

Towards A Curriculum Reform for Climate Change and Environmental Education (CCEE) For Sustainable Development in Nigeria

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Abstract: *Global climate change and ecological problems are a complex phenomenon which today threatens the existence of human race. In order to meet the daily needs and wants so as to survive in the environment, man has devastatingly disturbed the balanced equilibrium between biotic (man) and abiotic (physical environmental components) of the environment and atmosphere, leading to climatic change, depletion of natural resources and myriad of environmental degradation. For man to survive and maintain a harmonious relationship with the environment and atmosphere, citizens must be environmentally friendly and avoid acts that may lead to the depletion of the ozone layer. This paper advocates the integration of an innovative educational approach called Climate Change and Environmental Education (CCEE) into the curricular offerings of our primary and secondary schools to bring up a new generation of citizens that are environmentally conscious and which will understand, address, mitigate and adapt to the impact of climate change.*

Keywords: *Curriculum, Reform, Climate-change, Environmental Education, Sustainable, Development.*

1. INTRODUCTION

Climate change, global warming and environmental pollution/degradation are new realities staring the human community in the face today; with their deleterious effects. The effects of climate change are very discernable in our day to day ecosystems; agriculture, water needs and supply, and food production are all adversely affected. Global warming (climate change) also leads to sea-level rise with its attendant consequences which include, among others, fierce weather, increased frequency and intensity of storms, floods, hurricanes, droughts; increased frequency of fires, poverty, malnutrition and series of health and socio-economic consequences. In a similar vein, hazardous human activities lead to environmental pollution (air, water, land and noise,) ozone layer depletion, global warming leading to climate change, flooding, desertification, biodiversity loss, deforestation, coastal erosion, etc. (Amokaye, 2004).

The impact of climate change and environmental pollution/degradation can be vast. According to Building Nigerian Response to Climate Change (BNRCC) (2012), in Nigeria, some stable ecosystem such as the Sahel Savanna may become vulnerable because warming will reinforce existing patterns of water scarcity and increasing the risk of drought in Nigeria and indeed most countries in West Africa. As well, the country's aquatic ecosystems, wetlands, and other habitats will create overwhelming problems for an already impoverished populace.

Preliminary studies conducted on the vulnerability of various sectors of the Nigerian economy to climate change revealed that virtually all the sectors analyzed manifested some evidence of vulnerability to climate change, BNRCC (2012). The sector evaluated were based on seven natural systems and condensed into five viz: human settlement and health; water resource, wetlands and freshwater ecosystems; energy, industry, commerce and financial services; agriculture, food security, land degradation, forestry, biodiversity; and coastal zone and marine ecosystems. None of these

sectors was unaffected in the study's report, nor will remain unaffected in future by changes to climate change. Infact, more recent assessment, although in regional and global scale, not only corroborate the patterns and reports established by the BNRCC report, but captured more disturbing scenario using more embracing and sophisticated approach (Intergovernmental Panel on Climate Change IPCC, 2007). The indications are that the climate system is more sensitive than originally thought.

Relatedly, Ikpe and Ujah (2013) presented a number of environmental problem confronting Nigeria as a result of man's indiscriminate activities which negatively impinge on the environment: excessive pressure on available resource, infrastructures and space due to unabated rural - urban migration in the past three decades, reinforced by industrial and urban development that has caused a rising rate of pollution; high rate of soil degradation resulting in sheet, gully and coastal erosion and flooding due to non-judicious land use practices; depletion of natural forest resources through uncontrolled logging, tree-felling and over-grazing; unfettered bush-burning and the risk of exterminating wildlife species as well as uncontrolled fishing and related activities which endanger the species of wildlife and fish in the Nigerian waters; pollution of surface and underground water systems through indiscriminate disposal of solid and liquid waste; destruction of valuable agricultural land through bad mining practices; permanent dangers posed by encroachment of the desert on vast agricultural lands along northern borders; and oil pollution and related environmental consequences, particularly in the Niger Delta area of Nigeria. Some World Bank experts have predicted that Nigeria is likely to face the challenge of sea-level rise (World Bank Report, 2008). A projected sea level rise of more than 1 meter could flood many parts of Niger Delta area and force up to 80 percent of the Delta populace to a higher ground, with a consequent property damage, which the Intergovernmental Panel on Climate Change (IPCC) has estimated at nine' billion US dollars (World Bank Report, 2008).

2. CONCEPTUAL CLARIFICATION

At this juncture the major concepts in the paper are clarified. Climate change according to Wikipedia Free Encyclopedia is a significant and lasting change in the statistical distribution of weather patterns over periods ranging from decades to millions of years. It may be a change in average weather conditions (i.e. more fewer extreme weather events). Climate change is caused by factors that include oceanic processes, biotic processes, variation in solar radiation received by earth, human-induced alterations of the natural world; these later effects are currently causing global warming, and climate change is often used to describe human specific impacts related to global warming.

