The Environmental Studies

Teacher's Climate Change Awareness level and mitigation of Perceived Health effects among secondary school students in Cross River State, Nigeria

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Abstract

Secondary school teacher's level of climate change awareness can influence secondary school student's response to mitigate the perceived health effects of climate change. This can be done through and during the process of teaching and learning. Various studies have shown that students learn more by imitating their teachers, hence if teacher's level of climate change awareness is high, their students will learn from their them and this can bring about a change in attitude, thereby bringing about positive environmental behaviour among secondary school students. This research adopted the Ex-post facto research design; the study is located in secondary schools in Cross River State, Nigeria. A sample of 576 teachers from 18 public and private secondary schools (12 and 6 respectively) were assessed to examine their climate change awareness level and how they can influence the mitigation of perceived health effects of climate change among secondary schools students in Cross River State, Nigeria. The instrument was a 36 item structured questionnaire which was administered by the researchers and 5 trained research assistants. The instrument was coded and analyzed with Pearson product moment correlation analysis. The result showed a calculated value of 0.439, while the table value is .088, with 574 degree of freedom. The null hypothesis was rejected, while the alternate hypothesis was accepted; therefore, teachers' climate change awareness level does significantly influence the mitigation of perceived health effects of climate change among secondary school students in Cross River State, Nigeria. It was recommended among others that environmental clubs should be established in all secondary schools in the state, while government and other stakeholders should assist secondary schools with information and communication materials on all aspects of environmental awareness especially climate change awareness.
Keywords: Climate change awareness, perceived health effects, climate change mitigation, ozone layer depletion and global warming

Introduction

The emergence of global warming and climate change in human history has brought with it a significant threat to both human lives and other components of the human environment. Different people have different perception of the causes, effects and mitigation of the global warming and climate change on human health and the environment. There must be a communication channel which such awareness creation can be carried to reach the target audience. One such medium of information sharing about issues of the global climate warming and change are the school teachers. These groups of persons are charged with the responsibilities of molding the character, destinies and future of the students put under their care.

School teachers form a vital channel through which global warming and climate change information can be effectively taught to the students. Studies have shown that global warming has become a global phenomenon which has become a very burden to the scientific communities globally. Global warming and climate change are universal problems associated with abnormal increase in the level of temperature of the earth and its atmosphere. The global average temperature near Earth's surface has risen by 0.74 ± 0.18 C during the last 100 years. The Intergovernmental panel on climate change in its climatic models has projected that global surface temperatures are likely to increase by 1.1 to 6.4C between 1990-2001, and between 6.5-9.5^{0}c by 2020 (Vipinder-Nagra and Kaur, 2014). Studies have shown that the world's climatic system is fundamental to support life on this planet. Anthropogenic activities are altering the world's climate

by increasing the atmospheric concentration of green house gases, thereby amplifying the natural "green house effect" that makes the earth habitable, leading to detrimental and deleterious effects. Overall, climatic change is projected to increase threats to human health, predominantly within tropical and subtropical countries (Eneji, Ogar, Omoogun, Ojikpong, Dunnamah and Ekpo, 2013).

Climatic changes can affect the human health directly, through weather extremes and indirectly, through changes in the ranges of disease vectors, water borne pathogens, outbreak of epidemics, by bringing changes in water quality, air quality and food availability as well as food quality and malnutrition as a result of poverty and food insecurity. Climatic changes triggered by global warming can bring in their wake of extreme conditions like storms, drought and floods and can be of immediate threat to life (ADB, 2008; Eneji, et al., 2013).

However, in line with the Intergovernmental Panel on Climate Change, IPCC (2014), observed that human influence on the climate system is clear, recent anthropogenic emissions of greenhouse gases are the highest in history. Recent climate changes have had widespread impacts on humans and natural systems. The problem of global climate change has been a burning issue in global frontiers for quite some time and has become the most chronic problems confronting man and his environment, which is mostly caused by increased emission of industrial gases as a result of incomplete combustion of fossil fuel, carbon-dioxide released from agricultural activities, bush burning, methane emission from waste and other human activities among other gases, (Good, 2010; Curry, 2011; Eneji, Ben, Headboy, Okongor-Eno, Zemba, Mubi and Oko, 2011).

