ENVIRONMENTAL EDUCATION: A POTENT TOOL FOR THE ATTAINMENT OF SUSTAINABLE DEVELOPMENT GOALS (GOOD HEALTH AND WELLBEING, CLEAN WATER AND SANITATION, AFFORDABLE AND CLEAN ENERGY AND SUSTAINABLE CITIES AND COMMUNITIES) IN SOUTH-SOUTH, NIGERIA

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Abstract:

The research surveys knowledge base on core environmental issues and interests of randomly selected students of tertiary institutions in South South States in Nigeria. Several similar research shows minimal quantitative studies outlining approaches and the required components of Environmental Education (EE) to achieve sustainable development objectives. Descriptive figures

(simple percentage size, bar charts and pie charts) introduced into feedback and other analyses in print media. Results indicate a poor understanding of global challenges as well as local environmental ones. Consequently, a healthier globe with greater capacity can be reached as prospective decision makers. This paper offers an analysis with numerous programs on the role of environmental education in sustainable growth at global and regional level in particular. The paper further includes a concise overview of various environmental campaigns, training programs, and curriculum growth strategies to meet sustainability targets. The paper shows that environmental awareness is a powerful tool for achieving sustainable development goals; health and well-being, clean water and sanitation, accessible, clean energy and sustainable cities and communities as well. It would also help decision-makers design better strategies to implement environmental education properly in Nigeria and achieve the common sustainability goal. Moreover, the paper also draws attention to the relationship between environmental education and national sustainable development. We argue that environment and development are intertwined and therefore, in the collective bid to achieve sustainable development, systematically integrated into educational activities in order to produce environmentally responsible and responsible citizens and policies.

Introduction:

The Sustainable Development Goals Report 2018 analyses gains achieved during the third year of the 2030 Sustainable Development Agenda. This summary highlights achievements and ongoing challenges across all 17 Sustainable Development Goals (SDGs), based on the current evidence available, and discusses some of the interconnections between priorities and targets. Subsequent chapters focus more closely on the six goals under review at the July 2018 Sustainable Development High Level Political Forum. While people are living better lives overall than they were a decade ago, progress toward ensuring that no one is left behind has not been fast enough to meet the 2030 Agenda targets. Indeed, the rate of global progress is not keeping pace with Agenda ambitions, requiring countries and stakeholders at all levels to take immediate and accelerated action.

1.   Ensure healthy lives and promote well-being for all at all ages:

Today far more people lead safer lives than over the past decade. However, people are now in needless pain from preventable infections and too many die prematurely. It will require concentrated and sustainable measures to eradicate illness and ill health, with a emphasis on vulnerable demographic populations and areas.

Reproductive, motherly, neonatal and infant wellbeing

Since 2000 the maternal mortality figure has fallen by 37 per cent. Nevertheless, in 2015, 303,000 women around the world died during pregnancy or childbirth due to complications. Nearly 80 percent of live births worldwide occurred during the 2012-2017 period with the assistance of trained health workers, up from 62 percent in 2000–2005. Globally, the under-5 mortality rate plummeted by 47 per cent from 2000 to 2016, and the neonatal mortality rate declined by 39 per cent. The overall number of deaths under-5 dropped from 9.9 million to 5.6 million over the same time period. Also in the area facing the biggest barriers to health, success has been remarkable. The maternal mortality figure in sub-Saharan Africa has been lowered by 35% since 2000, and the mortality rate of under 5 has dropped by 50 percent. The global birth rate for teenagers in 2018 is 44 births per 1,000 females aged 15 to 19 years, compared to 56 in 2000. The highest prevalence (101) is observed in Africa Subsaharan. Ademola, E.O., Ogundipe, A.T. And Babatunde, W.T. (2009). (2014).

Non-communicable diseases and infectious diseases

Globally, between 2005 and 2016, the incidence of HIV decreased from 0.40 to 0.26 per 1,000 uninfected persons. Nevertheless, the prevalence for women of reproductive age in sub-Saharan Africa is even higher, at 2.58 per 1,000 uninfected individuals. In 2016, it reported 216 million malaria cases versus 210 million in 2013. In 2016, there were 140 new cases of tuberculosis per 100,000 people versus 173 cases per 100,000 in 2000. The incidence of hepatitis B declined from 4.7% in the pre-vaccine period to 1.3% in 2015 among children under. CNN. CNN. (2012). (2014).

