Volume 19 Issue 26
Originally issued as B2



Global Journal of human-social science: B
Geography, Geo-Sciences, Environmental Science & Disaster Management
Volume 19 Issue 2 Version 1.0 Year 2019
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-460X & Print ISSN: 0975-587X

Climate Change Related Factors and Management of Primary Schools in Benue State, Nigeria

By Mahmud Pinga & Sr. Justina Nguveren Jor
Benue State University

Abstract- The study investigated climate change related factors and management of primary schools in Benue State. Two research questions and two hypotheses guided the study. Descriptive survey research design was adopted for the study. The population comprised 15,987 teachers from 2,407 primary schools in Benue State. A total of 1000 teachers from 122 primary schools were selected using multi-stage sampling strategy (Proportionate stratified random sampling and incidental simple random sampling techniques). Climate Change Related Factors Questionnaire (CCRFQ) was used for data collection. The data collected was analyzed using mean and standard deviation to answer the research questions and chi-square to test the hypotheses at 0.05 level of significance. The findings revealed that changing rainfall patterns and flood significantly impact on the management of primary schools in Benue State.

Keywords: climate change, changing rainfall patterns, flood & management of primary schools.

GJHSS-B Classification: FOR Code: 040104



Strictly as per the compliance and regulations of:



© 2019. Mahmud Pinga & Sr. Justina Nguveren Jor. This is a research/review paper, distributed under the terms of the Creative Commons Attribution-Noncommercial 3.0 Unported License http://creativecommons.org/licenses/by-nc/3.0/), permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Climate Change Related Factors and Management of Primary Schools in Benue State, Nigeria

Mahmud Pinga[α] & Sr. Justina Nguveren Jor[σ]

Abstract- The study investigated climate change related factors and management of primary schools in Benue State. Two research questions and two hypotheses guided the study. Descriptive survey research design was adopted for the study. The population comprised 15,987 teachers from 2,407 primary schools in Benue State. A total of 1000 teachers from 122 primary schools were selected using multi-stage sampling strategy (Proportionate stratified random sampling and incidental simple random sampling techniques). Climate Change Related Factors Questionnaire (CCRFQ) was used for data collection. The data collected was analyzed using mean and standard deviation to answer the research questions and chi-square to test the hypotheses at 0.05 level of significance. The findings revealed that changing rainfall patterns and flood significantly impact on the management of primary schools in Benue State. Based on the findings of the study, it was recommended among other things that school management should take precautionary measures in maintaining school facilities that are exposed to continuous rainfall. Ceilings should also be installed in the classrooms to avoid unbearable noise that may be caused by the sound of rainfall.

Keywords: climate change, changing rainfall patterns, flood & management of primary schools.

I. 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 the subject matter in the last 20 years; Agenda 21 of Rio Declaration (1992), Inter-governmental Panel on Climate Change (IPCC, 2001) and Copenhagen (2009) to mention but a few. Presently, there is widespread consensus in the scientific community and even among politicians that climate change is occurring and that the signs and impacts are glaring. These signs are noticeable in the areas of temperature variations, the drying up of soils and water bodies, increased pests and diseases, shifts in suitable areas for growing crops and livestock, increased desertification in the Sahara region, change in rainfall patterns which leads to erosions and flooding of farmlands, homes and schools (Pinga, 2018).

These signs are not just present in African and Nigeria, but seem to be surfacing in Benue state of Nigeria in the areas of changing rainfall patterns (time of arrival, intensity and duration among others) that have led to the flooding of areas that have never experienced flood before, increased incidence of soil erosion, increased incidence of storms, desert encroachment and excess heat are all signs that climate change is already evident and represents one of the greatest environmental, social and economic threats facing Africa. This change has been confirmed by the 4th Inter-governmental Panel for Climate Change (IPCC, 2007) assessment report that Africa would be worst hit by the effects of climate change which Nigeria is part of it.

