



*Full Length Research Paper*

# Insights of students in climate change and attainable solution

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The focus of this paper is the insights of school children on the strategies of reducing impacts and effects of climate change in schools and communities which was based on the lessons learnt from Environmental Education and counselling programmes carried out in some selected secondary schools in Anambra State, Nigeria within the period 2009-2012. Three research questions guided the study. The sample consisted of 600 students selected through simple random sampling. A 42-item questionnaire was used to collect data. Data was analyzed using frequency and percentages. Findings from the study revealed that all the strategies are capable of reducing impacts and effects of climate change. Based on the findings, it was recommended among other things that school children should participate in decision making in schools, homes and communities.

**Key words:** Climate change, environmental education, counselling strategies, school children.

## INTRODUCTION

In recent times, climate change has become an environmental issue facing the world. The impacts and effects of this monster called climate change are experienced globally. For most people, the expression "climate change" means the alteration of the world's climate that we humans are causing. This is in line with the official definition by the United Nations Framework Convention on Climate Change (UNFCCC, 2008) that climate change is the change that can be attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods. Climate change is not a natural phenomenon but the alteration in the atmosphere that are over and above natural climate variations as a result of human activity. According to Nasuru (2009) climate change is a significant and lasting change in the

statistical distribution of weather patterns over periods ranging from decades to millions of years. Climate change also refers to an increase in average global temperatures (Enete, 2010). In particular, the Intergovernmental Panel on Climate Change (IPCC, 2008) defines climate change as a change in the state of the climate that can be identified by changes in the mean and / or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change manifests in various ways including rising temperatures, droughts, desertification, heavy precipitation, flooding and rising sea levels, extreme weather events such as cyclones etc (Peters & Maria 2011). Natural events which came as a result of human activities are believed to be contributing to this increase in average global temperatures. This means that the situation can be changed if human beings transform their

ways of living to be more sustainable and friendly to the environment.

Nigeria as a developing country in the West African region, is not excluded from climate change issues. The country is experiencing adverse climate conditions with negative impacts on the welfare of millions of people today. These negative impacts are persistent droughts, flooding, off season rains, dry spells and rising temperature. The specific cause of climate change according to Madu (2013) is the human-induced alterations of the natural environment which is currently causing global warming. Others include oceanic processes, biotic processes, variation in solar radiation received by earth, plate tectonics and volcanic eruptions. Climate change is currently at the centre of the daily lives of Nigerian citizens due to the burning of fuels, gases, papers in homes to poor patterns of land use. The results of this negative trend are diminishing water resources, increased malnutrition, water borne disease such as diarrhea, vector-borne diseases such as malaria, drowning injuries, severe mental and physical trauma particularly for communities living along side major river deltas and low-lying coastal areas (Afe, 2008). Similarly, Ciplet, Roberts & Edwards (2013) asserted that the negative impacts of climate change are temperature rise, erratic rainfall, sand storms, desertification, low agricultural yield, drying up of water bodies, and flooding. Furthermore environmental degradation and attendant desertification are major threats to the livelihoods of the inhabitants of the area including children.

### **Climate Change and Children**

Research by UNICEF (2011) indicated existing evidence to show that children's social, moral, cognitive and physiological immaturity leaves them more susceptible to the adverse effects of environmental degradation. Compared to adults, children are more susceptible to the negative effects of environmental degradation and those children are excluded or discriminated against because of their economic or social background. Ciplet, Roberts and Khan (2013) pointed out that the impacts are more severe for children in educationally deprived areas with less funding, living in poverty, for children living with disabilities and for children in countries that have weak governance and poor educational system. This is because they are more vulnerable to poor air quality, contaminated water, drowning and extreme heat. More so the girls are more vulnerable due to existing gender inequalities that, for example, can limit their access to education and nutrition (Okosi, 2011). Also the impact of climate change on boys' and girls' access to quality education have not yet received much attention nor have the possibilities of education to support initiatives for sustainability.

Climate change is a complex scientific and social problem. Effectively dealing with it presents an immense challenges, yet educating and counselling students about it offer students fruitful learning opportunities (McCright, O'Shea, Sweedes, Urquhart and Deleke, 2013). While children are among the most vulnerable to climate change, they should not be considered passive or helpless victims. Children are powerful agents of change, and studies Hart and Roger (2010) and (Nwokolo and Anagbogu, 2010) have found that many children can be extraordinarily resilient in the face of significant challenges. Providing children with empowering counselling and relevant education on disasters and climate change in a school environment can reduce their vulnerability to risk while contributing to sustainable development for their communities. Therefore educating and counselling girls and boys are among the best ways of strengthening community adaptation to climate change, as indicated by Women action committee (2010).

