INFLUENCE OF GEOGRAPHY TEACHERS' EXPERIENCE AND QUALIFICATION ON STUDENTS' CLIMATE CHANGE AWARENESS IN SENIOR SECONDARY SCHOOLS IN NSUKKA LOCAL GOVERNMENT AREA, ENUGU STATE

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Abstract
The study determined the influence of Geography teachers' experience and qualification on students' climate change awareness in senior secondary schools in Nsukka Local Government Area, Enugu State. The study adopted ex-post facto research design. The population of the study was 65 Geography teachers and students comprising 60 students. The entire population was used for the study. Structured questionnaire developed by the researchers was used for data collection. The questionnaire was validated by three research experts and it reliability coefficient was 0.763. The data collected were analyzed using mean and standard deviation to answer the research questions while t-test was used to test the null hypotheses at 0.05 level of significance. The findings of the study were that the students are aware of climate change phenomenon. The study also found that the students whose teachers had higher teaching experience and qualification had higher level of awareness of climate change. The study equally found that there is a significant difference on students' climate change awareness based on teachers' experience and qualification. Based on the findings, the study recommended among other things that Government should provide monetary incentive and time opportunity to enable teachers acquire higher degree other than First degree.

Introduction

Climate change is now the greatest challenge in the world over. Climate means the average weather in a place over many years. This includes average weather conditions, regular weather season (winter, spring summer and autumn) and special weather events (like tornadoes and floods). Climate in a wider sense is the state, including a statistical description, of the climate system. Climate is the major factor controlling the global patterns of vegetation structure, productivity, plant and animal species composition. These climate patterns play a fundamental role in shaping natural ecosystems, and the human economic and cultures that depend on them. While weather can change in just a few hours, climate takes years to change but in recent times, scientists have reported that there is a change in climate which obviously is threatening the world over caused by human actions in our environment.

Climate change refers to the long-term shifts in weather patterns and average temperatures of the Earth's atmosphere, oceans, and land. It is primarily caused by the release of greenhouse gases (such as carbon dioxide, methane, and nitrous oxide) into the atmosphere, mainly from human activities such as burning fossil fuels, deforestation, and industrial processes (Intergovernmental Panel on Climate Change [IPCC], 2013) Climate change is one of the fundamental issues facing the world today. This is informed by the impact of the ever growing complexities in the world's technological advancement witnessed as centuries passed by. According to Ekpoh (cited in Ekpoh & Ekpoh, 2011) climate change is any long term change in the pattern of average weather of a specific region or the earth as a whole. It is often seen to be natural or human induced. This phenomenon has been observed to have serious deleterious consequences for the earth in the form of significant variations in

regional climate, drought, excess heat, waves, wind storm, floods and many others. More so, National Research Council (2013) pointed out that strong possible consequence of climate change is to negatively shape many aspects of life in the foreseeable future. Climate change is one of the greatest public issues of our time. Climate change is a serious problem, and its consequences are evident (i.e. the polar ice caps are melting, posing a threat to animals, increased risk of floods and more). Climate change has been under-estimated since many people automatically link it to a global issue and not something that can affect them or may even go as far as to believe it does not exist.

In Nsukka for instance, the researchers observed from a pilot study that some people believed that the extreme events as a result of change in climate occur every leap year while some believed that it's a divine punishment meted by God upon the people for several sins committed world over. This means that the people are not fully aware that it's the climate in change that brings about these extreme weather events in the environment. Notable consequences of climate change could be seen in areas such as scanty rainfall or at times heavy rainfall, floods, thunder storm, wind storm among others. Suffice it to say that these weather events occur in no small measure in this area. Knowingly or unknowingly manifests in shortage of food security, damage to infrastructures, such as damage of school buildings thereby dislodging students from attending classes and among others. Ayandele and Jegede (2016) had affirmed that recent climate change studies have shown that climate change will affect every part of the socio economic activities of human and including the environment where humans live and the natural resources that sustain humans in this environment. Hence, the knowledge of climate is essential to students because of the challenge going on in the world today brought about by human action.