The term climate change is generally referred to as the regular variation of weather in a particular place over an extended period of time (Tamuno, 2007). This helps to explain the unprecedented change that occurs in the weather condition of a given place over a long period of time. According to Obasi (2010), climate change symbolises the significant deviation from the normal range of the atmospheric condition required to sustain human life and the biodiversity. Ayoade (2003), Tamuno (2004) and Tamuno (2007) define climate change as variations in the atmospheric condition over a long period of time that helps to discern a shift in the climate characteristics of a place for years without reversing to former characteristics. This is also seen as the change in the average weather that a given region experiences for an extended period of time. This average weather includes the entire features associated with daily weather characteristics such as temperature, wind pattern, humidity and precipitation. The United Nations Framework Convention on Climate Change (2002) is of the opinion that climate change is the increased frequency and intensity of extreme climate hazards as change in annual rainfall, flood, rise in sea level, drought and disease.

Climate change is attributed to the increase in the Greenhouse Gases (GHGs) caused by both anthropogenic (man activities) and natural activities. Some of the anthropogenic sources include industrialization, deforestation, fossil burning (greenhouse gases), bush burning and desertification (Mbah, 2014). These activities result in the production of carbon dioxide, methane, nitrogen dioxide, chlorofluorocarbons and ozone. All these gases are

Author α σ: Ph.D, Department of Educational Foundations, Benue State University, Makurdi.
e-mails: mahmudpinga@gmail.com, srjustinajor@gmail.com

© 2019 Global Journals

greenhouse gases which lead to the depletion of the ozone layer in the atmosphere mainly located in the stratosphere, thereby leading to global warming. Climate change can result from natural factors that are external to the climate system such as actions of volcanic activity, solar output, ocean variation and the earth's orbital movement around the sun (Ekpo, 2009).

To provide the basis for the development of a realistic and effective internationally accepted strategy for addressing climate change, several organizations have been established, one of which is the IPCC (1988); the World Meteorological Organisation (WMO, 1950), in collaboration with the United Nations Environment Programme (UNEP, 1972) established the Intergovernmental Panel on Climate Change (IPCC) in 1988. The issues of great concern for the IPCC include science, impacts and policy. Consequently, the panel established three working groups for these aspects which are charged with the responsibilities of assessing available scientific information on climate change in particular that arises from the human activities and available scientific, technical, environmental, social and economic information regarding response options to adaptation to and/or mitigation (Ojo, Ojo & Oni, 2006). Despite these measures and numerous achievements of the IPCC, the effects of climate change still persist.

According to Chiedozie, Ezengbor and Okoye (2015), climate change has been observed to have serious deleterious consequences for the earth in form of significant variations in regional climate, recurrent droughts, excessive heat waves, windstorms, and killer floods. In relation to the above assertions, this study attempts to assess the extent to which climate change related factors in the areas of changing rainfall patterns and flood influence the management of primary schools in Benue state, Nigeria.

Evidence is emerging that climate change is increasing rainfall variability in Nigeria and other parts of Africa (IPCC, 2007). According to Abdullahi (2015), rainfall is liquid water in the form of droplets that have condensed from atmospheric water vapour and then precipitates. This rain is a major component of water cycle responsible for depositing most of the fresh water on earth. Mike (2016) notes that rainfall is a type of precipitation that occurs when water vapour in the atmosphere condenses into droplets that can no longer be suspended in the air. The occurrence of rainfall is dependent upon several factors such as prevailing wind directions, ground elevation, location within a continental mass and location with respect to mountain ranges all have a major impact on the possibility of precipitation. The author further stresses that rain is a major component of water cycle and is responsible for depositing most of the fresh water on the earth. This rainfall when adequate, can increase food production in certain areas and also bring home a certain comforting atmospheric temperature that is conducive for teaching and learning in the classroom. Orogwu (2006) notes that rainfall stabilises the temperature and calm down the human body system that gives them the room to think more properly.

According to Jor (2019) changing rainfall patterns therefore, refers to the degree or variability in the amounts of rainfall recorded within the area of study which may cause flood, erosion, drought and other climate disasters that may influence school management effectiveness in the areas of school attendance, lateness, absenteeism, neatness, noise making and concentration in the class as well as instructional supervision and maintenance of physical facilities.