### **Climate change environmental education and counselling**

Environmental education and counselling are needed in the school because these systems provide children the opportunity to participate equally with adult stakeholders in addressing this ugly menace. Environmental education according to Stapp (1997) is aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and to associated problems, aware of how to help solve these problems and motivated to work towards their solution. Also Oghone (2012) defined environmental education as a process aimed at developing a world population that is aware of and concerned about the total environment and its associated problems and has the attitudes, motivations, knowledge, commitment and skills to work individually and collectively towards solutions of current problems and the prevention of new ones.

On the other hand, counselling is a process of helping individuals through their own efforts to discover and develop their potentialities both for personal happiness and social usefulness. Cobia and Hendson (2003) suggested that counselling is an enabling process, designed to help an individual come to terms with his life as it is and ultimately to grow to greater maturity through learning to take responsibility and to make decisions for himself. Bassey, Ejue and Bassey (2005) defined counselling as a range of counselling services provided with the aim of enhancing positive self-concept, attitude, perceptions, and overall social development of the human person. Counselling is to help an individual to make his own decisions and choices in the light of his feelings and needs. Hence counselling would help the students become more aware of the realities of climate

change to be able to make informed decisions and take responsibilities for mitigating climate change within their environment.

Environmental education and counselling should be integral parts of the education process aimed at practical problems of an interdisciplinary character, build a sense of values and contribute to public wellbeing. The focus should reside mainly in the initiative of the learners and their involvement in action and guided by both the immediate and future subjects of concern. From the above definitions the main objectives of environmental education and counselling are:

(a) Awareness – to help individuals and social groups become aware of and sensitivity to the total environment and its allied problems,

(b) Knowledge – to help individuals and social groups gain variety of experiences with the total environment and to acquire a basic understanding of the environment, its associated problems and humanity's critical responsible presence and role in it.

(c) Attitudes – to help individuals and social group acquire social values, strong feelings of concern for the environment and the motivation for actively participating in its protection and improvement.

(d) Skills - to help individuals and social groups acquire the skills for working towards the solution of environmental problems such as digging holes, non-littering of school compound, using sand bag method to wage flood, planting trees (palm trees and domestic shrubs) ,compost keeping, indiscriminate throwing of paper among others (Women action committee,2010).

(e) Participation – to help individuals and social groups develop a sense of responsibility and urgency regarding environmental problems through personal and community involvement to ensure appropriate action to help solve these problems and avoid future problems (Nwololo and Anagbogu, 2010).

Oghone (2012) is of the view that Environmental Education program should be incorporated in schools in order to reduce future impact of climate change through the following strategies:- including environmental education in the school curriculum, training new and old teachers, counselling and raising awareness by teachers and children, non-formal education by children themselves, guaranteeing a protective physical environment by stake holders, assurance of quality water, sanitation and hygiene in schools, hand washing in schools, development of green schools and carrying out projects in the community.

One of the ways of ensuring effective incorporation of environmental education in schools is to investigate the extent of awareness of climate change by school children as well to as develop counselling strategies for reducing impact of climate change through environmental education. This builds from John Dewey's belief that

knowledge and learning are most effective when human beings work collaboratively to solve specific, strategic, real world problems (cited by Minkler and Wallerstein, 2011). Parker and Roberts (2006) added that involving students in developing intervention strategies serves to ensure that students know what is expected of them, reduce unnecessary confusion, and establish consistency in learning. It is against this background that the objectives of the present study are to:

1. Find out the impacts of climate change as perceived by school children.
2. Investigate the effects of climate change as perceived by school children.
3. Find out the education and counselling strategies for reducing the impact of climate change as perceived by school children.

### Research Questions

The study is guided by three research questions

1. What are the impacts of climate change as perceived by school children?
2. What are the effects of climate change as perceived by school children?
3. What are the education and counselling strategies for reducing the impact of climate change as perceived by school children?

### METHOD:

The study employed the survey design with pilot study. The population of the study was all the students of the public schools in the twenty-one Local Government Areas (LGA) of Anambra State, Nigeria. The sample (Table 1) consisted of 150 students from each of the four Local Government Areas (LGA) and they were selected through random sampling. On the whole 600 students were selected for the study.

