
Climate Change Awareness and Attitude of Senior Secondary Students in Umuahia Education Zone of Abia State

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ABSTRACT

The purpose of the study was to determine the climate change awareness and attitude of senior secondary school students in Umuahia Education Zone Abia State. Six research questions and four hypotheses guided the study. The study adopted descriptive survey research design. The population of the study comprised all the senior secondary school class two (SS2) students in the thirty-four (34) secondary schools in the four local government areas in Umuahia education zone. There were two thousand and twelve (2012) SS2 students in the zone. Purposive sampling technique was used to sample sixteen (16) schools out of the thirty-four (34) secondary schools and six hundred and forty students (640) out of the two thousand and twelve students. Two instruments were used for data collection. The instruments are Awareness Scale for Climate Change (ASCC) and Climate Change Attitude Scale (CCAS). The instruments were developed by the researcher and validated by three experts in the University of Nigeria, Nsukka. The data collected were analyzed using mean score and standard deviation to answer the research questions while t-test was used to test the hypotheses formulated for the study. The major findings of the study based on the analyzed data were that the senior secondary school students have low climate change awareness and attitude, that there is no significant different between the male and female students mean score on climate change awareness and attitude. Based on the findings of the study, conclusions were drawn, and recommendations of the study were discussed and suggestions for further studies were made.

Keywords: Climate change, Awareness, Attitude, Urban, and Rural

INTRODUCTION

Climate is the major factor controlling the global patterns of vegetation structure, productivity, plant and animal species composition. Climate means the average weather in a place over many years. While weather can change in just a few hours, climate takes years to change. According to Small and Nicholis (2003), climate is the average weather for a particular region over a long time. It describes the total of all weather occurring over a long period of years in a given place. This includes average weather conditions, regular weather season (winter, spring, summer and fall) and special weather events (like tornadoes and floods). These climate patterns play a fundamental role in shaping natural ecosystems, and the human economic and cultures that depend on them.

Climate change means average seasonal change over a long period of time Igwe (2003) defined climate change as the variation in global or regional climates over time. It reflects changes state of the atmosphere over time scales ranging from decade to thousands of years. Climate change according to Nzewi (2009) refers to the measurable increase in the average temperature of earth's atmosphere, oceans and landmasses. Ezeudu (2009) defined climate change as a long term significant change in the average weather that a given region experience. Nwagu & Nzewi (2009) explained that climate change is the significant change in weather (wind, precipitation and temperature) over an extended period of time. Udenyi (2010) stressed that climate change is simply a change in the climate condition

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of the world and the change if found by the scientists and other concerned agencies to be on the increase line. In the context of study, climate change means the significant and measurable change of the global temperature which is believed to be rather on the increase.

The earth's climate is dynamic and always changing through a natural cycle. However, what the world is more worried about is that the changes that are occurring today have been speeded up because of human activities (Okebukola & Akpan 2009). Similarly, Uzochi (2009) remarked that human have been changing their environment in very significant ways ever since they learnt how to hunt with weapons, domesticate animals and farm crops, in addition to human modernized transportation and industrial system, which facilitate easy movement and production.

The impact of these human activities to the climate change comes as a result of excessive emission of greenhouse gases (GHGs) into the atmosphere. According to Sjoberg (2002), greenhouse gases mean the gases that contribute to the greenhouse effect by absorbing infrared radiation. The gases include carbon dioxide, methane, chlorofluorocarbon, water vapour, and nitrous oxide. Igwe (2003) explained that a greenhouse gas is a gas in the atmosphere that absorbs and emits radiation within the thermal infrared range. This process is the fundamental cause of the greenhouse effect. Greenhouse effect is the rise in temperature that the earth experience because certain gases in the atmosphere like carbon dioxide, methane, water vapour, nitrous oxide and chlorofluorocarbon trap energy from the sun and retain greater part of the trapped energy which caused the warming and changing of the global climate experienced in the world today.

Furthermore, the concentration of the greenhouse gases in the atmosphere caused ozone layer depletion. The ozone layer forms a thin shield high up in the sky and is located in the stratosphere. It protects life on earth from the sun's ultra violet rays. In the 1980s, scientists began finding clues that the ozone layer was going away or being depleted. This ozone depletion allows more ultra violet radiation to reach the earth's surface and it increase the rate at which the global climate changes.