The intensity and frequency of rainfall variability is expected to be more evident. In recent times, there have been periods of delay in rains and associated water shortage mostly in the Northern part of the country, while the Southern part of the country experiences frequent and longer periods of rainfall, an indicator of rainfall variability. Recha, Makokha, Traore, Shisanya, Lodoun and Sako (2012) report that persistence of below normal rainfall is a great risk to people's livelihood in Tharaka district in Kenya, where majority of people have been left vulnerable to hunger and famine. Schools were not left out as families could barely afford one square meal talk more of paying their children's school fee and other school necessities. The authors further note that, the situation led to heat and dust that severely affected students' health in the area. Similar observations have been reported by various scholars studies, for example intra-seasonal factors, such as the timing of the onset of first rains affecting crop-planting regimes (Tennant & Hewitson, 2002), the distribution and length of period of rain during the growing season (Mortimore & Adams, 2001), and the effectiveness of the rains in each precipitation event (Usman & Reason, 2004), are the real criteria that affect the people as well as the management of schools. IPCC (2007) reported that changes in rainfall amount and patterns also affect soil erosion rates and soil moisture, both of which affects body temperature as well as condition of roads that leads to schools in the area.

Change in the rainfall patterns influences so many aspects of human life. In the school setting, discipline which is the major ingredient of effective school management is hardly observed due to constant and persistent temperature variations such as that of rainfall. The influence of rainfall on the management of primary schools can be felt in the disruption of teaching/learning activities, irregular class attendance by students and teachers as well as management finding it difficult to maintain infrastructural facilities and instructional materials (Pinga, 2018; Amanchukwu, et al., 2015).

Amakiri (2007) maintains that noise within the school environment caused by rainfall, thunder and

© 2019 Global Journals

lightning could disrupt effective teaching and learning in schools as students and teachers may not listen to one another in addition to the fearful noise caused by the sounds of rain droplets and thunder. Amakiri (2010) also notes that during intense rainfall, the teacher will have to stress himself/ herself and strain his/ her voice to ensure that the pupils hear what he/she is saying and this has proven to be futile most of the times. This can lead to disruption of the lesson as pupils may be easily affected by the cold and even distracted by the noise caused as a result of the rain droplets. In addition, Steele (2010) in Amakiri (2010) posits that rainfall affects school children's health negatively, stating that many pupils develop cough and catarrh during rainy seasons and this makes them drowsy causing them to sleep excessively. In such scenarios, teachers find it difficult to manage a class of sick pupils effectively as discipline is lacking especially in an over populated classroom.

Osuji (2010) notes that continuous rainfall has worsened the situation of the roads which are neither tarred nor graded in most of our rural areas. This situation is more or less presents even in our urban areas. Cases abound where pupils go to school drenched and shivering. Such situations demoralise and make the pupils' uncomfortable, thereby disrupting effective teaching-learning in the classroom. Manjengwa et al (2014) also observes that almost one quarter of the school buildings were damaged during heavy rains and storms, while thirteen per cent (13) of the school pupils could not go to school when there was heavy rainfall. Manjengwa et al (2014) stress further that pupils who struggle to attend school in the rain may have their books and uniform socked with rain water and this may destroy their books and also cause them health challenges such as cough and catarrh that may become serious and keep them away from school for days or weeks.

According to Amanchukwu et al (2015), many children in River State of Nigeria fail to attend school during heavy rain, especially in the villages where there are no means of transportation. Such absenteeism may obviously influence pupils' academic performance, coordination, control and supervision as well as pupils' evaluation in the school. The situation is not different in Benue State of Nigeria as it is dominated by rural areas. Such pupils find it difficult making it to school during rainy season. It is possible for rain to fall uncontrollably for days, making it impossible for pupils to attend school and receive lessons as roads were covered with water thereby affecting the movement of human beings. This may invariably influence the school planned calendar as lessons that should have been held for the rainy days will be shifted forward. This may bring alteration or unnecessary rush to cover the school syllabus not minding the level of pupils' comprehension. The persistency of this rain could also lead to flooding.