Thus, as first step, we need to understand what meaning students and teachers make of climate change. Research often focuses on what people know about climate change. Dawson (2015) studied climate change understanding with 438 western Australian high school students to find out what students knew before developing curriculum resources and teacher development. Only one in three students was able to write correctly or partially a definition of the green house effects and climate change. Boon (2016) in investigating pre-service teachers' understanding of climate change found out that even in universities with specialist focus on sustainability education, pre-service teachers struggled with complexities of climate change. Boon points to the conceptual difficulty of climate change science being of an interdisciplinary nature as a census of the general low knowledge levels. We can no longer promise young people a stable atmosphere in their life time. So, what and how are we to teach, and how are students to be engaged and to learn in preparation for this uncertain future. These are key questions for education and stake holders. Since it's affirmed by scientist that climate change will affect every citizen, every part of our environment and our natural resources and thus, practically every part of our lives. Our economy, our urban and sub-urban development patterns (Ekpoh, cited in Ekpoh & Ekpoh, 2011). Global concern regarding the devastating impacts of climate change emphasized the need for creating awareness and building community capacity for adaptation to mitigate the effects of climate change. Nicholas and Breakey (2017) opined that climate change is challenging to conceptualize and difficult to recognize from personal experience. This is evidence by the spate of conferences, campaigns, report and research by climate change specialists and researchers who have repeatedly pointed out that the solution to climate change problems is climate change awareness, which requires education on climate change in order to enhance its proper understanding as pointed out by Efrat (2022). The need of the hour is to make people sensitive towards nature through a strong program of climate change awareness.

Awareness increases enthusiasm and support, promotes self-mobilization and action. The role of awareness rising in climate change adaptation is therefore crucial to managing the impacts of climate change, enhancing adaptive capacity, and reducing overall vulnerabilities. Any climate change campaign's aim is to achieve long-term behavioral changes that lead to positive impacts and such are created via the participation of the public. Awareness raises alertness which leads to action. Once the individual has understood the gist of the issue, they can then evaluate what changes to their normal routine would be environmentally friendly. That individual understands that some actions can have negative consequences and can set about reducing their carbon footprint. This will promote climate literacy among young people, helping them change their attitudes and behavior, and helps them adapt to the impacts of global warming.

In order to address global issues like climate change, students' awareness is essential. Climate change awareness is often considered essential to students support for mitigation and adaptation policies. Individuals who are more exposed and aware of hazards may begin to normalize risks in order to cope psychologically with them (National Research Council 2011). By increasing students' awareness and knowledge about climate change, citizens can become more engaged in decision-making, which in turn can impact the students' awareness and knowledge. As a result of students' awareness, education, and participation, students behaviour and actions regarding climate change can be transformed. The issue of climate change is a very complex one, covering all areas of life involving all sectors and aspects of the environment. Climate change presents an immediate and significant threat to our nature which co-exists with this environment for most people, climate change issues and habitat damage are new and not fully understood. A general lack of knowledge about the effects of certain actions is decisions on the natural environment means that people continue unabated with harmful activities in the same view. Mitchell and Tanner (2006) earlier reworked that there is little awareness about climate change and its impacts, climate change issues are given low priority in the face of the corrupting urgent priorities. They continued to stress that expanded awareness raising remains an important first step in understanding of climate change and development of locally appropriate responses. Similarly, Onyekuru and Marchant (2017) reported low levels of awareness and poor understanding of climate change risks, combined with significant awareness gaps about climate change processes, adaptation and mitigation particularly in the developing world of which Nigeria is no exception. The importance of climate change awareness has led to its integration into various subjects one of which is Geography.

The knowledge of Geography is not only important and useful to the learners, but to everyone who seeks to cope with the ever-changing trends of our environment. The Earth being the theatre where virtually all human activities take place is the focus of Geography study. Therefore, it is possible that man knows about the nature and phenomenon on earth and the consequences of the interaction between man and his environment. Geography is therefore a vital subject resource for the 21st century global citizens, enabling individuals to face questions of what it means to live sustainably in an independent world. A growing body of evidence suggests that schools can make a great difference in terms of students' academic performance and a substantial portion of that difference is attributable to teachers. This is because they are instrumental in the teaching of climate change related topics.

A teacher is someone who impacts knowledge, attitudes and skills to the learner, especially in school environment because a teacher's work place is usually in the school, he is often called a school teacher. The Federal Republic of Nigeria (2014) describes a teacher as a person who has undergone approved professional training in education at appropriate levels capable of impacting knowledge, attitudes and skills in the learner. Every educational system

at every level depends heavily on teachers for the execution of its programs. Okoro and Anyanwu (2020) viewed teachers to be highly essential for a successful operation of the educational system and as a key to the educational development. For instance, without teachers with relevant behavioural traits, educational facilities cannot be used to facilitate academic performance of students. Undoubtedly, the success and quality of any educational system depends on the quality of teachers input into the system. Teachers play a central role in bringing about the desired reform, as it is the teacher who filters the curriculum through the learners (Sandt as cited in Fehintola, 2014). Odumusi as cited in Fehintola (2014) stated that teachers with right traits are the hubs of any educational system upon their devotion and quality, the effectiveness of all educational arrangement must closely depend.