In 2016 it was estimated that 1.5 billion people received mass or individual diagnosis and care for neglected tropical diseases, down from 1.6 billion in 2015 and 2 billion in 2010. Unsafe drinking water, unsafe sanitation and lack of hygiene continue to contribute significantly to global mortality, leading to some 870,000 deaths in 2016. These deaths were caused mainly by diarrhoeal diseases but also by malnutrition and infections with the intestinal nematode. Globally, in 2016, 32 million people died from cardiovascular disease , cancer , diabetes or chronic respiratory illness. The risk of death from such reasons for individuals between the ages of 30 and 70 was around 18 per cent in 2016. Household and outdoor air pollution caused about 7 million deaths worldwide in 2016.Aminrad, Z., Zakaria, S. Z. B. S. Hadi, A. S. (2011).

Health systems and funding

Overall, nearly 12% of the world's population (over 800 million people) spent at least one tenth of their household budgets on health services in 2010 , up from 9.7% in 2000. Official Development Assistance (ODA) for basic health from all donors increased in real terms by 41 per cent since 2010 to $9.4 billion in 2016. According to statistics collected from 2005 to 2016, over 45 percent of all countries and 90 percent of the least developed countries (LDCs) have less than one doctor per 1,000 population, and over 60 percent have less than three nurses or midwives per 1,000.

2.   Ensure availability and sustainable management of water and sanitation for all:

Clean potable water and sanitation are basic civil rights. Exposure to fresh water is also a requirement for achieving other aspects of sustainable growth, including wellbeing, food protection and poverty reduction, in adequate quantity and quality. Water-related ecosystems are vital to life and have always provided natural sites for human settlements, bringing benefits to biodiversity such as transport, natural purification, irrigation, flood protection and habitats. Nevertheless, demographic development, intensification of agriculture, urbanization and industrial production are starting to overwhelm and weaken the capacity of nature to perform core roles and provide essential services. The challenges of sustainably meeting future water needs are daunting but they can be overcome. Implementing integrated water resource management at all levels (including trans-boundary level) and integrating water and sanitation into other sectors' policies and plans is critical. Akabayashi, (2003).

3.   Ensure access to affordable, reliable, sustainable and modern energy for all:

Recent success in renewable energy is promising indicators that will guarantee access to affordable, secure, and clean electricity for all. In many countries, access to electricity outpaces population growth. Therefore, energy efficiency is continuing to increase, which lowers carbon dioxide emissions, reduces electricity consumption and makes it more available. Although renewable energy has progressed steadily in the electricity market, continued development is still required in the fields of shipping, heating , and cooling. Despite some development, 41 per cent of the world 's population also needs access to renewable fuels and technology for cooking. Overall, progress on that goal remains too slow to be on track to meet the 2030 global energy goals.

4.   Make cities and human settlements inclusive, safe, resilient and sustainable:

When the world is rapidly urbanized, many countries are facing growing numbers of slum dwellers, declining air quality and insufficient urban social facilities and infrastructure. Regional sprawl persists, with suburbs growing at a pace 1.5 times that of population increase, demonstrating the need for more urban planning and more efficient transit networks. 152 countries have developed national urban policies to address many of these challenges, supporting sustainable urbanization. Despite progress, efforts must be redoubled to ensure that all urban residents have access to safe and adequate housing, clean air and basic services and live in resilient and sustainable communities. Adesulu, (2014).

Literature Review:

Environmental Education (EE)

Salvano Briceno & David C. Pitt (1988) asserts that education has always been part of the process by which people are fitted to live in their world with success. It deals with the development of the capacity of an individual to think, reason, and create. One of its core needs is how students of all ages get to know and what they can learn. Training (formal and informal) are also important factors for a healthy human life while improving future management of environmental challenges. It is common knowledge that environmental externalities associated with human activities such as climate change including the depletion of globes are blossoming with scarce resources , particularly with population growth. Bartosh (2003) recorded claims by numerous scholars regarding the origins of environmental education. Green education is green education, education from, about and with. These key terms have so much varied importance for the different dimensions of the environment.