The increase rate of climate change has severe consequences associated with it such as desertification, drought, temperature rise, low agriculture yield, drying up of water bodies, flooding among others (Oruonye, 2011). Similarly, Igwebuike, Odoh, Ezeugwu, Okparaku and Opkaraku (2009) enumerated the effects of climate change to include melting of the polar ice which could lead to rise in sea level. The rise in sea level could cause flood disaster (which can wash away farmland and crops, in addition to rendering the affected people homeless). Ekezie (2010) stated that the rise in temperature as a result of climate change could lead to drought, desertification, declining water table, lost of some plant and animal species, low crop yield and outbreak of climate related diseases like malaria and meningitis. These consequences of climate change according Intergovernmental Panel on Climate Change (IPCC, 2007) could persist for longer time as a result of human continuous emission of greenhouse gases into the atmosphere. In view of the above, Omotosho (2007), Ishaya & Obaja (2008), Anyadike (2009), and United Nations Development Programme (UNDP, 2010) argued that human continuous perpetuation of acts that caused the excessive emission of greenhouse gases such as bush burning, indiscriminate cutting down of trees (deforestation), constant burning of fossil fuel among others, depends on the extent to which they are aware that their activities contribute to climate change.

Oragwam (2004) described awareness as a state of consciousness and purpose. Chinedu (2008) viewed awareness as the condition of being aware and able to understand what is happening around one. Awareness is the state or ability to perceive, to feel or to be conscious of events, objects or sensory patterns. Awareness means having idea of the existence of something. In relation with the above views, Wikipedia (2009) equates awareness with knowledge of, understanding of, appreciation of, recognition of, attention to, perception of, conscious of, acquaintance with, enlightenment with, mindfulness of, cognizance of, something. Belloti (2002) explained that awareness involves knowing who is talking with whom; it provides a view of one another in the daily work environment. In the context of this study, though in relation to the above views, awareness implies understanding and knowledge of the activities and events (like climate change) going on around one's environment. This knowledge and understanding to a large extent influenced one's attitude towards such event(s) in one's environment.

Attitude, according to Abini (2006), is an acquisitioned tendency. Abini explained further that pupil's form attitude through either like or dislike, favourable or unfavourable. Williams (2000) defined attitude as readiness to act in a certain way expressed by a person's words, gestures or facial

expression. This contention is upheld because one's action is buttressed by one's facial outlook, the way one behaves and presents his ideas about the subject matter. Good (2001) on the other hand defined attitude as a state of mental and emotional readiness to response previously conditioned or associated stimuli. For Kent (2002), attitude is a mental and natural state of readiness organized through experiences, exerting a directive or dynamic influence upon the individual's responses to all objects and situation with which it is related. The above definition s presents attitude to mean the way an individual thinks or acts towards a given subject or issue. Therefore, climate change attitude means the way of thinking and acting by individual towards the issue of global climate change. It is the feelings and concerns an individual could have regarding climate change.

In relation to the above discussions, attempt has been made to increase students' awareness and attitude towards climate change in secondary schools. For example, climate and general environmental related contents like our environment, physical environment, sanitation, pollution, natural and manmade environmental hazards, deforestation, population, effects of industrial concentration, composition of atmospheric gases, weather and climate, classification of climate, major climate types of the world, were infused in most secondary school subjects like Geography, Chemistry, Physics, Biology, Agriculture, and Social Studies. These contents and subjects are veritable means of promoting climate change awareness and attitude of secondary school students in Nigeria. With respect to the above, Ishaya & Obaja (2008) noted secondary school teachers have been inculcating climate change contents infused into their respective subjects to the students with the intention of increasing their knowledge of climate change as well as influencing their attitude positively towards solving the problems of climate change. Againde (2006) added that schools through classroom instructions are making effort to create awareness on major environmental problems like climate change. Similarly, Chinedu (2008) and Ofoebe (2009) shared the view that the curriculum contents of most secondary school subjects could be effectively used to promote awareness of environmental problems as well as positive attitude towards solving the environmental problems.

In spite of the efforts, through school instructions to promote awareness and attitude towards environmental problems particularly climate change, it appears that the programme is not yielding the desired result. This is because, people (including those who passed through the instructional programme in school) seem to have continued perpetuating actions such as bush burning, deforestation, burning of fossil fuel like petrol, coal, and crude oil which contribute to climate change. It is worthy of note that as these human actions that contribute to climate change continue, so shall the consequences of climate change continue to face human beings on earth. Thus, there is need to determine the extent to which instructional delivery in schools through infusion strategy has increase the awareness and attitude of students towards climate change.