Curriculum is a plan for action, or a written document, which include strategies for achieving desired educational goals or ends. Most Nigerian educators and curriculum experts tend to favour the use of the term 'experiences' in their definition of curriculum (Onwuka, 1980; Mkpa, 1987; Maduwesi, 2000; Gbamanja, 2002; Utulu, 2007). They view curriculum as a process embracing the total experiences by means of which the school educators the young and inexperienced members of the society. It involves all programmes of activities designed by the school to enable learners attain, as far as possible, desirable educational ends or activities (Ijiga, 2010).

Curriculum reform, according to Fafunwa (1997) might be seen as the modification of an existing curriculum with the hope of providing a better curricular programme. It is the introduction of novelties in terms of content and practice, the alteration of what is established, a novel content, practice, method, etc.

Development is the process by which a country provides for its citizens, all the basic needs of life such as health, education, housing, nutrition, etc. It also involves providing the citizens with opportunities to contribute to the very process through gainful employment as well as scientific and technological innovations (Amokaye, 2004). It is also a process by which the national government authorities facilitate the construction and maintenance of the infrastructure and mechanism which diversify and perpetuate the production base of the country, such as agriculture and industries, so as to ensure that the society overcomes the pressure and necessities of the national and related economic system for the present and future times. According to Ikpe and Ujah (2013), development is a comprehensive process that involves political freedom and equality of opportunities for all in their access to basic resources, education, health services, food, housing, employment and fair distribution. Development is sustainable when its conservation, preservation and protection are guaranteed.

3. GLOBAL RESPONSE TO CLIMATE CHANGE/GLOBAL WARMING

In view of the devastating effects of climate change and environmental pollution/degradation, in 1992, international concern about global warming was translated into the United Nations Framework Conventions on Climate Change (UNFCCC) - a global treaty which encouraged action to stabilize greenhouse gas emission. In 1997, this encouragement was strengthened into a 'commitment' for action via the Kyoto Protocol. In 2005, the Kyoto protocol entered into force, thus committing the developed country signatories to reduce their emission of greenhouse gasses following the rules outlined in the Marieakech Accords of 2001 (UNESCO, 2005).

During the 15th Conference of the parties to the UN Framework Convention on Climate Change (UNFCCC COPTS), a UNESCO climate change initiative was launched in Copenhagen. It seeks to reinforce the scientific, mitigation and adaptation capacities of countries and communities that are most vulnerable to the effects of climate change. It focuses on a selected number of strategic issues in line with the UN system delivering as one strategy for action on climate change.

The initiative is based on four thematic areas: scientific, educational, environmental and ethical. Key objectives will be achieved through intersectoral and interdisciplinary cooperation, coordinated field activities and networking (UNESCO, 2005). Special attention is given to UNESCO's two global priorities, Africa and gender equality, as well as the increased vulnerability of small Island Developing States (SIDs).

This paper focuses and draws from the education initiative proposed by UNESCO Climate Change Initiative titled Climate Change Education (CCE) in the overall context of Education for Sustainable Development (ESD). The initiative proposes the development of a climate change education for sustainable development' programme which uses innovative educational approaches to help a broad audience (with particular focus on youth), understand, address, mitigate, and adapt to the impacts of climate change, encourage the change in attitudes and behaviours needed to put our world on a more sustainable development part, and build a new generation of climate change aware citizens (UNESCO, 2005). The curriculum is a veritable tool or plan for transmitting the content of the proposed Climate Change and Environmental Education (CCEE). But for it to serve that purpose it must be reformed.

4. REFORMING THE CURRICULUM FOR CLIMATE CHANGE AND ENVIRONMENTAL EDUCATION

The National Policy on Education (Federal Republic of Nigeria, FRN, 2004) states that there is need for functional education for the promotion of a progressive united Nigeria; to this end, school programmes should be relevant, practical and comprehensive. This provision underscores the necessity to broaden the curriculum to be able to address the current challenges posed by climate change and environmental pollution and degradation. The focus for climate change and environmental education should be the children and youth. This is because what the children and youth learn today will shape tomorrow's world. Climate change and environmental education has a central role to play in helping the general public, and especially the next generation to understand and relate to the issues, make life style change to become more environmental friendly and to reduce greenhouse gas emissions, and adapt to the changing local conditions. While climate change and environmental education at all levels, and in both formal and non-formal settings is needed, instilling climate change and environmental education at a young age is ultimately the best way to change behaviours and attitudes.