Studies have found that solar radiation and other visible light are accompanied by heat in the atmosphere that absorbs water and carbon dioxide and other gases in the air. The atmosphere remits this heat to the earth; the remitted heat goes to the earth surface providing additional warming. This warming associated with the remission of outgoing heat or light is trapped under the earth atmosphere, preventing its release back into the atmosphere, this warms the earth atmosphere, this phenomenon is called green house effect (Ifegbesan, 2010; Ogunseemi & Ibimilua, 2016). The green house effect traps the heat and makes it warmer. However scholars are of the opinion that increased Carbon dioxide from human induced activities are responsible for global temperature or global warming, (Ifegbesan, 2010).

Due to global climate change as a result of rising temperatures, ice at the Polar Regions are melting, increasing the volume of water released into river bodies and other tributaries. With the rising temperatures, there is projection that there will more killer storms, floods, drought, crop failure and food insecurity. Studies have also shown that the degree or extent of severity of storms such as Tsunamis, hurricanes, tornadoes and cyclones is increasing, and scientists have come up with the firmest evidence so far that global warming will significantly increase the intensity of the most extreme storms worldwide (Tol, 2008; Costello, et al., 2009; Richardson, Grose, Doman & Kelsey, 2013). Recent researches have shown that there are about 90% chances that 3 billion people worldwide will have to choose between moving their families to areas with milder climates or deciding to go hungry as a result of global agricultural crop failure due to climate change. One of the main causes of this will be the shortage in the amount of rainfall or precipitation resulting to widespread desertification with its attendant effects. Climate change is expected to have the most severe impact on water supplies. Water shortages in future are likely to threaten food production, reduce sanitation, and hinder economic development and damage ecosystems, (Tol, 2008; Costello, et al., 2009; Richardson, Grose, Doman & Kelsey, 2013). It causes more violent swings between floods and droughts.

Scholars have observed that the rising temperatures might lead to the extinction of more than a million species; this is worrisome because man's existence on the planet is tied to the presence of the diverse species and population of plants and animals in the ecosystems. A significant number of species have gone extinct or are under threat as a result of the global climate change. Modest rise in sea level will have huge impacts on coastal ecosystems. New marshes would eventually form in many places, but not where urban areas and developed landscapes block the way.

The extent of the level of awareness of climate change situation, beginning from the causes, effect and how these effects can be mitigated is wholly a duty the school teacher must understand to enable him teach these concepts and scenario to the students in the classroom. The shaping of attitude and values, commitment and skills needed to preserve and protect the environment begins at an early age, during which the teachers play a central role. School systems provide the largest organized sector for imparting knowledge about the environment and initiating actions to prevent the occurrence of new ones, while solving the existing problems. Teachers play a pivotal role towards such a reform, (Oguz, Cakci & Kavas, 2010). It is a common knowledge therefore that climate change impact heavily on the health of humans and their environment, granted that this is true, then what is the level or extent of teacher's awareness of global climate change and the perceived health effects on student's health in secondary schools in Cross River State?

In a study on the level of climate change awareness and perception among primary school teachers in Kenya, Koske & Ochieng, (2015) posited that the studied respondents revealed low awareness level, which was attributed with significant gaps on their knowledge, therefore suggesting improving quality of knowledge and developing positive attitudes on environmental issues among the school teachers. Similar outcome was also found in the people of sub-Saharan African countries where teacher's low level of awareness on climate change is attributed to limited awareness campaigns (Curry, 2011). Another study on teachers' awareness of the causes and effects of climate change and their classroom management strategies in climate change era revealed that teachers were not quite aware of climate change impacts and did not use classroom management strategies needed on the issue (Oruonye, 2011).

Thus, cited studies showed respondents' climate change information is based only on their personal experiences which are obviously limited (Holdren, 2006); while the research on the level of awareness of local communities on climate change impacts was still low in the Niger Delta region of Nigeria (Ekpoh & Ekpoh, 2015). Ekpoh & Ekpoh (2015) further held that an effective information campaign towards climate change awareness is a dynamic approach in adapting to or mitigating such environmental issues. As stated on the article titled effectiveness of public communication campaigns in promoting adaptation to climate change in Africa, "the objectives, strategies, and approaches of effective public communication campaigns can immensely influence the audiences' knowledge, attitudes, perceptions, and behaviour towards climate change adaptation in the region (Ekpoh & Ekpoh, 2015).