Flood is amongst the most disturbing elements of climate change in Africa and Nigeria in particular. Flood is generally seen as the overflowing of water from rivers or other bodies of water due to excessive rainfall or other inputs of water which temporarily submerge homes, farmlands and other economic and social facilities such as the schools and hospitals (Yawe, Pinga & Ivase, 2018). Ajayi (2006) defines flood as the accumulation of excessive quantity of water in an area without flowing away easily. John (2006) describes flood as an overflow of water that submerges land which is usually dry or previously uncovered by water. This is usually caused by an overflow from water bodies such as the rivers, lakes and oceans or due to accumulation of rainwater on saturated ground. Flood as used in this study, refers to the overflowing of water from a river or other bodies of water due to excessive rainfall or other inputs of water which temporarily submerges homes and schools, thereby destroying infrastructural facilities, books and other documents that may lead to the allocation of more funds for the procurement of such facilities and the servicing of others as well as displacing teachers and pupils from the school; and consequently distorting the process of teaching and learning.

The incidence of floods is becoming a reoccurring decimal in most rural and urban areas leading to colossal loss of properties and lives in Nigeria. For example, cases of flood were recorded in the North Central states of Benue, Kogi, Kwara, Nasarawa and Niger in 2000 and 2011. Also in 2012 and 2014, an unprecedented tragedy unfolded in the Benue state as communities were swallowed by raging floods. This brought untold hardship, anguish and sorrow to many inhabitants in the state. As the surging floods spread into tributaries of the River Niger into many communities, many helpless poor people were killed amid wide spread damaged houses, school buildings and other properties worth billions of naira. The situation was such that many people urged the Federal Government to declare a state of emergency in the devastated areas.

Whenever floods occur, especially in Benue State of Nigeria, schools are submerged and many documents and properties damaged as well as bringing school attendance to a shutdown thereby influencing the entire school management process in the areas of coordination as well as supervision and worst of all, the provision of funds for the procurement of damaged facilities and maintenance of the serviceable ones.

Management of primary schools have been influenced drastically within this latter part of the 21st century as most school facilities such as buildings, playgrounds and documents have been submerged, thus keeping pupils and teachers out of the school as well as damaging school records and making it difficult for the authorities of such schools to retrieve the damaged documents in time of need (Ramalho, 2006).

© 2019 Global Journals

According to the United Nations International Strategy Disaster Reduction (2006-2007), when flood disaster strikes, infrastructural facilities in the schools are greatly destroyed or damaged. This makes it hard for learners to continue with their learning activities for a long time. Especially that, the buildings, playgrounds, farmland and all records as well as instructional materials may be covered and destroyed by the flooding water. This by implication affects the coordination and control of such facilities by the school authorities.

According to Hassanain (2006), floods disrupt the daily life of teachers and pupils and life might not return to normal quickly. When it occurs, classrooms and playgrounds are flooded hence disrupting the daily routine of learning and coverage of the syllabus is affected which indirectly affects the school year calendar. Pupils are unable to play and have games which also affect the supervision and evaluation of their extra-curricular life. Furthermore, families affected by floods may take shelter in schools not affected hence disrupting learning and other planned academic activities in such schools. When education is interrupted or limited, pupils may drop out of school or the rate of absenteeism may rise (IFC, 2009). UNISDR (2006) adds that flood cause damage to roads thereby making schools inaccessible resulting to high absenteeism rates for both teachers and pupils. Principals estimate that half of pupils dropped out due to financial problems and other difficulties caused by floods. During heavy floods, pupils and teachers may be washed away leading to loss of lives, while others are displaced as families migrate to higher grounds. In addition, there is loss of furniture, textbooks, and damage to equipment. When floods occur during examinations time, the activity is disrupted and pupils may end up missing their examinations on the planned date. Thus, preparing for the possible occurrence of floods and it effects is important.

This clearly shows the damage flood disaster had caused and will still cause to education worldwide. The deleterious influence of climate disaster experienced in other parts of the world is not different from what is obtainable in Benue State and Nigeria at large as schools get inundated thereby destroying school facilities and also sending school children and teachers temporarily away from the school. Experience in this area has also shown that flood causes buildings to collapse as they are socked in the flooded water. Even when the flood is over, teachers and pupils find it difficult to commence schooling immediately especially if the flooded water stayed for a long period causing damage to the infrastructural facilities as well as instructional materials among others.