The instrument was researchers" developed questionnaire which covered the impact, effects and strategies for reduction of climate change. The 42 item questionnaire titled „Children Perception of Impact Reduction of Climate Change through Environmental Education and Counselling"" (CPIRCCEEC), was divided into three major sections. Section A is made up of 11 check list items on impact of climate change, Section B is made up of 16 checklist items on the effect of climate change and Section C is made up of 15 items on strategies for reduction. The instrument was validated by experts in the Department of Geology and environmental studies of Nnamdi Azikiwe University, Awka. It was pilot tested among 50 students in Delta State, Nigeria. The test – retest method was employed in establishing reliability of the instrument. The reliability coefficient of

**Table 1.** shows the age and gender of the participants

Age in years	Males	Females	Total
8	78	92	170
9	121	129	250
10	80	100	180

0.72 was found and was considered appropriate for the study. For the administration of the instrument, copies of the questionnaire were distributed to the 600 selected students by the researchers with the assistance of six trained research assistants. They were trained on how to share the questionnaire and also on how to answer the confused questionnaire items correctly. The responses were collated and simple percentages were used to answer the research questions. The decision rule and cut off point was 50% which means that any score of 50% and above is accepted while any score below 50% is rejected.

**RESULTS**

In line with the research questions, the data was presented in tables and analyzed below.

Table 2 shows the frequency count as well as the percentage of the respondents on the impact of climate change. From the above table, apart from items 2 ,8 and 10 with 41.7% ,33.3% and 33.3% respectively, all the other endorsement rates are presented in the table. This implies that they are all impacts of climate change as perceived by school children.

Table 3 shows the frequency counts as well as the percentage of the respondents on the effects of climate change. The respondents perceived all the items as the effects of climate change in Anambra State, Nigeria. The

endorsement rates are presented in the table.

In Table 4 the analysis of the strategies for reducing impact of climate change through environmental education as perceived by school children is presented. The endorsement rates are shown in the Table 4.

**DISCUSSION**

The study revealed that the impacts of climate change as perceived by children are rising temperatures, heavy precipitation, erratic rainfall, low agricultural yield, flooding, rising sea levels, deforestation among others. The afore mentioned impacts conform with the ones listed by UNICEF (2011 ) and Madu (2013). This level of awareness of the impact of climate change among the

children in this study may be due to the fact that the effect of this ugly monster called climate change is almost the same irrespective of the place and race (Parks and Roberts. 2006). However the school children’s low frequency of endorsement that drought and diminishing water resources are impact of climate change suggest that the students had never experienced them in their environment. This notwithstanding, the findings indicate that the children are aware of the impact of climate change and might be able to benefit from education and counselling for climate change mitigation. There is thus a need as recommended by United Nations Internal Strategy of Disaster Reduction (2008), to develop mechanisms to actively engage and empower children in their communities and local governments, in the assessment of vulnerability and impacts and the formulation of activities that would cushion the effects of climate change.

On the effects of climate change the children believed that poverty, low agricultural production, reduction in care of livestock, increased vector-borne diseases and water borne diseases, poor water quality, bush burning, extraction of fuel wood, drowning, malnutrition, school dropout, mental and physical trauma are the effects of climate change. The finding supports that of Okeke (2010). For children to identify the impacts of climate change draws one’s attention that the effects of climate change have grown to high proportions and dominated public discussions that even children are aware of. There is no doubt that these effects, if not tackled, are likely to alter the health status of millions of people, through increased deaths, disease and injury due to heat waves, floods, storms, fires and droughts. As the IPCC (2007) pointed out, increased malnutrition, lack of access to education, diarrhea disease and malaria in some areas would increase vulnerability to extreme public health and development goals will be threatened by longer-term damage to health systems from climate change disasters.

Finally the findings indicated that environmental education and counselling strategies have potential to be used to reduce the impact of climate change. These strategies basically are mitigation which are actions such as using sand bag to reduce erosion, planting trees, having school compost, among others and adaptation like transferring technology ideologies to children, collaboration and cooperating of children with adult

**Table 2:** Frequency counts and percentages on the impact of climate change as perceived by the students.

S/N	Items	Frequency	Percentage
1	Rising temperatures	600	100
2	Droughts	250	41.7
3	Heavy Precipitation	400	66.7
4	Flooding	600	100
5	Rising sea levels	500	83.3
6	Extreme weather events	450	75.0
7	Deforestation	420	70.0
8	Diminishing water resources	200	33.3
9	Erratic rainfall	600	100
10	Sand storms	200	33.3
11	Low agricultural yield	600	100