There are further research which focused on analysis of the teachers' climate change awareness with an aim to provide information useful for the Turkish teachers on assessing their knowledge and attitudes toward climate change (Karl, Melillo, Peterson, 2009). Canadel *and Canadel, (2011)* research launched a professional development program titled "Awareness and adaptation to Climate Change" in which 101

teachers participated, the three-day in-service thematic activities such as training, workshops, field trips, and lecture discussions with emphasis on climate change issues took centre stage. The study showed that more than half of the total respondents were not aware of global climate issues before the lecture, but became fully aware after engaging the designed program of activities, (Karl, Melillo, Peterson, 2009; Astalin, 2011). The authors concluded therefore that, disseminating information through direct or first-hand (seminars, lectures, workshops, field trips) and vicarious experiences (film viewing, simulation) were effective in the said study.

Results of the studies by Kollmuss and Agyeman, (2002) and Zsoka (2005; cited in Csutora 2012); Abdul-Wahab, (2008) and Oguz et al., (2010) had generalised that it is not necessary that increased environmental awareness will lead to increased pro-environmental behaviour. Although there is no direct relationship between knowledge and environmental actions, but still it is considered as a necessary factor which act as moderators to promote pro-environmental actions (Kitzmuller, 2009; Mimura, 2007; Astalin, 2011). Consequently, scholars have tried to put forward several models and theories justifying the relationship between environmental knowledge, attitudes and pro-environmental behaviour, (Grace and Sharp, 2000; Barraza and Walford, 2002; Elder, 2003) due to the complex nature of reality and economic-structural factors. Empirical evidence suggests that factors such as; gender, socio economic status, age, income, occupation, education, origin, residence, season, nationality, etc. (Hwang et al., 2000; Ifegbesan, 2010) are also somehow determinants of environmental awareness and ecological behaviour.

Teachers' awareness on climatic change will have a militating measure on the sustainability of our environment, for example, if we have selective harvesting of our plants (trees) to reduce deforestation or we can carry out reforestation of the forest to fight deforestation and stabilise the environment. Carbon dioxide will be massively absorbed, in the environment. The teacher's awareness of minimal use of electricity, cars, oils, gas and coal will have minimal availability of carbon dioxide, which will have a minimal climate impact including, less health related issues (Daveport, 2016).

In attempting to explore level of environmental education awareness and ecological behaviour of secondary school teachers in relation to demographic factors Okaka, (2013) observed that the results of the study reveal average environmental awareness and ecological behaviour. Significant differences are observed in environmental awareness and ecological behaviour in relation to gender and subject streams. A moderate positive and significant correlation exists between environmental education awareness and ecological behaviour of secondary school teachers. The authors therefore concluded that the higher the level of environmental awareness, the better the ecological behaviour among secondary school teachers. The implication of this finding is that, when teachers are adequately informed or aware about environmental issues, they are better equipped to create the needed awareness among their student, once this is done, since the school is a microcosm of a macrocosm, the students will take what was taught in the classroom into the society. Hence, climate change issues, especially those human induced causes can be reduced or mitigated. The awareness of increased ozone depletion due to the use of air conditioners, refrigerators and atmospheric arosal particles will reduce the presence of chlorofluorocarbon (CFC) as a pollutant. CFC causes the ozone molecules to break down, reducing ozone ultraviolent (UV) radiation absorbing capacity. Ultraviolent radiation causes CFC to undergo photo-dissociation, producing highly reactive chlorine free radicals such as in the case of dichlorodifluomethene (Sivamani, Crane & Dellavalle, 2009).

Although it is far-fetched to see climate change as resulting in radical changes to student's cognitive and social development, for some students in Cross River state, with added challenges presented by climate

change, could in fact contribute to a general "erosion" of both their capacities to their opportunities for learning and growth. ASU, (2010) however observed that teachers environmental awareness is critical in the development of students as far as capacity building can brings development concerns. Good health is central to the development of students, health, cognitive, affective and psychomotor development; if the students are not in good health or they are malnourished, energy and interest will be lacking as active learners in our secondary schools system, (Engle, 2013).

