

Assessing the Level of Climate Change Awareness among Secondary School Teachers in Calabar Municipality, Nigeria: Implication for Management Effectiveness

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Abstract

Climate change is an area that is currently in dire need of a wide range of publicity and other measures in order to mitigate its effect on the society. This is more so in the sense that informed public will make wiser and more accurate decisions and response to climate change issues. This study examined the level of climate change awareness among secondary school teachers in Calabar Municipality. Three research hypotheses were postulated to guide the study. A self designed questionnaire titled "Climate Change Awareness Questionnaire (CCAQ)" was administered on a sample of 200 secondary school teachers. Population t-test and independent t-test were employed to analyze the data collected. Findings indicated that the level of climate change awareness was low generally among teachers and the awareness varied with sex. Also, teachers' access to sources of information on climate change was low. Implications for management effectiveness were discussed.

Key words: Climate change, awareness, information, management effectiveness.

Introduction

Climate change is one of the most important environmental issues facing the world today. This is evidenced by the spate of conferences, campaigns, reports and researches on climate change in the last 20 years (Agenda 21 of Rio declaration, 1992, Intergovernmental Panel on Climate Change (IPCC), 2001, Copenhagen, 2009) to mention a few. Presently, there is widespread consensus in the scientific community and even among politicians that climate change is happening and that the impacts are already with us. Climate change is often used to describe any kind of change in climate that may be natural or human-induced (Union of Concerned Scientist UCS, 2002). Climate change according to Ekpoh (2009) is any long-term change in the patterns of average weather of a specific region or the earth as a whole. It is an abnormal variation in the earth's climate that usually occurs over durations ranging from decades to millions of years. Evidence shows that global mean temperature increased by 0.60C during the 20th century, with the 6 hottest years occurring between 1997 and 2007 (IPCC, 2007). This warming of the world's climate has been linked to higher concentrations of carbon dioxide and other greenhouse gases (GHGs) in the atmosphere, which are dominantly of anthropogenic origin such as fossil fuel combustion, land use and deforestation. Climate change phenomenon has serious deleterious consequences for the earth in the form of significant variations in regional climates, recurrent droughts, excessive heat waves, windstorms, killer floods, and so on.

There are noticeable consequences of climate change in Nigeria such as intense thunderstorms, widespread floods and incessant droughts. Odey (2009) has pointed out that climate change impacts pose great dangers with consequences such as desertification, sea level rise, flooding, water salination, among others. These impacts could manifest in food security challenges, damage to infrastructure and social dislocation. Additional impacts include threat to health as rising temperature could bring about diseases such as chronic heat rashes, Cerebra-Spinal Meningitis (CSM), stroke, malaria and other related diseases. Climate change will affect every citizen, every part of our environment and our natural resources, and thus practically every aspect of our lives, our economy, our urban and sub-urban development patterns (Ekpoh 2009). Global concern regarding the devastating impact of climate change has emphasized the need for creating awareness and building community capacity for adaptation strategies to mitigate the effects of climate change. As pointed out by Naclimuthu and Vijayakumari (1993), the need of the hour is to make people sensitive towards nature through a strong programme of climate change awareness. This is imperative in the sense that, there are some misconception and misunderstanding of climate change issues. Many researches have been conducted concerning the understanding of climate change and global environmental problems.

These studies highlighted the misconception and misunderstanding that people hold about climate change issues in terms of causality, consequences and cures (Boyes and Stanisstreet, 1992, 1998; Dove, 1996; and Rye, Rubba and Wiesenmajer, 1997). Studies have also shown that misconceptions about climate change issues are not only held by students but by teachers as well (Papadimitriou, 2001). These misconceptions according to Aladag and Ugurlu (2009) are probably due to, among other things, the complexity of the science involved, the uncertainties and controversies surrounding them. Climate change awareness involves creating knowledge, understanding and values, attitude, skills and abilities among individuals and social groups towards the issues of climate change for attaining a better quality environment. Climate change specialists have repeatedly pointed out that a solution to climate change problem will require climate change awareness and its proper understanding. The role of teachers will go a long way in achieving this purpose. As succinctly pointed out by Mosothware (1991) teachers can provide a vital link in the delivery of environmental knowledge, its associated problems and solution. In order to fasten their awareness towards climate change it is necessary to know what level of awareness they possess. This paper therefore assesses the level of secondary school teachers' climate change awareness in Calabar Municipality, since Education has a serious role to play in helping to give out the correct message about climate change so as to mitigate and alleviate its effects.

Hypotheses

- 1) Level of climate change awareness among secondary school teachers is not significantly high.
- 2) There is no significant difference between male and female teachers in their level of climate change awareness.
- 3) Teachers' access to sources of information on climate change is not significantly high.

