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Awareness of Climate Change and Sustainable Development Issues among Junior Secondary School (JSS) Students in Port Harcourt Metropolis, Nigeria

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Abstract

This study investigated the extent to which junior secondary school students in Port Harcourt Local Government Area of Rivers State Nigeria are aware of issues related to climate change and sustainable development. The study adopted a descriptive survey design. Four research questions were raised. Two instruments were used for data collection, a questionnaire and the junior secondary school teaching syllabus. The questionnaire titled " Climate change and Sustainable Development Awareness Questionnaire" (CCSDA) was used to obtain data from 1600 junior secondary school three (JSS3) students from the fourteen junior secondary schools in Port Harcourt Local Government of Rivers State, Nigeria. The questionnaire had three sections; A, B and C. Section A obtained the demographic features and bio-data of students, section B obtained information on the awareness level of climate change while section C obtained information on sustainable development awareness level. Simple percentages and mean were used to answer the research questions. The results from the data analysis revealed among other things that the JSS curriculum coverage of climate change is small; there is no sustainable development issues in the teaching syllabus of JSS; the level of awareness of sustainable Development issues is low; even though the climate change issues awareness level is high but the knowledge is low; students are eager and willing to know more about climate change and sustainable development issues. Based on these results, the researcher recommended among other things that more themes on Climate change and sustainable development should be introduced in social studies and integrated science in all the JSS level. Having very few topics on climate change and none at all on sustainable development at the junior secondary level is dangerous at this level of their development and more especially now that the world is striving to attain the Millennium Development Goals (MDGs).

Keywords: Climate change; sustainable development; junior secondary school curriculum; awareness; Nigeria

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1. Introduction

Scientific findings have indicated that a changing climate has a significant impact on our planet. Climate change is one of the most important environmental issues facing the world today. This evidence can be shown by the number of conferences, campaigns, reports and researches on climate change in the last 20 years (Agenda 21 of Rio declaration 1992, Intergovernmental Panel on Climate Change (IPCC), 2001, Copenhagen, 2009) etc.

In 2007, the Intergovernmental Panel on Climate Change (IPCC) issued its Fourth Assessment Report, so far the most convincing assessment on the science and implications of climate change. This report concluded that only immediate and sustained action will stop climate change from causing irreversible and potentially catastrophic damage to our natural environment. The IPCC noted that climate change will manifest itself in various ways, including:

a. Rising temperatures, droughts and desertification;

b. Heavy precipitation, flooding and rising sea levels;

c. Extreme weather events such as cyclones, floods and droughts.

Such conditions according to them can impact diminishing water resources, causing increased malnutrition, waterborne diseases such as diarrhoea, and vector-borne diseases such as malaria. Floods and rising sea levels can cause drowning, injuries, and severe mental and physical trauma, particularly for communities living in Small Island developing states, settlements alongside major river deltas and low-lying coastal areas. Evidence suggests that developing countries, already struggling with social, economic and environmental issues, will suffer most from greater weather extremes and the increasing incidence of droughts and floods.

Nigeria is a developing nation and large part of its economy depends on natural resources which are vulnerable to climate change, in view of this, Nigeria is sensitive to the effects of climate change. When those resources are affected, communities are affected. Loss of livelihoods, settlements and diseases, can force entire communities into complete extinction or refugee status. As critical as the effect of climate change is, it is not clear whether Nigerians are aware of what climate change is or its effects.

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 sensitise 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 school curriculum. Lack of awareness and knowledge as Olorunfemi (2010) had put it 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.

2. Climate change and sustainable development

Climate change is a change in the climate pattern. Climate change according to Union of Concerned Scientist UCS (2002) is any kind of change in climate that may be natural or human- induced.

IPCC (2011) defined climate change as a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. They went further to say that Climate change may be due to natural internal processes or external forces, or to persistent anthropogenic changes in the composition of the atmosphere or in land use.

Evidence shows that global mean temperature increased by 0.60C during the 20th century, with the six hottest years occurring between 1997 and 2007 (IPCC, 2007). This warming of the world's climate has been linked to higher concentrations of carbon dioxide and other greenhouse gases in the atmosphere, which are dominantly of anthropogenic origin such as fossil fuel combustion, land use and deforestation.

Climate change phenomenon has serious deleterious consequences for the earth in the form of significant variations in regional climates, recurrent droughts, excessive heat waves, windstorms, killer floods etc as noted by many scientist and different authors.