Teacher's awareness on the student mental health with the infestation of intestinal parasite, and diarrhea as a result of climatic change will need Environmental awareness, (Abdul-Wahab, 2008). Infection of parasite have been related to a number of episodes of diarrhoea is the early development of students and services carried of malaria have separately associated with cognitive and neurological impairment (Bisong, 2012). All of these factors can be expected to be exacerbated by the health effects of climate change. In a research carried out by Tol & Yohe, (2006) on the effect of gas flaring and carbon dioxide emission on human health, the researchers found out that gas flaring has a very deleterious effects on human health as a result of all exposure to hazardous air pollutant emitted during incomplete combustion of gas flare. The authors further found that these pollutants are associated with a variety of adverse health impacts such as cancer, gastro-intestinal diseases, neurological, reproductive and developmental effects and deformities in children, lungs damage and skin problems have also been reported (Tol and Yohe, 2006; Klein, 2007). The authors concluded that gas flaring has a serious health impact of humans as well as the environment.

Tatters, Fu & Hutchins, (2012) estimated that by 2030 climate change may cause up to 250,000 additional deaths per year and damage health at an estimated cost of US$ 2-4 billion per year. The 2015 Lancet Commission on Health and Climate Change identifies three ways that climate change may impact health, through food shortages, direct health and through the manifestation of different diseases and pest infestation. In another research by Mimura,(2007) on Small islands in Climate Change: Impacts, Adaptation and Vulnerability, the author discovered some most touching facts, one is that the greater health risks such as injuries, respiratory diseases, and poisoning resulting from extreme weather events such as storms, floods, heat waves, fire and drought. The second is that there may be indirect effects arising from the way climate change may impact water quality, air pollution, land use change and ecological change, manifested for example in cardiovascular disease, infectious disease, under-nutrition, allergies and mental illness. The third, the researchers therefore highlighted that these impacts are likely to be uneven, and to vary for example by age and gender, health status, socioeconomic status, social capital, public health, infrastructure and mobility and conflict status (Mimura, 2007; Tans, 2012).

In another research carried out by Kundzewicz, (2007), on effects of climate change on migration pattern and the health implication, the researcher found that health conditions are linked with migration patterns in other ways too. The author posited that disparities in development is one of the main drivers for migration worldwide; and a lack of access to good healthcare is often cited by migrants as one reason why they moved, this is so because when climate change occurs, there are a lot of environmental disaster as a result of the climate change. When these disasters occur, there is the destruction of infrastructure and installations, the rural communities where these disasters occur are better hit, hence they move out to better place where they can get better health services and other social services (Anderson, 2009).

A research question and a hypothesis were formulated to guide the study thus: how does teachers' level of climate change awareness influence their student's health? Teacher's level of climate change awareness does not significantly influence the perceived health of secondary school students in Cross River State.

Methodology

This study adopted the Ex-post facto research design because the variables under study have naturally occurred and existed, without the researcher's ability to manipulate any phenomenon. The area of study is Cross River State, Nigeria. Cross River State is located within Longitude 5°4' N and Latitude 8°30'E of the Greenwich meridian, Cross River State has a landmass of about 20,156 km² and a projected population figure to 2016 of about 3,866,300 people (NPC, 2006, projected to year 2016, at 2.5% growth rate). Cross River State is bounded in the North by Benue state, in the South by the Atlantic Ocean, in the East; Cross River State is bounded by the great ridge bordering the Republic of Cameroun and Nigeria, while in the West; Cross River State is bounded by Ebonyi, Akwa Ibom and Abia states.

The study area is largely made up of tropical rainforest vegetation zone progressing steadily to the savannah forest in the northern extremities. Rainfall patterns are double maxima, with peaks at July-august and are almost universal in this area, averaging over 3500mm per annum. Farmers use the rain forest environment for the exploitation of timber and non-timber products as well as farming. There are also plantation farms which are owned by both individuals and government. Crops cultivated include cash crops like cocoa, rubber, oil palm, and food crops like yam, plantain, banana, cassava, cocoa yam, water yam, ground nut, vegetables etc. Timber harvesting, Hunting and fishing are also part of the major occupation of the people.

The population of this study consisted of 7,643 teachers across the state, while 6 secondary schools were then selected from each zone, a total of 18 secondary schools were selected for the study, 12 public secondary schools (4 from each zone) and 6 private secondary schools, (2 from each senatorial zone) from the six Local Government Areas that makes the state (Data collected from the State Secondary Education Board, Planning Research and Statistics, 2017). Sample of five hundred and seventy sixr (576) respondents were selected among the teachers in the twelve (18) selected secondary schools for the study (20%). The instrument for data collection was a structured 36-items questionnaire divided into two sections consisting of teachers' demographic characteristics and those to elicit information on the variables under study. The instrument was administered by the researchers with the assistants of trained research assistants. There was 100% instrument return rate from the respondents.