In determining students' level of awareness and attitude towards climate change, considerations need to be taken on the influence of gender and location on students' climate change awareness and attitude. According to Lee (2001) gender is an ascribed attribute that differentiates feminine from masculine socially. Gender is seen as the categorization in the world of matter into sex. According to Kalusi (2000), gender is a cultural construction that assigns roles, attitude and values considered appropriate for each sex. Ekeh (2000) noted that gender implies the character of being male or female, man or women, boy or girl. Robert (2007) defined gender as a social construct which is not biologically determined but a concept equivalent to race or class. Offorma (2004) viewed gender as a learned socially constructed condition ascribed to male and female. Offorma noted further that gender is enforced through cultural practices as gender identity is the outcome of cultural learning thus, the expectations from male and female are depended on their cultural millieous.

These expectations could influence the way individual perceived environmental problems like climate change. Discussing on gender and environmental relations, Ekezie (2010) stressed that gender is an important variable in environmental discussion. According to Ekezie (2010), females appear to be closer to the environment than their male counterparts in the sense that they need forest for food generation as well as for fuel wood used for cooking. However, Chinedu (2008) noted that while the females relate with the environment in a friendly manner than their male counterparts. That is, the females merely engaged the environment for agricultural purpose while males engaged the environment for different purposes which are more serious such as falling forest trees for timber, clearing forest for construction of road, building of houses and factories amongst others.

With respect to the above views, Ofoebe (2009) presented the view that environmental sensitization programmes in and outside the school should take into cognizance the gender difference or the physiological difference between male and female which are obvious and expectedly affect the ways in which both sexes respond to the environmental issues as climate change. Oruonye (2011) noted that the different ways male and female are socialized tend to determine their environmental exploration, degree of environmental manipulation and overall relationship with the environment, including the general awareness and attitude towards environmental problems like climate change. Indeed, the present study sought among other things to determine if gender has influence on students' awareness and attitude towards climate change as a peculiar environmental problem.

On the other hand, location of individuals could also affect their awareness and attitude towards climate change. Location according to Benton (2000) is a geographical place or an area. Ogunniyi (2008) opined that location can also mean a settlement whether a village, town or city usually by human beings. Igwe (2003) defined location as a place where something or person resides in the world. Location in the context of this study means a geographical place or area where somebody or something is situated. It could be rural or urban area.

Rural areas are often made up of villages which may either be dispersed, nucleated or even linear in their pattern of distribution on the land, with few buildings and little number of people. It offers its settlers a simple and quiet life style. Their major economic activity is farming with few amenities and services centres. Thus, according to United Nations Development Programme (UNDP, 2010), climate change awareness and attitude of the rural dwellers in Nigeria is directly proportional to the quantity and quality of information prevalent and available to them. Urban areas are relatively large, dense and permanent settlement of socially heterogeneous individuals. They could be towns, cities, conurbations or metropolis. Urban areas have some characteristics – a large and heterogeneous population, medical and political facilities, educational, recreational, banking administrative and social activities, with highly developed manpower (male and female), artisans etc who engage in non-agricultural occupations, with highly impersonal relations. It is the opposite of rural areas, with its sophisticated life and life activities.

The above disparity between the urban and rural areas could influence their awareness and attitude towards climate change. In line with this assumption, Small and Nicholis (2003) opined that where people live (location) determine the how much information and knowledge that gets to them particularly in developing countries like Nigeria. Although, Agiande (2006) found out in a study in Calabar that location is no longer a barrier to students' knowledge of environmental problems (like climate change). Ishaya and Obaje (2008) in a study in Kaduna also found out that location has no significant influence on students' awareness of the problems of climate change. The present study intends to determine if location have influence on students' awareness and attitude towards climate change in Umuahia Education Zone of Abia State.