Methods

The study was conducted in Calabar Municipality, the capital of Cross River State, Nigeria. The survey design was adopted for the study. The population employed for the study comprised 936 secondary school teachers in the study area. A total sample of 200 school teachers were drawn using stratified random sampling technique from 10 secondary schools. Due consideration was given to give equal representation on the basis of sex. The sample profile showed that 100 were females and 100 males. The instrument used in the present study was a self developed questionnaire tagged "Climate Change Awareness Questionnaire." The instrument, a 25- item questionnaire, had 3 sections, A, B and C. Section A contained 5 demographic variables. Section B and C, patterned on a 5 point rating scale, had 10 items each. Section B measured the extent and degree of climate change awareness of teachers. Section C measured teachers' access to sources of information on climate change.

The validity of the questionnaire was ensured through the expert opinion of 3 lecturers in the University of Calabar. The reliability estimate through test-retest method was 0.86. This figure confirmed that the instrument was reliable in achieving the study objective. To collect data for the study, the researcher personally visited the sampled schools in June, 2010 where teachers were met individually so as to explain the purpose of study. This measure ensured that the sampled subjects completed the questionnaire, and a 100 percent return rate achieved. Data obtained were subjected to statistical analysis using the population t-test and independent t-test.

Results

Hypothesis 1

The level of climate change awareness among secondary school teachers is not significantly high. The only variable is the level of climate change awareness among secondary school teachers. Population t-test (test of one sample or single mean) is used to analyze the data obtained. A summary of the result is presented in Table 1.

Table 1: Population t-test (test of one sample mean) analysis of the level of climate change awareness among secondary school teachers

N = 200

Variables	Expected Mean μ	Observed Mean \bar{x}	SD	t
Teachers' level of climate change awareness	30.00	29.04	7.00	-1.920

Not significant at 0.05; df=199, critical t-value = 1.972

The result presented in this Table 1 reveals that the calculated t-value of -1.920 is found to be lower than the critical t-value of 1.972 at 0.05 level of significance and 199 degrees of freedom. With this result, the null hypothesis is accepted while the alternate hypothesis is rejected. This means that the level of climate change awareness among secondary school teachers is not significantly high within the study area. Invariably, the level of climate change awareness among secondary school teachers in Calabar is low. This result further demonstrates that the observed mean level of climate change awareness is lower than the expected mean. Furthermore, a statistical comparison of the observed mean ($x=29.04$) and the expected mean value of 30.00 using population t-test gives a negative t-value. This implies that teachers level of awareness of climate change is significantly low.

Hypothesis 2

There is no significant difference between male and female teachers in their level of climate change awareness. The independent variable is teachers' sex, while the dependent variable is level of climate change awareness. Independent t-test statistical analysis is used to compare the mean scores of male and female teachers. A summary of the result is presented in Table 2.

Table 2: Independent t-test analysis of the difference between male and female teachers in their level of climate change awareness. (N = 200)

Variable	N	\bar{X}	SD	t-value
Male	100	33.38	5.94	
Female	100	24.70	5.01	11.128*

*Significant at 0.05; df = 198; critical t-value = 1.972

The result presented in Table 2 shows that the calculated t-value of 11.128 is found to be higher than the critical t-value of 1.972 at 0.05 level of significance and 198 degrees of freedom. Thus, the null hypothesis is rejected while the alternate hypothesis is retained. This means that there is a significant difference between male and female teachers in their level of climate change awareness within the study area. The result in Table 2 further reveals that the mean score of male teachers ($x=33.38$) is also higher than the mean scores of female teachers ($x = 24.70$). Statistical comparison of the mean scores using independent t-test statistical analysis gives a significant positive outcome. This implies that male teachers have higher mean awareness of climate change than their female counterparts.

Hypothesis 3

Teachers' access to sources of information on climate change is not significantly high. The only variable is teachers' access to the sources of information on climate change. Population t-test (test of one sample mean) is used to analyze data obtained. A summary of the result is presented in Table 3.

Table 3: Population t-test (test of single mean) analysis of teachers' access to sources of information on climate change. N=200

Variables	Expected Mean μ	Observed Mean \bar{x}	SD	t
Teachers' access to sources of information on climate change	30.00	29.32	6.79	-1.388

Not significant at 0.05; df=199, critical t-value = 1.972

The result presented in Table 3 shows that the calculated t-value of -1.388 is found to be lower than the critical t-value of 1.972 at 0.05 level of significance and 199 degrees of freedom. Thus, the null hypothesis is accepted while the alternate hypothesis is rejected. This means that teachers' access to sources of information on climate change is significantly low in the study area. This result further indicates that the observed mean access to the sources of information on climate change is lower than the expected mean of 30.00. Statistical comparison of the observed mean value ($x = 29.32$) and the expected mean value of 30.00 using population t-test gave a negative t-value. This implies that teachers access to the source of information on climate change is not significantly high.

