



PSYCHOLOGICAL INFLUENCE OF CLIMATE CHANGE ON PUPILS AT BASIC EDUCATION IN NIGERIA

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Abstract

Climate change is the variation in global or regional climates over time. It is seen as a continuous, rapid, and prolonged alteration of climate in one direction which reflects changes in the variability or average state of the atmosphere over time scales, ranging from decades to millions of years. Climate change with its associated hazards is one of the most pressing challenges facing the provision of quality education in Nigeria. Education is the bedrock for meaningful development in any country. It is the wheel on which other developmental effort revolves. A country cannot develop beyond the level of education of its citizens. The implications of these effects of climate change are that there must be some intervention strategies to combat the situation. One of the strategies would be to create awareness of climate change to sensitize people on the effects of their agricultural, economic, industrial activities and their concomitant effects on the climate. Another way is by integrating climate and climate change issues in the secondary school curriculum. Lack of awareness and knowledge is the biggest obstacle. Nigerians need to be educated and informed about climate change and how it can change our lives drastically. Lack of information (awareness) and knowledge (education) about climate change also means that many Nigerians are reluctant to accept the reality of climate change.

Keywords

Climate change, awareness, attitude, secondary school, curriculum

Introduction

Climate refers to a statistical description of weather in terms of the mean and variability of temperature, precipitation and wind over a period of time, ranging from months to millions of years (the classical period is 30 - 35 years) and of the related conditions of oceans, land surfaces including human perturbations and ice sheets (Hoyt and Schatter, 1997). The climate in any given area is actually a complex and interactive system consisting of the atmosphere, land surface, snow and ice, oceans, other bodies of water and living things. The climate system also evolves over time under the influence of

its own internal and external dynamics called "forcing" (Schneider, 2001). It is one of the most serious environmental issues that today's world population is facing (Moser and Dilling, 2004; Lorenzoni *et al.*, 2007) though the issue is not new (Vlassopoulos, 2012). Ever since it emerged in the early nineteenth century, up to late twentieth century the issue was a topic discussed exclusively within the scientific society (Vlassopoulos, 2012; Seacrest *et al.*, 2000). Global climate has varied naturally over time scales throughout the Earth's history (Houghton *et al.*, 2000).

Human activities and natural phenomena have been identified as the two major causes of climate change. The human activities include: bush burning, deforestation, desertification, burning of fossil fuels, and industrial pollutions. These activities of man, cause the release of excess carbon dioxide (CO₂) and other heat trapping emissions such as methane (CH₄), Nitrous Oxide (N₂O), chlorofluorocarbons (CFCs) and Ozone (O₃). These green-house gases contribute to the depletion of the Ozone layer in the atmosphere leading to global warming (Mbah, 2014). The natural variations originated either from internal fluctuations of energy, water and carbon exchange between the atmospheres, oceans, land and ice, or from external influences on the climate system, including variations in the energy received from the sun and the effects of volcanic eruptions (Harvey and Danny, 2000). Ekpo (2009) stated that every system, whether human or otherwise is tied to climate and that changes in climate affect many related aspects of where and how people, plants, and animals live.

Impact of Climate Change in Nigeria

Nigeria's climate has been changing, evident in: increases in temperature, variable rainfall, rise in sea level and flooding, drought and desertification, land degradation, more frequent extreme weather events, affected fresh water resources and loss of biodiversity (Elisha *et al.*, 2017; Ebele and Emodi, 2016; Olaniyi *et al.*, 2013). The durations and intensities of rainfall have increased, producing large runoffs and flooding in many places in Nigeria (Enete, 2014). Rainfall variation is projected to continue to increase. Precipitation in southern areas is expected to rise and rising sea levels are expected to exacerbate flooding and submersion of coastal lands (Akande *et al.*, 2017; Ebele and Emodi, 2016). Droughts have also become a constant in Nigeria, and are expected to continue in Northern Nigeria, arising from a decline in precipitation and rise in temperature (Amanchukwue *et al.*, 2015; Olapido, 2010). Lake Chad and other lakes in the country are drying up and at risk of disappearing (Dioha and Emodi, 2018; Elisha *et al.*, 2017). Temperature has risen significantly since the 1980s (Enete, 2014; Federal Ministry of Environment, 2014). Climate projections for the coming decades reveal a significant increase in temperature over all the ecological zones (Akande *et al.*, 2017).