Indeed, few studies have been done to determine the students' awareness and attitude towards climate change. For instance, Ishaya & Abaje (2008) studied indigenous people's perception on climate change and adaptation strategies in senior secondary schools in Jema Local Government Area of Kaduna State. The study found out that the students' possessed low awareness and poor attitude towards climate change. Oruonye (2011) carried out assessment of the level of awareness of the effects of climate change among students in Jalingo Metropolis of Tabara State. The study found that the students used for the study are not aware of climate change and that they possessed low attitude towards climate change. Furthermore, related studies have been done on environmental education awareness and attitude of students by Ofoebe (2009), Chinedu (2008) and Agiande (2006) in Okigwe Education Zone, Imo State. Owerri Education Zone, Imo State. Ogoja Education Zone, Cross River State respectively. Even though related studies have been done with respect to secondary school students' climate change awareness and attitude, none of the studies were carried out in Abia State. Thus, at present the status of secondary school students' awareness and attitude in Abia State is not known. This gap is what the present study tends to fill by determining the climate change awareness and attitude of senior secondary school students in Umuahia Education Zone, Abia State.

RESEARCH QUESTIONS

The following research questions guided the study.

- 1) What is the climate change awareness mean score of senior secondary school students in Umuahia education zone?
- 2) What is the attitude mean score of students towards climate change?
- 3) What are the climate change awareness mean scores of male and female students?
- 4) What are the attitude mean scores of male and female students towards climate change?
- 5) What are the climate change awareness mean scores of students in terms of school location?
- 6) What are the attitude mean scores of students towards climate change in terms of school location?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance.

H₀₁ There is no significant difference in the climate change awareness mean score of male and female senior secondary school students.

H₀₂ There is no significant difference in the attitude mean score of male and female senior secondary school students towards climate change.

H₀₃ There is no significant difference in the climate change awareness mean score of urban and rural senior secondary school students.

H₀₄ There is no significant difference in the attitude mean score of urban and rural senior secondary school students towards climate change.

RESEARCH METHOD

The study adopted descriptive survey research design. A survey research design according to Nworgu (2006) is one in which a group of people or items is studied by collecting and analyzing data from only a part considered to be representative of the entire group. Survey design specifies how much data were collected and analyzed. Thus, the design is considered most appropriate for this study that tends to describe the awareness and attitude of students towards climate change. The study was carried out in Umuahia Education Zone, Abia State. The zone consists of four (4) Local Government Areas – Umuahia North, Umuahia South, Ikwuano and Umunneochi. There are forty-one (41) public senior secondary schools located in the zone. The distribution of the schools within the four Local Government Areas is as follows; sixteen (16) in Umuahia North, nine (9) in Umuahia South, seven (7) in Ikwuano and nine (9) in Umunneochi Local Government Areas. The choice of Umuahia Education zone as the area of the study is based on the fact that the zone is plagued with many environmental problems like flooding, erosion, and eclectic rainfall which have been strongly linked to the effects of climate change. These problems notwithstanding the people of the zone still engaged in activities like deforestation, bush burning for hunting and farming that increase the aforementioned problems. These environmental problems in the zone made the zone suitable for the study. The population of this study comprised of all the senior secondary school two (SS 2) students in all the thirty-four (34) public senior secondary co-educational schools in Umuahia education zone. There are two thousand and twelve (2012) SS 2 students in the study area (see appendix B). The choice of the co-educational schools is to enable the study adequately take care of the gender variable in the study. Similarly, the choice of senior secondary school class two anchored on the fact that the students have previously interacted with the SS1 curriculum contents particularly Geography curriculum content that can be used to explain climate change like weather and climate., classification of climate and major climate types in the world. Thus, it is believed that the students at that level would be able to fill the items in the research instrument. Four local government areas in Umuahia education zone were involved in the study. However, purposive sampling technique was used to sample four (4) schools each (two urban and two rural) from all the four local government areas giving a total number of 16 schools out of the thirty-four (34) co-educational schools in the zone. Purposive sampling technique was also used to sample forty (40) students from each of the 16 sampled schools. This will give a sample size of six hundred and forty (640). The choice of purposive sampling technique is to enable the study to effectively cover the gender and location variables in the sample of the study. Two instruments constructed by the researcher were used for data collection. The two instruments are Awareness Scale