Clark et al (2013) and Shofoluwe and Sam (2012) record the 1977 adoption of a resolution by the world's first Intergovernmental Conference on Environmental Education (EE) in Tbilisi, Georgia, promoting environmental education as a prerequisite for a healthy future and questioning human consciousness and values to enhance the quality of life. Environmental Education (EE) has thus created talk points. Many literatures have explained environmental awareness in philosophical terms. Accordingly the following environmental education (EE) goals are articulated:

• Awareness-building – to help social organizations and people develop understanding and exposure to the broader community and the relevant concerns.

• Participation and advancement of knowledge – to provide opportunities for social groups and individuals to be actively involved at all levels in working towards solving environmental problems (UNESCO, 1978). In addition, to help social groups and individuals gain a variety of experience and gain a basic understanding of the environment and its associated problems.

• Attitudinal change – to assist social organizations and people to develop a range of principles and emotions of environmental interest and encouragement to engage positively in environmental development and protection;

• Learning of expertise – to help social organizations and people develop the knowledge required to recognize and address environmental problems.

Conceptual clarity assessments indicate that, among scholars in the field of environmental education (EE), the most widely accepted notion is that the primary goal of environmental education (EE) is to affect behavior and develop active citizenship (Vaughan et al . 2003). Further support for Environmental Education (EE) as a sustainable tool for a secure future as it lubricates awareness that appreciates the connection between environmental integrity, human well-being and economic prosperity. However, according to Shofoluwe and Sam (2012), North Carolina State Environmental Report in 2011 indicates poor understanding of the need for tripods, leading to environmental degradation

Bartosh (2003) accents it to a meaning that is generally agreed. Accordingly the result of the goals presented in this report. But study uses awareness and knowledge interchangeably, and considers skills as part of knowledge. Thus, consideration of attitude and participation is extended. Premised on Boiyo (2014) consideration of awareness as knowledge and comprehension of environmental facts and the consequences of various environmental issues. In addition, the dictionary of Oxford Advanced Learner (International Students' 8th edition) (2010) describes knowledge as facts, understanding and skills learned through education or practical/scientific knowledge of/about something.

Expertise in the environment

Mehra and Burhan in Sobur (2003) argue that knowledge is a collection of ideas that corresponds to the order of things and is connected by faith. Supriyono (2009) notes that information design leads to the deconstruction of mechanical thinking. Awareness and the appropriate steps to address environmental issues are one of the criteria of good conduct. Environmental awareness is the understanding of human towards the unity of space, objects, resources , environment, and organism, including human actions which affects the survival and welfare of others. It could be acquired in two ways-either through experience or through scientific information. The above may require structured environmental education (EE) which follows a definite and standardized protocol. Knowledge in the cognitive domain has six actions according to Notoatmodjo (2002): knowledge, understanding, application , analysis , synthesis and evaluation. Environmental awareness is a result arising from the mechanism of information and experience including definition, practice, data, theory , social rule, rule of law, moral norm, structure of values and human attitude, and the natural phenomena of the world covering the nature of space with living and non-living beings and their circumstances. Hines, Hungerford, and Tomera (1986) state: "Behavior is not of its own making. It is formed by phase of learning. Human must therefore exhibit a conscientious environmental alliance in learning.' Alliance that considers planet earth to belong to all its occupants; natural resource exploration and use in harmony with nature and galvanizing for ethical and responsible environmental behavior for future generations.

Attitude towards the world

According to Azwar (2003), attitude is a general evaluation created by humans towards themselves, other people, object or issue. Notoatmodjo (2002) defines attitude as a reaction or response to stimulus or object. Purwanto (1999) states that attitude carries ideas or feelings with the tendency to act as the attitude of that object.