There are a number of indirect impacts of climate change on human health in Nigeria. As Nigeria's inhabitants have already suffered from nutritional imbalances (poor nutrition and malnutrition), climate change will only have a deleterious effect on food security (Akpomi and Vipene, 2016). A shift could occur in the location of some vector-borne diseases, such as malaria (mosquitoes) and sleeping sickness (tsetse fly). In response to shifts in the patterns of rainfall and temperature; mosquitoes currently thrive in locations where water logging and poor drainage typify the landscape. High flood frequency and water-logging due to climate change in ecozones hitherto unassociated with malaria will enhance the breeding of mosquitoes and thus the spread of malaria. Malaria will also increase due to the preponderance of stagnant pools of water resulting from the sea-level rise related flooding (Akpomi and Vipene, 2016). New evidence with respect to micro-climate change due to land-use changes such as swamp reclamation and deforestation suggest an increase spread of malaria to new areas (Munga *et al.*, 2006; IPCC, 2007). Direct impacts include health problems induced by increasing incidences of heat waves. These could lead to more cases of cerebro-spinal meningitis (CSM), which today is found to correlate positively with the highest maximum temperature of the northern winter season, and inversely with absolute humidity to a lesser, although still significant, extent. The dryness has led to dry waterbeds and movement of people and their pasture to the southern regions thus causing tension and conflicts between the original inhabitants and the new comers (Akpomi and Vipene, 2016).

Regional Impact of Climate Change in Nigeria

The challenges associated with climate change are not the same across the country. Nigeria has a tropical climate with two precipitation regimes: low precipitation in the North and high precipitation in parts of the Southwest and Southeast. This can lead to aridity, drought and desertification in the north; and flooding and erosion in the South (Akande *et al.*, 2017; Onah *et al.*, 2016). Vulnerability analysis demonstrates that states in the north experience higher degrees of vulnerability to climate change than those in the south (Madu, 2016; Federal Ministry of Environment, 2014). The Northeast and the Northwest are the most vulnerable. The

combination of rising heat and less rain has hastened desert encroachment, with loss of the wetlands, and fast reduction in the amount of surface water, flora and fauna resources on land (Abdulkadir *et al.*, 2017; Akande *et al.*, 2017; Ebele and Emodi, 2016; Federal Ministry of Environment, 2014). The Southwest and Southeast are relatively less vulnerable than other parts of the country. Within Southern Nigeria, the South-south (Niger Delta region) is the most vulnerable, due to sea level rise, increased precipitation, coastal erosion and flooding - which has resulted in the displacement of many settlements (Matemilola, 2019; Federal Ministry of Environment, 2014; Sayne, 2011). The pattern of vulnerability to climate change also corresponds to the dominance of climate-sensitive agricultural activities (Madu, 2016). The Northern regions of Nigeria, which have higher degrees of rurality, are more vulnerable to climate change (Madu, 2016).

Influence of Climate Change on Pupils at Basic Education

Awareness and School Curriculum on Climate Change

Awareness is described as the condition of being aware and able to understand what is happening around one (Chinedu, 2008). Awareness is the state or ability to perceive, to feel or to be conscious of events, objects or sensory patterns. Awareness means having idea of the existence of something (Ezeuduet *al.*, 2016). Wikipedia (2009) equates awareness with knowledge of, understanding of, appreciation of, recognition of, attention to, perception of, conscious of, acquaintance with, enlightenment with, mindfulness of, cognizance of, something. Hence, awareness implies understanding and knowledge of the activities and events (like climate change) going on around one's environment. This knowledge and understanding to a large extent influenced one's attitude towards such event (s) in one's environment (Ezeuduet *al.*, 2016).