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for Climate Change (ASCC) and Climate Change Attitude Scale (CCAS). The Awareness Scale for Climate Change measured students’ awareness of climate change problems, facts, and general issues on climate change. On the other hand, Climate Change Attitude Scale measured students’ attitudes towards climate change. The instruments contained two sections of A and B. Section A contained the personal data of the respondents while section B contained the items of the instrument. The instruments were developed in four Likert scale type of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). To ensure face validity of the awareness and attitude scales, the items of the instruments were validated by three experts. One in Geography & Environmental Education and two experts in Measurement & Evaluation, all from the Department of Science Education, University of Nigeria, Nsukka. They checked the correctness and appropriateness of wording, clarity of items, replaced or removed nebulous and ambiguous statements, added items deemed suitable and made suggestions that improved the instruments. Their comments guided the researcher in producing the final items of the instrument. The instruments were trial tested on 40 students from four senior secondary schools in Bende education zone which is outside the study zone but share similar characteristics with the study zone. The four schools comprised two urban and two rural senior secondary schools. Ten (10) senior secondary school class 2 (SS2) students were sampled in each of the four schools used for trial testing. The reliability of the items in the instruments was determined using Cronbach Alpha and the reliability coefficients of awareness scale for climate change and climate change attitude scale were 0.89 and 0.97 respectively. Thus, the coefficient values for the two instruments were considered adequate for the study. The instruments were administered by the researcher with the help of trained research assistants to facilitate data collection. Data obtained from the instrument were analyzed using mean and standard deviation scores. Based on the four-point scale, a mean score of 2.50 was used as the benchmark of the study. Therefore, any item that scored below 2.50 was rejected while the items that scored 2.50 and above were accepted. t-test used to test all the null hypotheses at 0.05 level of significance.

PRESENTATION OF RESULTS

The results of the study are presented in line with the research questions.

Research Question 1: What is the climate change awareness mean score of senior secondary school students in Umuahia education zone?

Table1. Result of mean and standard deviation analyses of the climate change awareness of senior secondary school students in Umuahia Education Zone.

S/N	ITEM	MEAN	SD	DECISION
1	Climate is dynamic and always changing through natural cycle.	1.7672	.44107	Disagree
2	Climate change is a measurable increase in the average temperature of earth’s atmosphere.	2.7219	.52256	Agree
3	Change in weather condition over an extended period of time is climate change.	1.7797	.44745	Disagree
4	Climate change is characterized with high temperature.	2.4766	.47314	Disagree
5	Climate change comes with rise in sea level.	1.7750	.41791	Disagree
6	Climate change is characterized by desertification.	1.7750	.43623	Disagree
7	Most streams in hinterland are drying up as a result of climate change.	1.8313	.43294	Disagree
8	There is observed increase in sea level in the coastal areas.	1.7891	.40829	Disagree
9	There is decrease in agricultural products in Nigeria.	1.8094	.45578	Disagree
10	I have heard of climate change before.	2.7781	.44843	Agree
11	The rate of sunshine is higher now than before.	2.7906	.42596	Agree
12	The weather seems to be hotter nowadays.	2.7891	.43430	Agree
13	The atmospheric heat level is higher now than before	2.7828	.45590	Agree
14	There is increased rate of rainfall.	2.7687	.45066	Agree
15	Cases of flooding occur more nowadays.	2.8094	.42375	Agree
	Total	2.44		

The result of data analysis in table 1 showed that the overall climate change awareness mean score of senior secondary school students is 2.44 which is less than 2.50 mean benchmark of the study. This result indicates that the students possessed low climate change awareness.

Research Question 2: What is the attitude mean score of students towards climate change?

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Table2. Result of mean and standard deviation analyses of the senior secondary school students attitude towards climate change in Umuahia Education Zone.

S/N	ITEM	MEAN	SD	DECISION
1	I believe that there is still plenty of time to prepare for climate change problems.	2.5953	.73370	Agree
2	I think climate change will bring a period of great adversity.	1.7406	.59067	Disagree
3	I am seriously concerned with what problem climate change may bring.	1.7859	.54482	Disagree
4	I think no special preparation is needed for climate change.	2.6906	.61125	Agree
5	I believe climate change will pass like other environmental problems, so there is no need to worry.	3.3500	.52122	Agree
6	I am working hard to educate my friends on climate change.	1.8529	.47865	Disagree
7	I am spreading news of climate change within my area.	2.7105	.86688	Agree
8	I am preparing myself to manage the effects of climate change.	1.8094	.43828	Disagree
9	I always ask questions on climate change.	2.7500	.85580	Agree
10	I read available information on climate change.	2.7562	.85943	Agree
11	I preach to my friends against bush burning to prevent further global climate change.	1.8328	.44950	Disagree
12	I do not think that global climate is changing.	1.8466	.43183	Disagree
13	I think responding to climate change will be a waste of my time.	3.2813	.51484	Agree
14	I think participating in climate change related issues will lead to waste of national resources.	3.2942	.53803	Agree
15	I believe climate change will only affect those who caused it.	2.4031	.79316	Disagree
	Total			

The analyzed data in table 2 showed that the total mean score of 2.35 was obtained for students attitude towards climate change. This result showed that the students’ attitude towards climate change is low.