One of the factors that may influence Geography students' awareness of climate change is teacher experience. A teacher's experience in Geography can vary depending on their education level, teaching experience, and the geographic area in which they teach (Akpo, 2012). Teaching experience of a teacher can be measured based on the teacher's ability around comprehension and transformation of knowledge, concept to be imparted to learners. Rodniques and Mckay (2010) defined experienced teacher as those who have taught for many years (five year and above) and are able to motivate students and hold their attention, know how they manage their lesson, classroom effectively and can change cause in the middle of a lesson. Boyd, Grossman, Lankford, Loab and Wyckoff (cited in Bolarinwa, Kolawole, Ayodele, Fakunle & Adetule, 2020) believed that greater teaching experience will produce students with greater academic performance. Report by Darling-Hammond (cited in Bolarinwa, Kolawole, Ayodele, Fakunle and Adetule, 2020) showed that on average, teacher with more than 10 years of experience are more effective than teachers with little or no experience but are not more effective than those with 5 years of experience. Akpo (2012) examined the impact of teacher-related variables on students in Junior Secondary School Certificate Mathematics results in Namibia, found out that, teaching experience was related to students' academic performance in JSC Mathematics. In the same vein, Ewetan and Ewetan (2015) in their study, teachers teaching experience and academic performance in Mathematics and English Language in public secondary schools in Ogun State, Nigeria found that teachers' teaching experience has significantly influenced students' academic performance in Mathematics and English Language.

Also, for geography to be thought effectively by the teachers and to the better understanding of geography by the students there is need that teachers of geography should be experienced to enable them to achieve the goals and objectives of education and this will make the students of geography to perform very well in the subject. Geography teachers typically have a degree in Geography or a related field, and many have completed teacher education programs to gain certification to teach in secondary schools. Geography teachers have a strong understanding of the physical and cultural landscapes of the world, and they are skilled at teaching students about topics such as climate, landforms, population, and human migration. They may also incorporate technology and interactive activities into their lessons to engage students and promote critical thinking skills. A Geography teacher is an experienced tutor who provides students with lessons that entails on the climate, soil, population, and other physical and cultural elements of the earth. Geography teaching can be defined as a classroom engagement with learners to enable their understanding and application of knowledge, concepts, and processes of geography.

If a teacher is not well trained, the learning process will not be effective no matter how carefully a curriculum has been marked out, how detailed and scientifically accurate the textbooks, worksheets, equipment and operating instructions are and how adequate the physical facilities are. According to the NTI, about 54% of teachers in the country are under qualified to be engaged for the important job of imparting knowledge on the young ones

(Etiubon & Benson, 2014). However, the specific qualifications required to become a Geography teacher can vary depending on the level of education and the geographic area in which one intends to teach. Qualified teachers are those who have academic training as a result of enrolment into educational institution and obtained qualifications such as NCE, B.Sc., Ed, B.Ed., M.Ed., while one must have a bachelor's degree in Geography, Education, or a related field. Some states may also require teachers to have a teaching certification, which can involve completing a teacher education program and passing state-mandated exams. Owolabi and Adedayo (2012) also examined the effects of teachers' qualification on the performance of senior secondary school students in physics. The result revealed that students taught by teachers with higher qualifications performed better than those taught by teachers with lower qualification. This implies that students' awareness of climate change may be higher with more qualified teachers. Having these standards as benchmark ratings for teaching made it necessary to examine the influence of teacher experience and qualification on geography students' awareness of climate change.

The theoretical significance of this study is explained by experience theory (Dewey, 1938/1997). Dewey's experience theory of 1938/1997 explained a person's current experience is this shaped by their previous experience and their current experience impacts their future experience: Every experience both takes up something from those which have gone before and modifies in some way the quality of those which come after. This theory is very important to this study because climate change awareness need experienced teachers that really know what it means to educate the students on this very issue in order to protect our environment for future generations.

Research Questions

The following research question guided the study.

1. What are the levels of students' awareness of climate change?
2. What is the influence of teachers' experience on students' awareness of climate change?
3. What is the influence of teachers' qualifications on students' awareness of climate change?

Hypotheses

The following hypotheses were tested at 0.05 level of significance.

Ho_1: There is no significant influence of teachers' experience on students' awareness of climate change

Ho_2: There is no significant influence of teachers' qualification on students' awareness of climate change

Methodology

This study adopted an ex-post facto research design and was carried out in Nsukka local government Area, Enugu State. The population of this study consisted of sixty (60) senior secondary geography students (SSII) and five (5) geography teachers in 32 senior secondary schools in Nsukka Local Government Area, Enugu State (Post Primary School Management Board, Nsukka Education Zone, 2023). The Senior Secondary two (SS2) students offering Geography are considered appropriate for use of this study because they have had enough exposure to senior secondary school geography curriculum, having completed their SS1 scheme of work.