Sustainable development on the other hand is a pattern of economic growth in which resources are used to meet human needs while preserving the environment so that these needs can be met for generations to come. Its importance was recognized with the establishment of the United Nations Decade for Education for Sustainable Development (2005-2014). The term, sustainable development has been widely accepted and used since the Brundtland Commission Report (WCED, 1987). The report defines sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their needs” (WCED, 1987, p. 43). It emphasized the importance of eradication of poverty and meeting the basic needs of all; of promoting the principles of intergenerational and intra-generational equity, of recognizing the link between a healthy economy and healthy environment, and of accepting the limitations set by the carrying capacity of the environment (WCED, 1987).

Sustainable development was further popularized in the 1992 United Nations Conference on Environment and Development in Rio de Janeiro. The outcome of this conference, Agenda 21, listed a wide range of strategies for realizing sustainable development, pointing out the role of education in Chapter 36, “reorienting education towards sustainable development”.

The United Nations Conference on Sustainable Development (UNCSD) took place in 2012. That marked the 20th anniversary of the 1992 United Nations Conference on Environment and Development (UNCED), in Rio de Janeiro Brazil, and the 10th anniversary of the 2002 World Summit on Sustainable Development (WSSD) in Johannesburg South Africa. These conferences secured renewed political commitment for sustainable development, assessed the progress to date and the remaining gaps in the implementation of the outcomes of the major summits on sustainable development, and addressed new and emerging challenges.

Sustainable development education therefore according to UNESCO, the lead agency for the decade, Education for sustainable development (ESD) is "a process of learning how to make decisions that consider the long-term future of the economy, ecology and equity of all communities" (UNESCO, 2004).

The foregoing shows the importance of sustainable development and climate change education. Sustainable development and climate change is one of the twentieth century's significant concepts. Education for sustainable development and climate change helps all students to develop the awareness, skills, understanding and values to participate in decisions about the way we live our lives which will individually and collectively, both locally and globally, improves the quality of life now without damaging the planet for the future. There are opportunities for students to develop their understanding of climate change and sustainable development within the school curriculum. Topics on sustainable development and climate change can be infused in such subjects like; Geography, Science, Social Studies, Civic Education and Physical and Health Education (PHE).

3. School curriculum on climate change and sustainable development

Curriculum is a sequence of potential experiences set up in schools for the purpose of disciplining children and youths in group ways of thinking and acting (Wheeler (1978), 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 the learners and as a means of developing the personality of the individuals. It is the total experience involving the school in the process of educating young people. It includes the teacher, subjects, content, method of teaching and evaluation as well as the physical and psychological dimensions of the experience (Offorma, 2002). 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).

In a research conducted by Summers and Kruger (2003) which sought to portray some key aspects of the processes through which a group of primary school teachers translated a theoretical view of education for sustainable development (ESD) into pupil learning showed that the teachers saw human action as central to sustainable development

education and that a child's understanding of his personal obligation to dispose of litter includes elements of hygiene and his sharing of this responsibility with others. In this study, a child of 6years old simple awareness that fossil fuels will 'burn away and won't exist' developed to include the concept of both finite and alternative energy sources and the meaning of 'renewable'. A year 3 child's view of future depletion of resources was similarly enhanced to include ideas about renewable and non-renewable resources, while a year 5 child, who initially thought only in terms of forest fires affecting tigers, developed more sophisticated ideas about the impact of human beings on tiger populations.

This study further revealed that the effect of changes in understanding or awareness was a broadening of the child's viewpoint and often an improvement in the child's vocabulary. As a result of the teaching, erroneous ideas might be replaced with correct ones. Thus, a six- year old child who formerly thought of rainforest species as few in number and not specific to that particular environment came to appreciate their vast diversity; a Year 3 child who thought all nature reserves were basically the same and untouched by human hand later understood their diversity and the need for management of them; another Year 3 child's initially naive ideas about living things as a mere source of food to be cared for by nurturing them at home were replaced by an understanding of the need to conserve endangered species for the benefit of future generations; a Year 5 child initially showed a naïve certainty about human overuse of water resources causing extinction of species but this was later replaced with a more cautious attitude which looked for early symptoms of population decline.

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.

In this study, curriculum is conceived as the blue print used as an instructional guide. 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. Climate change specialists have repeatedly

pointed out that a solution to climate change problem will require climate change awareness and its proper understanding.

This study therefore tries to assess the level of junior secondary school students' climate change and sustainable development awareness since education has a key role to play in helping to give out the correct message about climate change and sustainable development to especially the younger generation who will grow with the skills, values and attitudes and it will become part of them.

4. Research Questions

The following research questions guided the study.

1. To what extent does the curriculum content of Junior Secondary School (JSS) in Nigeria cover climate change
2. To what extent does the curriculum content of Junior Secondary School (JSS) in Nigeria provide for sustainable development
3. What is the level of climate change awareness of junior secondary students in Port Harcourt Local government Area of Rivers State, Nigeria?
4. What is the level of sustainable development awareness of junior secondary students in Port Harcourt Local government Area of Rivers State, Nigeria?