Curriculum may be referred to as a blue print for instructional guide used for teaching and learning to bring about desirable change in the learner. It seeks to translate the hopes of society in which they function into concrete reality (Offorma, 2006). The curriculum of any school consists of all the experiences that a school may select and consistently organize for the purpose of bringing about changes

in the behaviours of thelearners and as a means of developing the personality of the individuals. It is the totalexperience involving the school in the process of educating young people. It includes theteacher, subjects, content, method of teaching and evaluation as well as the physical andpsychological dimensions of the experience (Offorma, 2002). Africa is among the continents with the least intellectual, institutional and technological capability to address climate challenge issues. There is need for evidence based scientific data on African experiences to be infused into the curricula to serve the African specific problems. The suggested areas of emphasis include agricultural sciences, biological sciences and social sciences. It was pointed out that the implementation of adaptive measures is essential in order to address the projected consequences while reducing the severity of the impacts through mitigation measures (Njoku, 2016).

Awareness and School Curriculum on Climate Change in Port Harcourt, Nigeria

In his study to assess the level of junior secondary school students' climate change and sustainable development awareness in Port Harcourt Metropolis, Nigeria; Njoku (2016) stated that curriculum is conceived as the blue print used as an instructional guide. He went on to ask the following questions: does the school curriculum of the Junior Secondary Schools in Nigeria cater adequately for issues on climate change and sustainable development? Are students aware of what climate change and sustainable development are? These are some of the issues answers were sought for as a result of the relevance of knowledge of climate change and sustainable development to life skills especially for Junior Secondary School products. Climate change awareness involves creating knowledge, understanding and values, attitude, skills and abilities among individuals towards the issues of climate change for attaining a better-quality environment (Njoku, 2016). Climate change specialists have repeatedly pointed out that a solution to climate change problem will require climate change awareness and its proper understanding (Njoku, 2016).

Njoku (2016) disclosed in his study that Social studies and Basic science were the only disciplines within information on climate change and there was no

discipline with information on sustainable development. Also, from the findings of the study, both social studies and basic science disciplines did not have a good number of topics devoted to the concept of climate change. The JSS 3 social studies did not have any information at all on climate change. Furthermore, the findings revealed that the level of awareness of climate change issues was high unlike sustainable development. Even though the mean rate was above the criterion mean confirming the awareness is high, still a good number of the population were ignorant of what climate change is all about. About 78% of the respondents had not heard of the concept 'sustainable development' before and did not understand what it means and how they could contribute. This was not surprising because, since the concepts are not properly taken care of in the curriculum, there is the tendency of teachers not teaching the students anything on the concepts especially on sustainable development which was not found in their curriculum at all (Njoku, 2016).

Climate Change Awareness of Students in Umuahia Education Zone, Abia State, Nigeria

A study to determine the climate change awareness and attitude of senior secondary school students in Umuahia Education Zone, Abia State, Nigeria was carried out by Ezeuduet *al.* (2016). The zone consists of four (4) Local Government Areas - Umuahia North, Umuahia South, Ikwuano and Umunneochi. There were forty-one (41) public senior secondary schools located in the zone. The choice of Umuahia Education zone as the area of the study was based on the fact that the zone was plagued with many environmental problems like flooding, erosion, and eclectic rainfall which had been strongly linked to the effects of climate change. These problems notwithstanding, the people of the zone still engaged in activities like deforestation, bush burning for hunting and farming that increase the aforementioned problems. These environmental problems in the zone made the zone suitable for the study. The population of this study comprised of all the senior secondary school two (SS 2) students in all the thirty-four (34) public senior secondary co-educational schools in Umuahia education zone (Ezeuduet *al.*, 2016).