The entire population was used for the study, since they are small and can be managed. Therefore, no sampling was done. The instrument for data collection was a

structured questionnaire titled; Climate Change Awareness Questionnaire (CCAQ) developed by the researchers. The questionnaire is divided into two sections. Section A of the instrument contains the demographic data of the respondents while section B of the instrument contains 20 questions on climate change awareness that guided the study. It was organized on a four-point modified Likert scale of SA, A, D, SD and rated in the following order 4,3,2,1.

CCAQ was validated by three experts, one from geography unit of social science education department and one from measurements and evaluation unit from the Faculty of Education University of Nigeria, Nsukka. To ascertain the reliability of the instrument (IGTEQSCCA), the researchers administered 30 copies of the instrument to 30 respondents in Obollo-Afor, Enugu State. The collected data from trial testing was analyzed using Cronbach Alpha technique. It yielded reliability index of 0.763 which was high enough for the study.

The instrument was administered directly to the students and teachers in their respective schools by the researchers with the help of two research assistants. Mean and standard deviation were adopted for the analysis of data. The decision rule is that if the calculated mean in each questionnaire items is 2.50 and above, it will be accepted while it will be rejected when the calculated means is less than 2.50. Also, the grand mean will be calculated to determine the strength of acceptance or rejection of each of the research questions.

Results

The results of the study are presented in line with the research questions and hypotheses that guided the study.

Research Question One: What is the level of students' awareness of climate change?

Table 1: Mean analysis of the level of students' awareness of climate change

S/N	Item Statement	X	SD	Decision
1	Climate change is as a result of green house gas emission	2.87	0.47	High level
2	Climate change is as a result of human induced mechanism	2.74	0.43	High level
3	Climate change is as a result of persistent deforestation in our environment	2.77	0.41	High level
4	Climate change is as a result of burning of bushes	2.77	0.44	High level
5	Climate change is as a result of punishment melted out on the world for numerous sins committed	2.01	0.43	Low level
6	Climate change is as a result of constant use of fertilizer in our farm	2.22	0.45	Low level
7	Climate change is as a result of excessive use of generator	2.76	0.45	High level
8	Climate change is as a result of growth of urbanization	2.83	0.43	High level
9	Climate change is as a result of synthetic materials used in refrigerator, air conditioner, perfumes	2.11	0.44	Low level
10	Climate change leads to flooding of low lying areas	2.76	0.44	High level
11	Climate change leads to prolong draught	2.72	0.52	High level
12	Climate change leads to very high temperature	2.79	0.46	High level
13	Climate change leads to intense rainfall	2.78	0.44	High level
14	Climate change leads to sea level rise	2.76	0.43	High level

15	Climate change leads to heat burns	2.75	0.44	High level
16	Climate change leads to excessive windstorm	2.75	0.43	High level
17	Climate change leads to poverty	2.22	0.43	Low level
18	Climate change leads to loss of lives and properties	2.65	0.55	High level
19	Climate change leads to increase in temperature	3.05	0.45	High level
20	Climate change leads to depletion of the ozone layer	2.80	0.45	High level
	Grand Mean	**2.66**	**0.45**	**High Level**

Result in Table 1 showed the level of students' awareness of climate change. The grand mean value of 2.66 (0.45) which is above the 2.50 acceptance benchmark implies high level of awareness. Hence, Geography students' in Nsukka local government area has high level of awareness of climate change.

Research Question Two: What is the influence of teachers' experience on students' awareness of climate change?

Table 2: Mean analysis of the students' awareness of climate change depending on the teachers' experience

Teachers' Experience	N	Mean	Std. Deviation
1-10 years experience	32	2.61	1.04
11 and above years experience	28	2.71	0.99

Result in Table 2 shows the mean and standard deviation analysis of the students' awareness of climate change based on the teachers' experience. The students under teachers whose teaching experience runs from 1-10 years had a mean of 2.61(1.04) while students under teachers whose teaching experience runs from 11 years and above had a mean of 2.71(0.99). Higher years of experience expressed higher mean scores implying that students with more experienced teachers have higher level of climate change awareness.

Ho_1: There is no significance influence of teachers' experience on students' awareness of climate change

Table 3: t-test analysis of the difference between teachers' experience and students' climate change awareness

Teachers' experience	N	Mean	SD	Df	t-cal	Sig (Two tailed)	Decision
1-10 years	32	2.61	1.04	58	.482	.001	S
11 and above years	28	2.71	0.99				

Table 3 showed the t-test analysis of hypothesis one. The result of the hypothesis analysis showed that the t-cal value (0.482) is significant at 0.00 probability value which is less than the 0.05 level of significance. This implies that there is a significant difference in students' climate change awareness based on teachers' experience.