5. Methodology

The study is a descriptive survey research which sought to determine the level of climate change and sustainable development awareness among Junior Secondary Students in Port Harcourt, Rivers State. As indicated by Cohen, Manion and Morrison (2007), the descriptive design identifies the opinions people hold about certain phenomena. In this study, the phenomena were identified as climate change and sustainable development.

The population consists of 11472 JSS 3 students from the 14 JSS government junior secondary schools in Port Harcourt local government area of Rivers State, Nigeria. The government schools were used because there is no comprehensive data on the number of private junior secondary schools in this local government. 120 JS3 students each from the 14 schools were randomly selected for the study which gave a total sample of 1680 respondents. However the analysis was based on valid responses of 1600 respondents. The focus on JS3 students was based on the assumption that basic education is terminal for some proportion of the population. It was deemed necessary to find out the extent to which the junior secondary school curriculum in Nigeria provided for the acquisition of knowledge, skills and attitudes on climate change and sustainable development. Again, having studied for three years, the pupils would have been sufficiently exposed to issues

about climate change and sustainable development to make it possible for them to respond appropriately to the questionnaire items.

A self designed questionnaire titled Climate Change and Sustainable Development awareness level (CCSDA) made up of three sections; A, B and C respectively was used to obtain data from the students. Section A obtained the demographic features and bio-data of students, section B obtained information on the awareness level of climate change while section C obtained information on sustainable development awareness level.

The researcher validated the questionnaire using face and content validity. The Pearson Product Moment Correlation (PPMC) was applied to determine the reliability coefficient of the questionnaire. This gave a coefficient of 0.78.

In order to ensure that no particular student was disadvantaged, research data was collected barely a week before the students wrote their junior secondary school certificate examination. All teaching activity had ended and students were to write their examinations. The instruments were administered in the 14 junior secondary Schools with the help of their teachers who acted as research assistants. They were adequately briefed so as to be able to answer all the questions raised by the participants. The students were asked to complete the questionnaire on the spot. Out of the 1680 copies of the questionnaires distributed, a total of 1600 valid copies were obtained at the end of the data collection exercises. This gave a return rate of 99.5% which was good enough to determine the awareness of the phenomena under study.

6. Results

The Junior Secondary School teaching syllabus was also analyzed to determine the extent of coverage for Climate Change issues and Sustainable Development issues.

Mean and simple percentages were used in answering the research questions. Details of these analyses are presented below.

6.1. Research Question 1 and 2

The contents of the Junior Secondary School (JSS) teaching syllabus issued by the Nigerian Educational Research and Development Council of the ministry of education were analyzed. Only two disciplines, Social Studies and Basic Science contained information on climate change. In comparing the extent of coverage of climate change in the two disciplines, as indicated in table one Jss1 has six themes in the syllabus, out of the six themes, 1 theme contained information on climate change issues. Jss2 have 14 themes, 1 theme contained information on climate change issues while for Jss3 with 6 units none has information on climate change issues. For Basic science, Jss1, 2 and 3 with 18, 17 and 16 themes respectively have 1 unit each with information on climate change issues.

6.2. Research Question 3

From the table 2, It is observed that about 87% of the sampled population are familiar with the term, 'climate change'. 52% believe that Climate change is affecting them while 48% said it is not affecting them. On mitigating the effects of climate change, It is observed that 82% of the sampled population do not think that anything can be done to ameliorate the effects of climate change. From the table also, It is observed that almost all the items are above the criterion mean except items 4, 11 and 13. Item 16 that sought to know if the respondents will like to know more about climate change issues have the highest mean rate of 3.8 and the grand mean is 2.9.

6.3. Research Question 4

Table 3 indicates that 78% of the sampled population have never heard of the term sustainable development while 22% have. Items 18,19,20,21 are all below the criterion means of 2.5 while items 22, 24, 25 and 26 are above the criterion mean. It is observed that item 26 which sought to find out if the respondents want to know more about sustainable development has the highest mean score of 3.6. However, the grand mean is 2.4.

7. Discussion of findings

Awareness of junior secondary school (JSS) students of Port Harcourt metropolis of Rivers State on climate change and sustainable development was explored in this study. The study also explored through content analysis of the syllabus how much information the subjects contained on climate change and sustainable development. This study was based on the premise that for African countries and in particular Nigeria to develop in a sustainable manner, they should confront climate change issues through attitude-based, skills and knowledge approaches which should be best achieved through formal education.