Methodology:

The study was conducted among tertiary students at eight selected universities across Nigeria's southern states, namely: Federal Petroleum University (FUPRE) Warri; Federal University, Otuoke – Bayelsa State; University of Benin, Benin City (UNIBEN); University of Uyo, Uyo; University of Calabar, Calabar; Cross River State University of Technology, Calabar; Niger Delta University, Bayelsa State;

The quantitative method of data collection was used for this research, in which the survey method was used as an instrument of data collection through questionnaire administration. It is because the most appropriate tool for data collection is questionnaire under quantitative arrangement (Marshell, 2011). Questionnaire was designed based on various aspects of environmental issues and information which could inform level of awareness and willingness to interact with the environment in a sustainable way. It is focused on the environmental education (EE) micro-level appraisal focused on a

few environmental education (EE) subjects rooted in Nigerian tertiary institutions' history and philosophy of science.

Method of sampling is applied, Obasi (2000) and UNESCO (2005) argue that sampling is usually carried out in educational analysis in order to allow the in-depth study of a portion of a population, rather than the whole, to generalize and conclude on the whole population. The sample size is consequential to the integrity of the result and therefore the sample size determined using statistical sampling method adopted by Israel (1992):

$$n_o = \frac{Z^2pq}{e^2}$$

Where n_o = sample size
Z= 95% (desired confidence level)
p= .5 (maximum variability)
q=1-p
e = desired level of precision ($\pm$ 5%)

Therefore a total sample size of approximately 384 was determined. In addition, sample size of 383-398 is adequate for population size of approximately 9,000-100,000 for precision level of ±5 per cent and confidence level of 95 per cent and p=.5 (Israel, 1992). The study assumes a total population of less than 100,000 in whole schools under study. Using stratified random methodology for conducting the 384 questionnaires, students were selected randomly around the campus to ensure a equal reflection of the overall population being surveyed (UNESCO,2005).

For data analysis , the study adopted the quantitative method of data analysis, using the Statistical Package for Social Scientists (SPSS) to analyze the questions. For the 384 questionnaires that were issued, only 300 questionnaires were obtained and evaluated, thereby defining the sample cap.

It is important to estimate the data, as not all data are available. There are many data estimating techniques but polynomial curve fitting is commonly used. The technique is intended to convey the relationship between a vector X as a function of available data C and a answer Y finding the best match in the data curve. The following polynomial of m order is (Shekarchain et al., 2011) Y = C0 + C1X + C2X 2 + ... + CmXm-Equation 1. Therefore equation 1 used to predict the effect on the population of Environmental Education (EE) from 2017-2030.

Results:

Results in this research demonstrate students ' knowledge of selected environmental factors and current concerns that should be systematically studied and that are sustainability components. Table 1 outlines initial field study of current average environmental education (EE) status in tertiary institutions. Out of an total of 16 credit load Graduate School (GS) courses offered only in the first year in Nigerian tertiary institutions, it indicates a less than 50 percent of only two credit load general course. Table 1 below, Typical course overview of History and Science Theory that integrates elements of Environmental Education (EE) in tertiary institutions in Nigeria.

1	Man - his origin and nature
2	Man and his cosmic environment
3	Scientific methodology
4	Science and technology in the society and service to man
5	Renewable and non-renewable resources- man and his energy resources
6	Environmental effect of chemical plastics, textiles, waste and other materials, chemicals and radiochemical hazards
7	Introduction to the various areas of science and technology
8	Elements of environmental studies

Table 1: Science philosophy which integrates elements of environmental education (EE) in tertiary institutions in Nigeria.