The result of data analysis collected showed that the senior secondary school students possess low awareness of climate change. This statement anchored on the fact that the total climate change awareness mean score with standard deviation value of .430 is below the 2.50 mean score benchmark (Ezeuduet *al.*, 2016). This finding was in line with Ishaya and Obaje (2008), and Oruonye (2011) who found out that the students possess low level of climate change awareness. These findings that have continued to show low climate change awareness among young Nigerians particularly those in schools could be a point to the fact that the relevant school subjects like Biology, Chemistry, Geography, Agricultural Science, Economics, Social Studies and Primary Science have not been effectively used to promote issues that borders on changing global climate (Ezeuduet *al.*, 2016). It was observed that the mean ratings of the items raised to answer this research question indicate that students had low attitude towards climate change with a mean score of 2.27 and .515 standard deviation value which is less than the mean benchmark of the study put at 2.50 (Ezeuduet *al.*, 2016). This finding supported Oruonye (2011) who found out that tertiary institution students possessed low attitude towards climate change. Ishaya and Obaje (2008) also found out that secondary school students in Jema, Kaduna State, possessed low attitude towards climate change. Furthermore, the test of significant difference in the male and female students' climate change mean scores showed that there was no significant difference between senior secondary school male and female students awareness mean score. Also, there was no significant difference between senior secondary school male and female students mean score on attitude towards climate change. In support of the above finding, Musa (2004) stressed that though gender is a crucial issue in the discussion of environmental issues as climate change, but that it could have no influence on the awareness and knowledge of the challenges of climate change. The result of the study showed that there was significant difference in the climate change awareness and attitude between urban and rural secondary school students. The analyses of hypotheses showed that the students' awareness and attitude of climate change significant value was 0.00 which less than 0.05 (Ezeuduet *al.*, 2016). Hence, the findings supported Oguniyi and Hewson (2008) who

revealed that there are problems of inadequate instructional facilities, poor attitude of teaching and inadequate teachers in most rural areas.

Climate Change Awareness in Different States in Nigeria

Indeed, few studies have been done to determine the students' awareness and attitude towards climate change. For instance, Ishaya and Abaje (2008) studied indigenous people's perception on climate change and adaptation strategies in senior secondary schools in Jema Local Government Area of Kaduna State. The study found out that the students' possessed low awareness and poor attitude towards climate change. Oruonye (2011) carried out assessment of the level of awareness of the effects of climate change among students in Jalingo Metropolis of Tabara State. The study found that the students used for the study are not aware of climate change and that they possessed low attitude towards climate change. Furthermore, related studies have been done on environmental education awareness and attitude of students by Ofoebe (2009), Chinedu (2008), and Agiande (2006) in Okigwe Education Zone, Imo State. Owerri Education Zone, Imo State. Ogoja Education Zone, Cross River State respectively. Even though related studies have been done with respect to secondary school students' climate change awareness and attitude, none of the studies were carried out in Abia State. Thus, at present the status of secondary school students' awareness and attitude in Abia State is not known. This gap is what the present study tends to fill by determining the climate change awareness and attitude of senior secondary school students in Umuahia Education Zone, Abia State.

Gender and Location Disparities of Awareness and Attitude

Indetermining students' level of awareness and attitude towards climate change, considerations need to be taken on the influence of gender and location on students' climate change awareness and attitude (Ezeuduet *al.*, 2016).

Gender Disparity of Awareness and Attitude

Gender is an ascribed attribute that differentiates feminine from masculine socially. Gender is seen as the categorization in the world of matter into sex (Lee *et al.*, 2001; Ezeuduet *al.*, 2016). According to

Kalusi (2000), gender is a cultural construction that assigns roles, attitude and values considered appropriate for each sex. Discussing on gender and environmental relations, Ekezie (2010) stressed that gender is an important variable in environmental discussion. According to Ekezie (2010), females appear to be closer to the environment than their male counterparts in the sense that they need forest for food generation as well as for fuel wood used for cooking. However, Chinedu (2008) noted that while the females relate with the environment in a friendly manner than their male counterparts. That is, the females merely engaged the environment for agricultural purpose while males engaged the environment for different purposes which are more serious such as falling forest trees for timber, clearing forest for construction of road, building of houses and factories amongst others.

With respect to the above views, Ofoebe (2009) presented the view that environmental sensitization programmes in and outside the school should take into cognizance the gender difference or the physiological difference between male and female which are obvious and expectedly affect the ways in which both sexes respond to the environmental issues as climate change. Oruonye (2011) noted that the different ways male and female are socialized tend to determine their environmental exploration, degree of environmental manipulation and overall relationship with the environment, including the general awareness and attitude towards environmental problems like climate change.

Location (Rural and Urban) Disparity of Awareness and Attitude

On the other hand, location of individuals could also affect their awareness and attitude towards climate change. Ogunniyi and Hewson (2008) opined that location can be a settlement whether a village, town or city usually by human beings. Igwe (2003) defined location as a place where something or person resides in the world. Location in the context of this study means a geographical place or area where somebody or something is situated. It could be rural or urban area (Ezeuduet *al.*, 2016). Rural areas are often made up of villages which may either be dispersed, nucleated or even linear in their pattern of distribution on the land, with few buildings and little number of people. It offers its settlers a simple

and quiet life style. Their major economic activity is farming with few amenities and services centres (Ezeuduet *al.*, 2016).