The study revealed that Social studies and Basic science are the only disciplines with information on climate change and there is no discipline with information on sustainable development. Also from the findings of the study both social studies and basic science disciplines do not have a good number of topics devoted to the concept of climate change. The JSS 3 social studies do not have any information at all on climate change.

Furthermore, the findings revealed that the level of awareness of climate change issues is high unlike sustainable development. Even though the mean rate is above the criterion mean confirming the awareness is high, still a good number of the population are ignorant of what climate change is all about. 78% of the respondents have not heard of the concept 'sustainable development' before and do not understand what it means and how they could contribute. This is 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.

From the findings also, it is observed that majority of the respondent are willing and eager to acquire knowledge on climate change issues as well as sustainable development. They hear about climate change not only in the school but from the radio, television, church and internet as informed by the respondents though not reported in this study, this may be the reason for the awareness level but they are not very sure of its impacts and their own contribution towards combating them. A good number of them believe that it is not affecting them personally (52%) and that nothing can be done to take care of its effects (86%). This is because they are not informed. And the study revealed that they want to be better the information.

8. Conclusion

The impact of climate change is a general phenomenon, students should be exposed to the dangers of climate change early enough to help them develop positive attitude towards the environment and reduce the dangers associated with climate change thereby living a sustainable life style. The study revealed that the students have some knowledge of Climate change and sustainable development issues and are eager to acquire more skills and knowledge on climate change and sustainable development related issues.

9. Recommendations

Based on the findings of the study the author recommends the following;

- Climate change should be embraced by all especially the educational sector because it is a reality.
- The recommendation of Ozor (2009) to include climate change issues in the curricular of universities should be considered at all educational levels especially at the junior secondary educational level.
- More themes on Climate change and sustainable development in social studies and integrated science should be introduced in all the JSS level. Having very few topics on climate change and none at all on sustainable development at the junior secondary level is dangerous at this level of their development and more especially now that the world is striving to attain the Millennium Development Goals (MDGs).

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Appendix A. Summary of JSS Curriculum Coverage of Climate Change

Table 1

Social Studies				Basic Science		
Class	Total Number of Units	Number of Units for Climate Change	Percentage Coverage	Total Number of Units	Number of Units for Climate Change	Percentage Coverage
JSS1	6	1	16.6	18	1	5.6
JSS2	14	1	7.1	17	1	5.6
JSS3	6	0	0	16	1	5.6
Total	26	2	7.6	51	3	5.9

Appendix B. Awareness of Climate Change

Table 2

S/N	Item	Yes	%	No	%	Total
1	Have you heard of the term Climate Change	1398	87	202	13	1600
2	Do you think Climate Change is affecting or is going to affect you?	775	48	825	52	1600
3	Do you think anything can be done to tackle climate Change?	223	14	1377	86	1600

	Items	Mean	Criterion Mean	Standard Deviation
4	I am familiar with the term “Green House Effect”	1.7	2.5	0.57
5	I am familiar with the term “Global Warming”	2.9	2.5	0.28
6	Climate change leads to flooding and destruction of lives and properties	3.0	2.5	0.35
7	It causes lung problems and diseases	3.0	2.5	0.35
8	It leads to changes in the atmospheric conditions	3.6	2.5	0.78
8	It leads to poverty through its activities	3.5	2.5	0.71
10	It is caused by industrial and vehicular pollution	2.9	2.5	0.28
11	It is caused by persistence deforestation	2.2	2.5	0.21
12	It is caused by solar radiation	2.5	2.5	0
13	It is as a result of production of gas	2.2	2.5	0.21
14	I am not sure if climate change is really happening	3.2	2.5	0.49
15	I do not believe climate change is a real problem	3.1	2.5	0.42
16	I will like to know more about Climate Change	3.8	2.5	0.92
	Grand Mean	2.9		

Appendix C. Awareness of Sustainable Development

Table 3

S/N	Items	Yes	%	NO	%	Total
17	Have you heard of the term Sustainable Development	350	22	1250	78	1600

		Mean	Criterion Mean	Standard Deviation
18	I am familiar with the term Sustainable Development	1.6	2.5	0.64
19	I have previous experiences in terms of Sustainable Development	1.8	2.5	0.49
20	Putting the light off and other electrical appliances when not in use leads to Sustainable Development	1.8	2.5	0.49
21	Saving water is a Sustainable life style	1.8	2.5	0.49
22	Disposing waste properly leads to Sustainable Development	3.1	2.5	0.42
23	Walking or cycling to school leads to Sustainable Development	2.5	2.5	0
24	I am not bothered about Sustainable Development	2.7	2.5	0.14
25	I have/will have personal change for sustainable life style	3.0	2.5	0.35
26	I will like to know more about Sustainable Development	3.6	2.5	0.78
	Grand Mean	2.4		