**Table 3.** Frequency count and percentages on the effects of climate change as perceived by the students.

S/N	Items	Frequency	Percentage
1	Poor sanitation	450	75.0
2	Low Agricultural production	420	70.0
3	Reduction in care of livestock	420	70.0
4	Increased vector-borne diseases e.g malaria	600	100
5	Increased waterborne diseases e.g diarrhea	500	83.3
6	Poor water quality	600	100
7	Inadequate access to clean water	400	66.7
8	Extreme heat	350	58.3
9	Intensive agricultural land use	480	80.0
10	Bush burning	450	75.0
11	Extraction of fuel wood	400	66.7
12	Drowning	500	83.3
13	Mental and physical trauma	600	100
14	School dropout	600	100
15	Malnutrition	500	83.3

stakeholders among others. The strategies also include a broad range of issues which counselling would be used to improve in schools. This is in line with Afe (2008) who asserted that mitigation and adaptation are two complementary strategies that can reduce the risk of climate change and strengthen affected communities. These strategies work in concert with one another to promote academically and socially productive behaviors such as compliance and attentiveness to climate change issues (Mills and Lecomte, 2006). When a combination of education and counselling strategies are used, they may help students to begin to understand the environmental issues and what they could do to help in a global cause as important as climate change (women action committee, 2010).

## CONCLUSIONS

The study empirically established that environmental education strategies can be used to reduce the impact of climate change in Anambra State, Nigeria. In the light of this, environmental education should be included in the curriculum. More so if awareness is created early for the children then the extent of the impact and effect of climate change will be drastically reduced. Also it was empirically established that the strategies if applied will go a long way to reduce the impact and effect of climate change in our environment now and in the future. The strategies suggested do not represent a consensus on the best way forward. But they have provided examples and ideas and challenge teachers and counsellors to take actions and improve their critical roles in educating and

**Table 4:** Frequency count and percentage on the strategies for reducing the impact of climate change as perceived by the students.

S/N	Items	Frequency	Percentage
1	Counselling on the need to planting trees and shrubs around the school environment.	600	100
2	Counselling and sensitization on the need to planting flowers and protect planted flowers for beautification of school environment.	600	100
3	Creating awareness of climate change reduction process through peer-tutoring.	500	83.3
4	Interactive group counselling and demonstrations on using sand bags to wage erosion in the school environment.	420	70.0
5	Educating children on the benefits of using energy bulb in class rooms to reduce excessive heat	450	75.0
6	Counselling children against use of paper, water-proof etc to litter the school environment.	600	100
7	Children should be counselled on the impacts and consequences of impact change in the assembly.	420	70.0
8	Counselling children on how to avoid playing and staying in the rain to avoid drowning.	600	100
9	Using posters and bill boards to educate and help children understand the risks they face and how to respond to climate change warnings	500	83.3
10	Teaching the children to develop school gardens to strengthen food security and improve nutrition.	600	100
11	Advising children not only on stopping bad actions that harm the environment but also to increase good deeds that protect it	400	66.7
12	Counselling children to become involved in designing, developing and disseminating high quality information about climate hazards and their likely future changes	350	58.3
13	Teaching the children to promote hygiene in schools through proper washing of hands after using the toilet, etc.	480	80.0
14	Mobilization of children to champion the climate change awareness campaign in the school.	450	75.0
15	Using social skills groups, self-monitoring, and individual meetings with children to reduce use of fireworks and refuse burning	400	66.7

preparing tomorrow's citizens to tackle the challenges of climate change.

## RECOMMENDATIONS

Based on the study, the following recommendations were made.

1. The ministry of education, policy makers and curriculum planners should incorporate climate change environmental education (CCEE) into the curriculum with

adaptations for the local context.

2. The teacher training programmes should now cover climate change environmental education, this will enable them develop necessary skills and pedagogical support.

3. Students in conjunction with the school management, counsellors and ministry of education should raise awareness of CCEE through the media, seminars, workshops, flyers, bill boards and posters.

4. The students should be encouraged by counsellors to carry this climate change message to their

homes and communities.

5. The school children should participate in decision making in the school, homes and communities.

6. Students should engage in after school activities which provide opportunities for them to interact with their environment through excursion, field trips, research and action projects and to practically apply what they have learnt.

7. The school management and counsellors in conjunction with students should develop environmentally sustainable schools which provide well designed compound.

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