Results and discussion

How does teacher's level of climate change awareness influence the mitigation the perceived health effects of climate change on students? The null hypothesis states that, teacher's level of climate change awareness does not significantly influence the mitigation (reduction) of the perceived health effects in Cross River State.

Table 1: Pearson Product Moment Correlation analysis of the influence of teacher's level of climate change awareness and the mitigation of perceived health effects on students

Variables	N	Mean	SD	r-value	Sig.
Teacher's climate change awareness level	576	18.50	2.29	0.439*	.000
Mitigation of perceived health effect on student	576	27.85	6.26		

**significant at p<.05; df = 574; critical r-value = .088

Result in table 1 shows that the calculated r-value of 0.439 is greater than the critical r-value of .088 at p<.05 with 576 degrees of freedom. This implies that the null hypothesis which states that, teacher's level of awareness of climate change does not significantly influence the mitigation of the perceived health effects of the health of secondary school students in Cross River State is rejected while the alternate hypothesis is accepted. The result of this study is in line with the findings of Hunter, (2008) who discovered that climate change do affect human health in two main ways: firstly, by changing the severity or frequency of health problems that are already affected by climate or weather factors; and secondly, by creating unprecedented or unanticipated health problems or health threats in places where they have not previous occurred. This is so because the influence of weather and climate on human health is significant and varied.

Exposure to health hazards related to climate change affects different people and different communities to different degrees. While often assessed individually, exposure to multiple climate change threats can occur simultaneously, resulting in compounding or cascading health impacts. With climate change, the frequency, severity, duration and location of weather and climate phenomena – like rising temperatures, heavy/ scanty rains and droughts, and some other kinds of severe weather – are changing. This means that areas already experiencing health-threatening weather and climate phenomena, such as severe heat or hurricanes, are likely to experience worsening impacts, such as higher temperature and increased storm intensity, rainfall rates, and storm surge, all these result to severe health implications for the students (St Luis & Hess, 2008).

The result though is significant, teachers level of climate change awareness is still very low, this is confirmed by the study of Holdren, (2006) that showed that most teacher's climate change information and knowledge is base only on their personal experiences, obviously very limited; while the research on the level of awareness of teachers and local communities on climate change impacts was still low in the Niger Delta region of Nigeria (Ekpoh & Ekpoh, 2015). Teachers who are environmentally conscious and aware have roles to play through the creation of climate change awareness to the students, who are members of a larger society; hence the information or awareness created in the school can be transferred to the larger community.

This result confirms the study of Orlove, (2009) who found that extremes of heat and cold have a broad and far-reaching set of impacts on the nation. These include significant loss of life and illness, economic costs in transportation, agricultural production, energy and infrastructure on the average over the last 30 years, excessive heat accounts for more reported deaths annually than hurricanes, floods, tornadoes, and lightning combined (Sueysmark, 2007, Nicole, 2012, Liu, 2015). The implication of this result is that

teacher's level of climate change awareness can help the students understand the spiral relationship between climate and weather conditions and how these influence human health and other components of the ecosystem. Teacher's awareness should guide them to counsel students on how to develop the culture of dumping waste only at designated places, clearing their environment of all standing water and drainages, clearing their surroundings and homes, regulate how to dispel pathogens and vermins from their living environment. Above all, teacher's awareness of climate change can influence student's attitude positively towards environmental sanitation and personal hygiene.

Most schools, students hardly do their normal routine sanitation, labour is no longer done in most secondary school since schools now have labourers who do most of these jobs, these has made most of our students in secondary school these days to be bereft of manual labour, teachers can re-introduce all these practices including tree planting, environmental sanitation and personal hygiene. This can only be achieved if the teachers know the way and goes the way themselves for their students to emulate. This finding also gave credence to the conclusion of Canadel and Canadel, (2011) that concluded therefore that, disseminating information through direct or first-hand (seminars, lectures, workshops, field trips) and vicarious experiences (film viewing, simulation) were effective in the mitigation of perceived health effects of climate change, (Astalin, 2011). Kollmuss and Agyeman, (2002) and Zsoka (2005); cited in Csutora (2012); Abdul-Wahab, (2008) and Oguz et al., (2010) had generalised that it is not necessary that increased environmental awareness will lead to increased pro-environmental behaviour, (Schahn and Giesinger, 1993; cited in Kitzmuller, 2009; Grob, 1991, cited in Kollmuss and Agyeman, 2002).