Research Question Three: What is the influence of teachers' qualifications on students' awareness of climate change?

Table 4: Mean analysis of the students' awareness of climate change depending on the teachers' qualification

Teachers' Experience	N	Mean ($\bar{X}$)	Std. Deviation
1-10 years experience	45	2.65	0.51
11 and above years experience	15	2.67	0.86

Results in Table 4shows the mean and standard deviation analysis of the students' awareness of climate change based on the teachers' experience. The students under teachers with first degree had a mean of 2.65(0.51) while students under teachers above first degree had a mean of 2.67(0.86). Higher teachers' qualification expressed higher mean scores implying that students with more qualified teachers have higher level of climate change awareness.

Ho_2: There is no significance influence of teachers' qualification on students' awareness of climate change

Table 5: t-test analysis of the difference between teachers' experience and students' climate change awareness

Teachers' qualification	15	Mean	SD	Df	t-cal	Sig (Two tailed)	Decision
First degree	45	2.65	0.51	58	.634	.000	S
Above First degree	28	2.67	0.86				

Table 4 showed the t-test analysis of hypothesis two. The result of the hypothesis analysis showed that the t-cal value (0.634) is significant at 0.00 probability value which is less than the 0.05 level of significance. This implies that there is a significant difference in students' climate change awareness based on teachers' qualification.

Discussion of the Findings

The findings of the study are discussed in line with the research questions and null hypotheses that guided the study. The finding of the study with respect to research question one showed that the students are aware that climate change is as a result of green house gas emission, human induced mechanism, persistent deforestation in our environment, burning of bushes, excessive use of generator, growth of urbanization ,climate change leads to flooding of low lying areas, leads to prolong draught, leads to very high temperature, leads to intense rainfall, leads to sea level rise, leads to heat burns, leads to excessive windstorm, leads to loss of lives and properties, leads to increase in temperature, and leads to depletion of the ozone layer. Therefore, the students have high level of awareness of climate change. The above finding supported the earlier findings of Ezeudu, Ezeudu and Sampson (2016) as well as Eze (2020) who found out in their respective studies that students within the secondary schools in south-eastern Nigeria tend to have reasonable level of climate change awareness. This perceived high level of climate change awareness could be attracted to effective teaching of climate related concepts in various secondary school subject curricula.

The finding of the study with respect to research question two showed that the students under teachers whose teaching experience runs from 1-10 years and students under teachers whose teaching experience runs from 11 years differ in their academic achievement mean scores in favour of students under experience teachers of 11 years and above. The corresponding research hypothesis one showed that there is a significant difference between teachers' experience and students' climate change awareness. This finding is line with the earlier findings of Ugoji (2018) who found out that teacher' years of teaching experience is

strong factor in enhancing students' awareness of climate change. This could be based on the fact that the more teachers work and encounter challenges which they overcome with time, the more they improve in content delivery in classroom. Hence, they communicate and explain things better to their students than teachers who are new in the job.

The finding of the study with respect to research question three showed that the students under teachers whose teaching qualification is just First degree and students under teachers whose teaching qualification is above First degree differ in their academic achievement mean scores in favour of students under teachers whose qualification is above First degree. The corresponding research hypothesis two showed that there is a significant difference between teachers' qualification and students' climate change awareness. The above finding corroborated the earlier findings of Ugwu, Familoni, Anibueze, Onyekwere, Ajewole, Nwogu and Ibeneme (2021) who found out that teachers' academic qualification has strong influence on students' climate change awareness and attitude. The reason behind this finding could be link to the fact that the more educated a teacher is the more knowledge on issues including climate change the teacher acquires. The acquisition of more knowledge will enable such teachers to impart meaningfully to the students.

Conclusions

Based on the findings of the study, the study concluded that the students are aware that climate change. The study also concluded that the students with teachers with higher teaching experience and qualification had higher level of awareness of climate change.The study equally concluded that there is a significant difference on students' climate change awareness based on teachers' experience and qualification.

Recommendations

Based on the findings of the study, the following recommendations were made.

1. Government should provide monetary incentive and time opportunity to enable teachers acquire higher degree other than First degree.
2. Government should endeavour to provide in-service training for teachers especially Geography teachers to enhance their teaching experiences.
3. School authorities should provide students with climate change clubs, debate panel etc to enable the students discuss climate change issues and be more aware of it.

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