Consequently on table 1, so further test on simple but essential and consequential impact on the integrity of the environment. Figure 1 reveals that just 15 per cent grasp the definition of sustainability
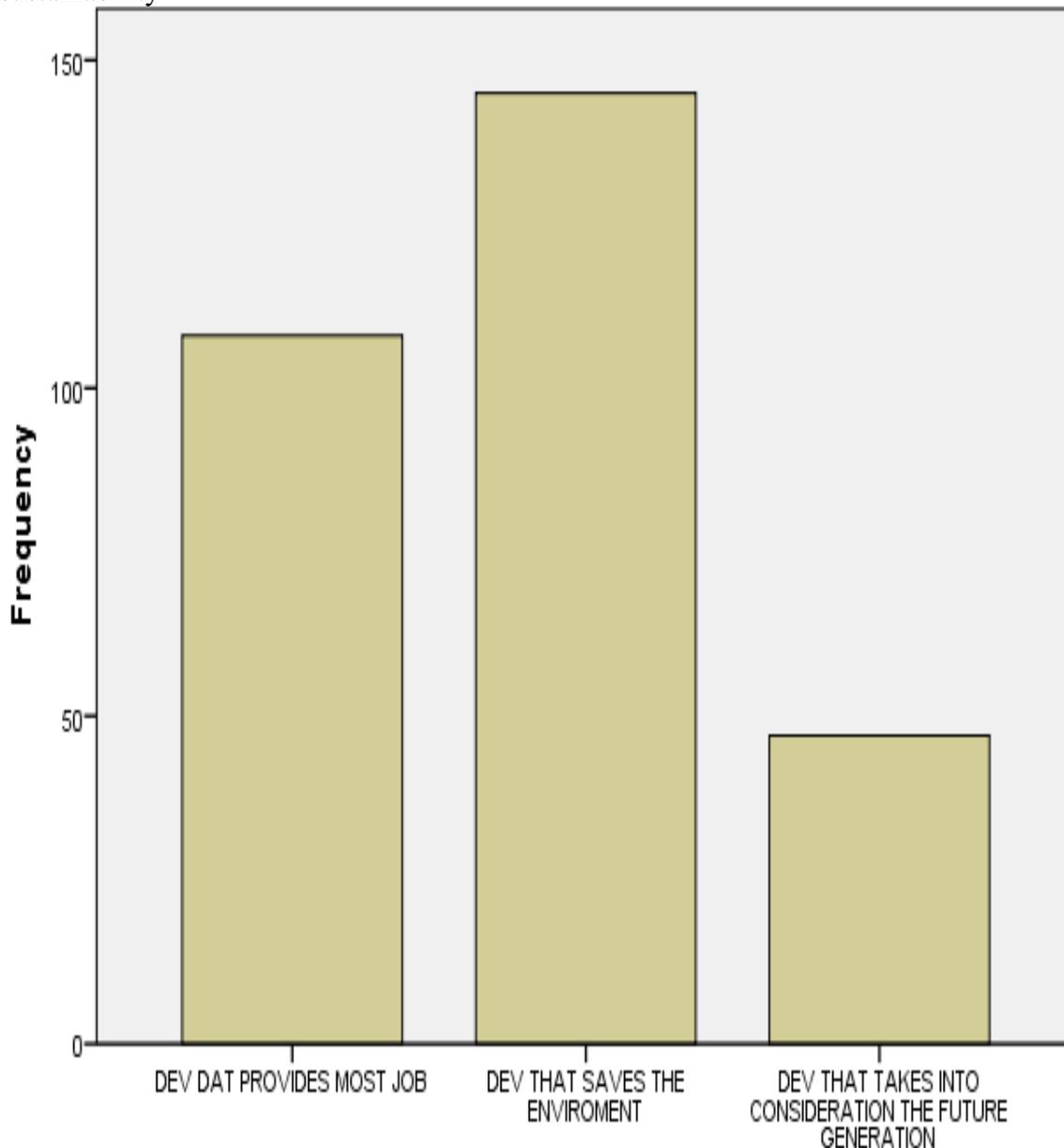
Figure 1: Knowledge of Sustainable Development

Table 2 shows a similar trend as to whether the globe is on a dangerous trajectory as 80 per cent have no or not knowledge of the prevailing global environmental status as shown by IPCC. Thus it may be linked to other consequences of their behaviour like their waste management process- 90 percent either burnt, buried and dumped their waste publicly and even their awareness and practice of 3 Rs (Reduce , Reuse and Recycle). Approximately 65 per cent of students did not know it as well as practice it as shown in figure 3. Additionally, environmental policy knowledge according to table 3 followed similar trends.

