacher does not have any effect on creating awareness among teachers on the issue of causes and effects of climate change. three (3) reveals that there is no significant difference on gender of teachers preparation and classroom management on the effects of climate change. This study revealed that continued activities of training and retraining programme for teachers can help to enhance their performances and that of the entire educational system.

Conclusion and Recommendations

On the basis of the result of the study, the following conclusion were made since teachers lack the basic knowledge on climate change and the students' performances could not be monitored. The study is to serve as a baseline data and source of inspiration for further research. It was also concluded that teachers both male and female should be more productive especially in happenings in their environment.

The following recommendations are made based on the findings:

1. Government should as a matter of urgency start the implementation of adequate and well planned in-service training, seminars and conferences for teachers at all levels of education on the issues of climate change
2. The state ministry of Education in collaboration with state Post Primary Education Board should encourage teachers to attend seminars, conferences and workshops through government sponsorship
3. Government should develop avenues where Nigerian are educated on the issues and problems of climate change with particular emphasis on how to prevent it or mitigate its adverse effects
4. Guidance counselors should work in collaboration with teachers to create awareness on both teachers and students.

References

- Afe, J.O.(2002). Reflections on Becoming a Teacher and the Challenges of Teacher Education. Inaugural lecture series 64 of the University of Benin, Nigeria.
- Ajayi, H. O. (2008). Contemporary issues on early childhood. 9(4) Colloquium.
- Akueziulo, E. O. and Agu, N. (2002). Research and Statistics in Education and Social Science. Nuel Centi Publishers and Academic press ltd.
- Emeh, J. U. (1990). Classroom Management for Instructions, in G.C. Unachukwu (ed) Methodology of Instruction 115-143 Owerri: Totan publishers ltd.
- Federal Government of Nigeria FGN, (2004). National Policy on Education, Abuja NERDC.
- Hirabyashi, E.C. (2011). Teacher Understanding and Preparation” climate change education in formal settings K-14: A workshop summary Washington, DC. The National Academies press.
- Houghton,(2001). <http://unfccc.Int/essentialbackground/convention/background/items>.
- Lassa, P. N .(2000).Teacher Production: A focus on Nigeria in proceedings of the education Mini summit held at Abuja, Monday 29 November 1999.
- Lawal, H. S. (2003). Teacher Education and the professional growth of the 21st century Nigeria Teacher. The African Symposium.3(2).
- Nwankwo, C. A. and Unachukwu, G. O .(2012). Teachers Awareness of the causes and effects of climate changed their classroom Management strategies in climate change Era. Research Journal in Organizational Psychology and Educational Studies 1(3)161-167.
- Nwite, O. (2011). Teacher Preparation and Information and Communication Technology (ICT) in Ebonyi state University for the challenges of 20: 2020 In Nworgu, B.G and Buse, J. C.
- The United Nation Framework Convention on Climate Change (2004). <http://unfccc.int/essentialbackground/convention/background/items>.