Research Question 3: What are the climate change awareness mean scores of male and female students?

Table3. Result of mean and standard deviation analyses of climate change awareness of male and female students.

Gender	Mean	Std. Deviation	N
Male	2.4239	.25725	320
Female	2.4517	.18550	320

Result in table 3 showed that the climate change awareness mean score of male students is 2.42 with a standard deviation of .257 while the female students mean score is 2.45 with a standard deviation of .185. The result showed that the total mean score for male and female students on climate change awareness is 2.33 with a standard deviation of .251. This result indicated that both the male and female students have low climate change awareness.

Table4. Summary of t-test for significance between male and female student’s climate change awareness mean score.

Gender	N	Mean	SD	df	Std. Error	T	Sig.	Decision
Male	320	2.4239	.25725	638	.02752	-6.098	.684	Accept H ₀₁
Female	320	2.4517	.18550					

Table 4 showed the result of the research hypotheses one. The result showed a significant value of .684 which is greater than the 0.05 level of significant for the study. This showed that there is no significant different between the climate change awareness mean score of male and female students.

Research Question 4: What are the attitude mean scores of male and female students towards climate change?

Table5. Result of mean and standard deviation analyses of male and female students attitude towards climate change.

Gender	Mean	Std. Deviation	N
Male	2.3619	.19553	320
Female	2.3396	.08715	320

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Result in table 5 showed that the male student’s attitude towards climate change mean score is 2.36 with a standard deviation of .195 while the female student’s attitude mean score is 2.33 with a standard deviation of .087. The result showed that the total mean score for male and female student’s attitude towards climate change is 2.35 with a standard deviation of .151. This result indicated that both the male and female students have low attitude towards climate change.

Table6. Summary of t-test for significance between male and female student’s climate change attitude mean score.

Gender	N	Mean	SD	Df	Std, Error	T	Sig.	Decision
Male	320	2.3619	.19553	638	.02752	-6.098	.536	Accept H ₀₁
Female	320	2.3396	.08715					

Table 4 showed the result of the research hypotheses two. The result showed a significant value of .536 which is greater than the 0.05 level of significant for the study. This showed that there is no significant different between the climate change attitude mean score of male and female students.

Research Question 5: What are the climate change awareness mean scores of students in terms of school location?

Table7. Result of mean and standard deviation analyses of climate change awareness of urban and rural students.

Location	Mean	Std. Deviation	N
Urban	2.4974	.26150	320
Rural	2.2586	.20661	320

Result in table 7 showed that the urban students awareness of climate change mean score is 2.49 with a standard deviation of .261 while the rural students awareness mean score is 2.25 with a standard deviation of .206. The result showed that the total mean score for urban and rural student’s awareness of climate change is 2.33 with a standard deviation of .251. This result indicated that both the urban and rural students have low awareness of climate change.

Table8. Summary of t-test for significance between urban and rural students climate change awareness mean score.

Gender	N	Mean	SD	Df	Std, Error	t	Sig.	Decision
Urban	320	2.4974	.26150	638	.02752	-6.098	.000	Reject H ₀₃
Rural	320	2.2586	.20661					

Table 8 showed the result of the research hypotheses three. The result showed a significant value of .000 which is less than the 0.05 level of significant for the study. This showed that there is significant different between the climate change awareness mean score of urban and rural students.

Research Question 6: What are the attitude mean scores of students towards climate change in terms of school location?

Table9. Result of mean and standard deviation analyses of urban and rural students attitude towards climate change.

Location	Mean	Std. Deviation	N
Urban	2.3802	.17404	320
Rural	2.3214	.11852	320

Result in table 9 showed that the urban students attitude towards climate change mean score is 2.38 with a standard deviation of .174 while the rural students attitude mean score is 2.32 with a standard deviation of .118. The result showed that the total mean score for urban and rural students attitude towards climate change is 2.35 with a standard deviation of .151. This result indicated that both the urban and rural students have low attitude towards climate change.