Table 2: Global environment on dangerous trajectory

|		Frequency	Percent	Valid percent	Cumulative percent
Valid	Y E S	60	19.8	20.0	20.0
	N O	104	34.3	34.7	54.7
	NOT SURE	136	44.9	45.3	100.0
	Total	300	99.0	100.00	
	Missing system	3	1.0		
	Total	303	100.0		
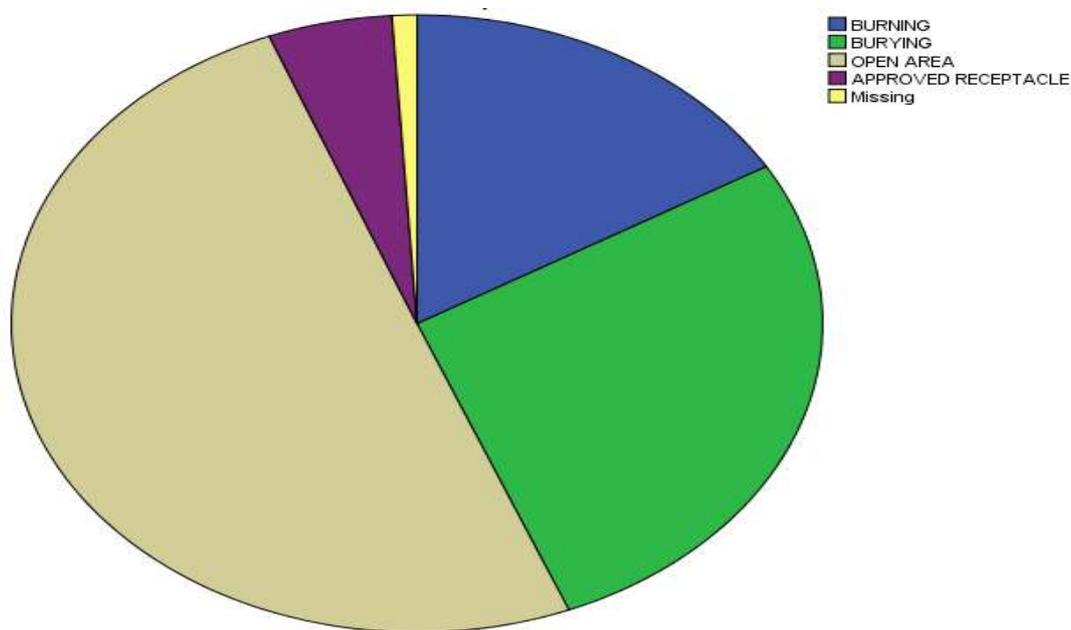
Figure 2: Method of waste disposal: Open area has the highest percentage
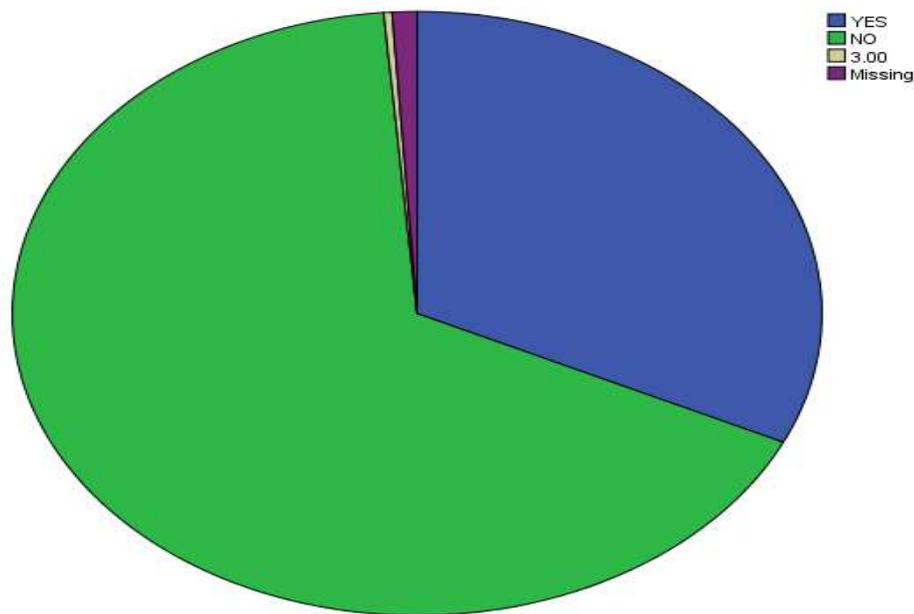
Figure 3: Practice of 3 Rs