Discussion of Results

The analysis of hypothesis one shows that teachers' level of climate change awareness is significantly low. By implication, it means that secondary school teachers are generally not aware of climate change and its related issues. They show low awareness about various climate change elements such as, global warming, ozone depletion, heat waves, flooding, windstorms, thunderstorm, landslide, mud flows and so on. They are also not aware of the causes, effects and measures needed to be taken to adapt and mitigate the effect of climate change. The outcome of this study is in consonance with the results of Pradhan (2002) who reported that teachers working in secondary school had low awareness about environmental problems. Similarly, Kahraman et al., (2008), in Aladag and Ugurlu (2009) in a study observed that the majority of the student teachers have low level of awareness and knowledge about global warming. In a related study, Skea (1992) noted that public attitude on climate change is mixed with ignorance, apprehension and confusion. In the same vein, Patry (2000) observed that some people have no clear understanding of the meaning, causes or effects of climate change. However, this low level of understanding is not restricted to Nigeria. Rather Bord, Fisher, and O'Conner (1998: 75) noted that errors in assessing causes of climate change are global in nature.

The fact that secondary school teachers have low level of climate change awareness can be attributed to the reason that they do not have access to climate change information and the state government have not done much to sensitize the public on climate change issues. Hence greater efforts will be required to increase teachers' awareness of climate change. The real challenge is to provide information for people to know because information is an essential element in raising awareness, conferring understanding and motivating action. Results of hypothesis two indicated that male and female teachers showed significant variation in their climate change awareness, thereby highlighting that gender was an important factor affecting climate change awareness among teachers. Male teachers exhibited more climate change awareness than their female counterparts. A possible reason for the differences between male and female teachers may hinge on the fact that both groups are essentially exposed to sources of information on climate change differently. Male teachers listen more to news, and buy newspapers more frequently which probably gives them wider access, knowledge and information on various climate change issues in different parts of the world.

Besides they readily have access to internet facilities which further boost their knowledge on climate change issues, whereas their female counterparts are not exposed to such information. It should be pointed out that cultural values still restrict females to reserved level of association in these parts of the world. The finding, however, supports the outcome of earlier studies by Rou (1995) and Patel and Patel (1995) who reported that sex has an effect on level of climate change awareness among school teachers. Results of hypothesis three disclosed that teachers' access to sources of information on climate change is significantly low. This is an indication that teachers do not have access to sources of information on climate change such as newspapers, magazines, television news, the radio, public lectures and seminars, Non Government Organizations(NGO), the internet, brochures, and so on, which have great impact on creating awareness of individuals in the society, towards climate change issues. Epileptic electricity supply could be held accountable for poor access to electronic media by teachers in the study area. Studies conducted by Hausbeck, Milbrath and Enright (1992) and Chann (1999) showed the influence of mass media in creating environmental awareness and knowledge among the masses

Conclusion

Arising from the findings of this investigation, the conclusion drawn is that secondary schools teachers have a low level of climate change awareness. Climate change is a new reality that will have deleterious effects on the society. It is a phenomena that will affect every aspect of our lives, our economy, our urban and sub-urban development patterns, natural areas and our life style. Not much is known about climate change by non experts. For this reason awareness creation is a key measure to address the impact of climate change. In the educational sector, teachers can play an important role in educating the students about climate change, related issues and solutions. This is possible only when teachers themselves have the necessary level of awareness. This therefore necessitates the need for introducing climate change programmes into education reforms.

Implication for Management Effectiveness

This low level of climate change awareness among teachers has implications for management effectiveness:

1. The cross River State government should be actively involved in raising awareness on climate change. Existing government policies, programmes and actions should be made known to all school teachers. This can be made known through the mass media i.e. television, newspapers and the radio and by circulating various published materials on a continuous basis as part of awareness campaign on climate change.

2. Government should developed a comprehensive and co-ordinated education and outreach programmes for schools teachers. This can be enhanced through conferences and seminars to train teachers on issues of climate change and the danger it poses to human development. Such conferences will provide platform for experts on climate change to exchange ideas on best practices in mitigation and adaptation measures to address the challenges of climate change.

3. The state government should establish appropriate funding mechanisms for raising teachers' awareness. Such funds should be included in budgetary provisions annually.

4. Government officials can make significant contributions to improve public awareness of climate change issues by making it a priority issue when speaking in public.

5. Ministry of education should develop teaching and learning materials in the field of climate change for educational institutions. Thus it is imperative to bring out small books on what is climate change, how it affects our lives, our economic prosperity, our health, our welfare and how we all together can save the environment for our benefit and for future generations. Thus, steps should be initiated to incorporate climate change issues as part of the school curriculum in primary, secondary and tertiary levels. If climate change studies are made part of institutions curriculum it will reduce the level of ignorance about climate change issues.

6. Cross River State government should maintain official website to provide information on climate change.

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