Integrating Climate Change and Environmental Education (CCEE) into existing school curricular without compromising already overstretched programme of study in our primary and secondary schools is a challenge. The commended course of action, therefore, is to integrate CCEE trans-disciplinary manner into existing subject areas such as social studies, sciences, citizenship education, geography, human right education, language education, etc.

The CCEE curriculum should focus on the development of knowledge, skills, and competences needed, and contribute to the mitigation of, and adaptation to climate change; and teach the young learners to imbibe true love for nature and awareness' of renewable natural resources, land use pattern and social conservation which will help reduce incidence of soil erosion, deforestation, etc. Further it

should introduce basic scientific concepts, theories and projections of climate change, impart basic knowledge and understanding of man's total environment and the skills, attitudes and values needed to understand and improve the biosphere and troposphere. Theme such as sustainable consumption, disaster preparedness, environmental protection, recycling, water, desertification and renewable energies should be discussed, taking into account their relevance in the specific national and local context. In addition, concepts such as ethics, human rights, gender equality, risk management, social justice and decision making are crucial to prepare learners for a changing environment.

Promoting lasting change through CCEE requires that teachers' attitudes, motivation and skills contribute fully to the effort. This is because teachers are the implementers of the curriculum. Therefore, efforts must be made to train the teacher to understand the implications of change in behaviour that CCEE brings' about, to recognise the need for it and to have the competences and confidence to introduce it into their classroom teaching. Thus, integrating CCEE and its new teaching approaches and methods require teachers to have a thorough understanding of climate change and environmental degradation and their relation to broader sustainable development issues. The CCEE initiative should, therefore, provide support for teacher training on climate change and environmental education.

5. IMPLICATIONS FOR SUSTAINABLE NATIONAL DEVELOPMENT

Climate Change and Environmental Education (CCEE) bears similar objectives with sustainable development. The concept of sustainable development is defined by the World Commission on Environment (1987) as meeting the needs of the present without compromising the ability of the future generation to meet their needs. Sustainability has since become the subject matter of development thinking world-wide and a crucial theme in CCEE. The implication of this thinking is that development should proceed in such a way that the environmental economic factors of production do not diminish over time. But happenings in the present age are antithetical to this thinking.

The modern industrial age propelled the economics of the present-day developed countries forward and gave rise to the unprecedented improvement in the standard of living of much of mankind. This however gave birth to environmental pollution and climatic change beginning a slow but accelerated negative transformation of the earth's surface and atmosphere. The challenge imposed on the earth to provide the necessary raw materials, energy, and waste disposal process for mankind's production and consumption has had many consequences on the well-being of ecosystems around the globe. The shelter; clothing, nourishment, mobility and other lifestyle components that make up humanity's basic needs impose a significant impact on the environment and atmosphere, particularly as the earth's population increases. As a result, rather than conserving the environmental economic factors of production for the present and future generation, they are destroyed by the chain implications of human's indiscriminate use of the environment.

In Nigeria effects of climate change and environmental pollution/degradation are manifesting by the day. On human settlement and health, population displacement as a result of flood and drought are a seasonal occurrence. Direct impacts of increasing incidence of heat waves results in cerebro-spinal meningitis (CSM) just as pests and diseases are implicated in climate change. In the far Northern part of Nigeria, incidents of reduced water volumes in streams and rivers, drying up of water sources and deficiencies of fresh water availability worsen already poor sanitary and health conditions in these areas; as well as uncontrolled disposal of wastewater and human waste which result in deterioration in water quality. Food security is also threatened as a variety of food crops produced in Nigeria depends on rainfall, just to mention a few.

One of the conditions for maintaining sustainable development as suggested by World Conservation Strategy (World Commission on Environment, 1987) is essentially in terms of maintaining essential ecological process and life supporting system, preserving genetic diversity and ensuring sustainable use of species and ecosystem. These issues constitute to a great extent, the content and the pedagogical exploits of the CCEE curricular, which is aimed at equipping the youths with the knowledge of the environment from which economic resources are obtained and in which they will function. No nation can grow in' the face of environmental disaster and adversities occasioned by climatic change. Therefore, any initiative in the form of CCEE aimed at mitigating the effect of climatic change and conservation of the environment is a major step to achieving sustainable national development.

6. CONCLUSION

Nigeria, like other countries in the world is threatened by climatic change' and myriad of environmental challenges traceable to human activities. Ignorance of the incidence of climatic change and environmental concern account for the worsening of the challenges posed by these phenomena. This calls for the integration of Climatic Change and Environmental Education (CCEE) into the curricular offerings of our schools. CCEE is designed to equip the young learners with the basic knowledge of environment, weather and climate, climatic change, environmental protection/conservation, natural disaster preparedness and response, etc. It is hoped that when implement, CCEE curriculum will help the upcoming generation to understand and address impact of climate change and environmental challenges in their localities and the nation in general.

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