Thus, according to United Nations Development Programme (UNDP, 2010), climate change awareness and attitude of the rural dwellers in Nigeria is directly proportional to the quantity and quality of information prevalent and available to them. Urban areas are relatively large, dense and permanent settlement of socially heterogeneous individuals. They could be towns, cities, conurbations or metropolis. Urban areas have some characteristics – a large and heterogeneous population, medical and political facilities, educational, recreational, banking administrative and social activities, with highly developed manpower (male and female), artisans etc. who engage in non-agricultural occupations, with highly impersonal relations. It is the opposite of rural areas, with its sophisticated life and life activities. The above disparity between the urban and rural areas could influence their awareness and attitude towards climate change (Ezeuduet *al.*, 2016). In line with this assumption, Small and Nicholis (2003) opined that where people live (location) determine the how much information and knowledge that gets to them particularly in developing countries like Nigeria. Although, Agiande (2006) found out in a study in Calabar that location is no longer a barrier to students' knowledge of environmental problems (like climate change). Ishaya and Obaje (2008) in a study in Kaduna also found out that location has no significant influence on students' awareness of the problems of climate change.

In relation to the above discussions, attempt has been made to increase students' awareness and attitude towards climate change in secondary schools. For example, climate and general environmental related contents like our environment, physical environment, sanitation, pollution, natural and manmade environmental hazards, deforestation, population, effects of industrial concentration, composition of atmospheric gases, weather and climate, classification of climate, major climate types of the world, were infused in most secondary school subjects like Geography, Chemistry, Physics, Biology, Agriculture, and Social Studies. These

contents and subjects are veritable means of promoting climate change awareness and attitude of secondary school students in Nigeria (Ezeuduet *al.*, 2016). With respect to the above, Ishaya and Obaje (2008) noted secondary school teachers have been inculcating climate change contents infused into their respective subjects to the students with the intention of increasing their knowledge of climate change as well as influencing their attitude positively towards solving the problems of climate change. Agiande (2006) added that schools through classroom instructions are making effort to create awareness on major environmental problems like climate change. Similarly, Chinedu (2008) and Ofoebe (2009) shared the view that the curriculum contents of most secondary school subjects could be effectively used to promote awareness of environmental problems as well as positive attitude towards solving the environmental problems.

Conclusion

The effect of climate change globally cannot be overemphasized. The much efforts put in place to promote awareness and influence the attitude of people towards environmental problems, particularly climate change, seem not to be yielding the desired result. This is as a result of continued perpetuation of actions such as bush burning, deforestation, burning of fossil fuel like petrol, coal, and crude oil which contribute to climate change. There must be some intervention strategies to combat the situation. One of the strategies would be to create awareness of climate change to sensitize people on the effects of their agricultural, economic, industrial activities and their concomitant effects on the climate. Another way is by integrating climate and climate change issues in the secondary school curriculum. Lack of awareness and knowledge is the biggest obstacle. Education and information on climate change essential for rapid improvement of our lives against its devastating effects.

Recommendations:

1. Urgent measures should be taken to cushion the effect of climate change on health, as health hazard is very devastating to the population of the world today.
2. People should be made to understand the dire consequences of health risks, faced through climate related problems

3. The government and health care givers should put into consideration the disorders and mental health issues of people living near areas proving to be subtle to desertification
 4. People should be encouraged to plant trees near their dwelling places to avoid desert encroachment.
 5. More studies should be carried out in the area of climate change and mental health to avoid the dangers it pose to humanity.
 6. Government should investigate and sponsor more climate health related studies that will enhance a better approach to handle a climate health issues in the future
 7. The fallow system of agriculture should be revisited to allow the land to regain nutrients and there by prevent desert encroachment.
 8. Climate change is a past, present and future problem and as such government at all levels and the international community should map out plans to checkmate flooding, hurricanes, drought ,chronic rising sea level and increasing temperature.
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