Table10. Summary of t-test for significance between urban and rural students climate change attitude mean score.

Gender	N	Mean	SD	Df	Std, Error	t	Sig.	Decision
Urban	320	2.3802	.17404	638	.02752	-6.098	.000	Reject H ₀₃
Rural	320	2.3214	.11852					

Table 10 showed the result of the research hypotheses four. The result showed a significant value of .000 which is less than the 0.05 level of significant for the study. This showed that there is significant different between the climate change attitude mean score of urban and rural students.

DISCUSSION OF THE FINDINGS

The result of data analysis in table 1 showed that the senior secondary school students possess low awareness of climate change. This statement anchored on the fact that the total climate change awareness mean score in table (2.24) with standard deviation value of .430 is below the 2.50 mean score benchmark. This finding is in line with Ishaya and Obaje (2008) and Oruonye (2011) who found out that the students possess low level of climate change awareness. These findings that have continued to show low climate change awareness among young Nigerians particularly those in schools could be a point to the fact that the relevant school subjects like Biology, Chemistry, Geography, Agricultural Science, Economics, Social Studies and Primary Science have not been effectively used to promote issues that borders on changing global climate. It can be observed from the table 2 of chapter four that the mean ratings of the items raised to answer this research question indicate that students have low attitude towards climate change with a mean score of 2.27 and .515 standard deviation value which is less than the mean benchmark of the study put at 2.50. This finding supports Oruonye (2011) who found out that tertiary institution students possessed low attitude towards climate change. Ishaya and Obaje (2008) also found out that secondary school students in Jema, Kaduna State, possessed low attitude towards climate.

Analysis presented in table 3 showed that the climate change awareness mean score of male and female students is 2.33 with a standard deviation of .251. In table 5 analysis of data showed that the mean score of male and female students towards climate change is 2.35 with a standard deviation of .151. Furthermore, the test of significant difference in the male and female students climate change mean scores in table 4 showed that there is no significant difference between senior secondary school male and female students awareness mean score. Table 6 also showed that there is no significant different between senior secondary school male and female students mean score on attitude towards climate change. In support of the above finding, Musa (2004) stressed that though gender is a crucial issue in the discussion of environmental issues as climate change, but that it could have no influence on the awareness and knowledge of the challenges of climate change. The result of the study showed that there is significant different in the climate change awareness and attitude between urban and rural secondary school students. The analyses of hypotheses in table 8 and table 10 showed that the students awareness and attitude of climate change significant value is 0.00 which less than 0.05. The findings supported Oguniyi (2008) who revealed that there are problems of inadequate instructional facilities, poor attitude of teaching and inadequate teachers in most rural areas.

CONCLUSIONS

Based on the findings of the study, the following conclusions were drawn;

- 1) The senior secondary school students in Umuahia education zone possessed low awareness of climate change.
- 2) The senior secondary school students in Umuahia education zone have low attitude towards climate change.
- 3) There is no significant difference in the climate change awareness mean score of male and female students.
- 4) There is no significant different in the climate change attitude mean score of male and female students.
- 5) There is significant different in the climate change awareness mean score of urban and rural students.
- 6) There is significant different in the climate change attitude mean score of urban and rural students.

RECOMMENDATIONS OF THE STUDY

Based on the findings of the study, the following recommendations are made. Since relevant subjects that could be used to promote students climate change awareness and attitude in secondary school, concerted efforts have to be made in order to ensure that the subjects are adequately used to promote climate change awareness and attitude. To do this effectively, government and other relevant

non-governmental organizations should organize and or support conferences, workshops and seminars directed at exposing the teachers on the need to reflect climate change causes and effect effectively each time environmental relevant contents in their subject are being taught. The exposure could also include teaching methods that could enhance inculcation of climate change contents to the students.

There is need for stakeholders in education curriculum planning particularly for the senior secondary school education to consider, as a matter of necessity, the infusion of more contents that could help the students to understand the causes and effects of climate change into the relevant subjects in senior secondary schools.

Government and non-governmental organization should ensure that quality education activities are carried out in rural areas as it is obtainable in urban areas. To achieve this, there is need to ensure that qualified teachers are employed to teach in rural secondary schools. Rural schools should be adequately equipped with every necessary teaching and learning facilities such as library, classrooms, administrative blocks among others.

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