Table 3: Knowledge of Environmental policy

		Frequency	Percent	Valid percent	Cumulative percent
Valid	YES	68	22.4	22.7	22.7
	NO	139	45.9	46.3	69.0
	NOT SURE	93	30.7	31.0	100.0
	Total	300	99.0	100.00	
Missing system		3	1.0		
Total		303	100.0		

Yet many agree on the unhealthy environment and knowledge of global warming as table 4 and 5 points. This may be attributed both to indiscriminately dumping waste seen from many locations and from media knowledge. Evaluation of all results indicates disconnecting graduates, formal knowledge and necessary action toward environmental degradation. So it's not shocking that over 85 % of students support the need for stand-alone environmental education as seen in table 6, which is in accordance with Bosah (2013) research, which earned over 90% support. Robinson (2013) certifies scattered environmental education (EE) elements in non-compulsory environmental elements that shorten many undergraduates and underline their minimal exposure and awareness and responsibility for the environment. Environmental education and training are therefore vital in raising thorough awareness of the long-term adverse effects of environmental degradation and uncontrolled development (Robinson, 2013 and UNCED, 1992). Awareness of the interconnectedness of man and his world needs to be incorporated, particularly human beings and their actions that can influence the survival and health of others (Hines, Hungerford and Tomera, 1986). As Bosah (2013) states the inseparability of our environment from life. Therefore every need to manage our world properly. Then it is essential to incorporate all the required elements of environmental topics like field approaches to prepare the students on hands-on. Estimating a student influencing 2 people based on access to Environmental

Education (EE) could increase environmental awareness by around 26 folds by 2030. Trend shown in figure 3.

Table 4: Do we have a healthy environment

		Frequency	Percent	Valid percent	Cumulative percent
Valid	YES	50	16.5	16.7	16.7
	NO	124	40.9	41.3	58.0
NOT SURE		126	41.6	42.0	100.0
Total		300	99.0	100.00	
Missing system		3	1.0		
Total		303	100.0		

Table 5: Knowledge about global warming

		Frequency	Percent	Valid percent	Cumulative percent
Valid	YES	185	61.1	16.7	61.7
	NO	83	27.4	27.7	89.3
NOT SURE		32	10.6	10.7	100.0
Total		300	99.0	100.00	
Missing system		3	1.0		
Total		303	100.0		

Table 6: Need for environmental education

		Frequency	Percent	Valid percent	Cumulative percent
Valid	YES	260	85.8	86.7	86.7
	NO	40	13.2	13.3	100.0
Total		300	99.0	100.00	
Missing system		3	1.0		
Total		303	100.0		

The establishment of environmental clubs could be advantageous for the practical approach, as could be a tool for field practices on ways of reducing environmental damage. Studying ways to involve pupils, Boiyo (2014) found a number of students inspired by club events and suggested it as an important and effective method for achieving academic and co-curricular objectives in schools. Similarly, Abba and Singh (2014) supports the stance of Boiyo (2014) and further stresses the importance of environmental debates and seminars as potential motivation for the involvement of students in active engagement and accountability for environmental conservation and development.

Conclusion and Recommendations:

The environmental education (EE) components integrated in the syllabus of the Graduate School (GS) are not adequate. In fact, data from the report indicates a poor knowledge of environmental problems and a persistent lack of desire to resolve them. Environmental Education (EE) is a lifetime method with the goal of imparting environmental consciousness, ecological understanding, behaviors, principles, actions obligations and ethical responsibility for the fair use of energy and for healthy and sustainable growth to its focus audiences in the formal education sectors.

The suggested version of the Environmental Education (EE) syllabus would also be implemented by NCERT in Graduate School (GS), as it integrates core environmental components. This will be supplemented by field research, workshops and contests on environmental issues that can serve to offer in-depth knowledge; hand-on experience and active engagement in solving environmental problems. In addition to the recommendations, the following tools are also very important to aids the success of environmental education:

- High awareness creationon environmental issues.
- Participation and knowledge advancement
- Positive attitudinal change should be instilled on students.
- Equitable level of skills acquisition to manage environmental menace
- Make environmental education a compulsory course in the Nigerian education curriculum (primary, secondary and tertiary).

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