The result of this study corroborates Tatteas, (2012) who found that when teachers are properly informed about the effects of climate change, they would use such knowledge to guide students on their health implication and probably how to protect themselves against such harmful effects. It is on this basis that Tatteas, (2012) further confirmed that the Local communities across the world can prevent floods and heavy rains from devastating their homes and buildings by updating infrastructure, improving drinking water, safeguards and creating public plans for what to do in case disaster strikes. Some other way of reducing the impact or effects of climate change on both human and the environment is to design mitigation strategies to reduce the rate at which emissions are added to the atmosphere and eventually bring about a sustainable balance (Abboh, 2008; Fraiel, 2009; Gregory, 2009; Crirmmins, 2016; Ogunseemi & Ibimilua, 2016).

These changes brought by human activities tend to make life more and more difficult for organisms and even human. There is need for proper climate change awareness creation among secondary school students to stop this damaging trend. It is also observed that adaptation to climate change involves carrying out some awareness involving adjustments in ecological, social or economic systems in response to current or expected impacts. It has to do with the changes in human behaviour, practices or structures that are capable of moderating or offsetting potential changes in climate. It involves adjustment aimed at reducing vulnerability of communities, regions or activities to climate variability and change. The ability to adapt and cope with climate change impact is a function of awareness, knowledge, wealth, scientific and technical knowledge, information, skills. Many adaptive measures according to Allison, (2009) include public education and awareness, through the reduction in human activities that produce green house gases, seasonal climate forecasting, adjustments of cropping systems, diversification of production and restoration,

adaptation to water problems, building reserves and provision of relief measures, to mention a few (Shewood, 2009; Asu, 2010; Eneji, et al, 2013).

The result supports Olatumile, (2013) whose result suggests that most professionals may have a faint idea about climate change, but they lack basic skills and knowledge on how to mitigate or reduce the effect of climate change on the human health, society and environment. When proper awareness is created, mitigation of climate change impact can be achievable (Frumklin, et al., 2008; Barna, Goodman & Mortimer, 2012; Richardson, Grose, Doman & Kelsey, 2013). It is therefore necessary that secondary school teachers level of climate change awareness must be ascertained in order to enable them help the student mitigate the perceived health effects of climate change.

Conclusion

Based on the result this study from the analyses of data, it is therefore concluded that despite the result of data analysed, teachers level of environmental awareness, especially climate change awareness within the study area is still very low, but with proper awareness created through teacher-students interaction and through workshops, seminar, conference and other face to face training and retraining, teachers awareness can significantly influence the mitigation and reduction in the incidence of climate related health effects and other environmental stressors as a result of climate change.

Recommendation and policy implication of the study

Based on the foregoing, the following recommendations were made to guide policy formulations

- School administration should organize regular teachers environmental awareness training programs to create climate change awareness and other forms of environmental awareness to teachers to improve their level of environmental awareness
- The department of Environmental Education should mount environmental awareness programs for secondary school teachers including their students in order to create the needed awareness
- Schools should provide time during time tale planning to give room for the introduction of environmental issues to be discussed with the students during their normal school periods
- There should be the formation of environmental clubs in all secondary schools across the state
- Schools should make it compulsory that all students should participate in sanitation and other hygiene practices and activities in schools
- Curriculum planners should introduced environmental education as a school subjects. There should be regular monitoring and evaluation of the implementation of the programs
- Government and other stakeholders should contribute books and other print materials to various schools on the topic under discourse for the students and teachers consumption.
- Resource persons should be invited to schools to have awareness creation talk with the staff and students from time to time to boast their productivity and learning outcomes, during such talk's information, education and communication (IEC) materials including video, audio and audio-visual materials for personal use at home and in the school should be provided for the schools and students.

- During teaching practice posting, environmental education students should be posted to secondary schools located within areas prone to environmental challenges.

i. Finally, environmental awareness campaigns should be mounted in the communities, churches, age grade meetings and other social organizations for the inculcation of proper environmental awareness of the members of the community.

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