The issue of climate change and its seeming impact on primary schools today has reached the point where effective use of relevant strategies would be explored and employed to curb the menace. It is against this background that the study investigated the impact of climate change related factors in the areas of changing rainfall patterns and flood on the management of public primary schools in Benue State of Nigeria.

II. Statement of Problem

In spite of the efforts of government and the administrators of primary schools in the Benue state of Nigeria to ensure conducive teaching and learning environment and pupils' attendance at schools, the problems associated with climate change seem to hamper and overwhelm these efforts. For instance, pupils have on several occasions seemed to fail to attend school during heavy rainfall. Even when they get to school, the noise produced by the rain may also distract their attention. The water collected from the rain can also lead to flooding and collapse of school buildings. Flooding often seems to forces pupils in Benue state of Nigeria just like any part of the world to relocate with their families to places that are safe from flooding thereby making pupils to abandon their education. Even when this deluge is abated, most schools seems to be unable to resume immediately because the damage done by the flood may have influenced them so badly that the environment may not be conducive for teaching and learning processes to take place. Some schools may also be indirectly influenced as hundreds or thousands of people may be camped in their premises throughout the flooding period thereby, denying the pupils access to education as well as damaging school facilities. Despite the aforementioned speculations of climate change related factors on the management of primary schools in Benue state of Nigeria, the researchers observed that not much has been done on the impact of climate change on the management of primary schools in the area of study. The problem of the study therefore is: To what extent does climate change related factors impact on the management of primary schools in Benue State of Nigeria?

a) *Research Questions*

The following research questions guided the study:

1. To what extent do changing rainfall patterns impact on the management of public primary schools in Benue State of Nigeria?
2. To what extent does flood impact on the management of public primary schools?

b) *Hypotheses*

The following null hypotheses were formulated and tested at 0.05 level of significance:

1. Changing rainfall patterns have no significant impact on the management of public primary schools in Benue State of Nigeria.

© 2019 Global Journals

2. Flood has no significant impact on the management of public primary schools in Benue State.

c) Research Method

The study adopted the descriptive survey research design. The study was conducted in Benue State of Nigeria. The population comprised 15,987 teachers from 2,407 primary schools in Benue State during the 2017/2018 academic session (Benue State Ministry of Education, Science & Technology, 2018). A sample of 1,000 (6%) respondents from 122 (5%) primary schools was selected using multi-stage sampling technique (proportionate stratified random sampling and simple random sampling techniques). However, only 921 or 92% were returned whereas 79 or 8% were not returned due to the non-cooperative attitude of some teachers. This sample size is considered adequate since it is in line with Achor and Ejigbo's (2006) assertion that for a larger population, a sample of 10% of the population is adequate. Achor and Ejigbo, further stressed that the percentage could be higher or less depending on the population of the study.

A well-structured questionnaire titled "Climate Change Related Factors Questionnaire (CCRFQ)" was used for data collection. The questionnaire was divided into Sections A and B. Section A contained information on the personal data of the respondents, while Section B contained information that bordered on the extent to which changing rainfall patterns and flood impact on the management of primary schools in Benue State of Nigeria. The responses of teachers were collated and analyzed for results. Mean and standard deviation were used to answer the research question. The decision was based on the real limit of numbers. Hence a mean response score of 3.50-4.00 was considered Very High Impact (VHI), 2.50-3.49 High Impact (HI), 1.50-2.49 Low Impact (LI), while 0.50-1.49 was considered as Very Low Impact (VLI). The chi-square test of goodness-of-fit was used to test the hypotheses at $p<0.05$ level of significance.

III. Data Analysis and Interpretation

The results were analysed and interpreted in line with the research questions and hypotheses as follow:

Research Question One: To what extent do changing rainfall patterns impact on the management of primary schools in Benue State of Nigeria?

Table 1: Mean Ratings and Standard Deviation of the Impact of Changing Rainfall Patterns on the Management of Primary Schools

S/No.	Item Description	N	VHI	HI	LI	VLI	*M*	*SD*	Decision
1	In my school, heavy rainfall stops pupils from attending school and this affects discipline.	921	400	359	85	77	3.23	0.73	High Impact
2	In my school, heavy rainfall causes erosion thereby preventing parents/guardians from taking their children/wards to school.	921	200	342	275	104	3.02	0.82	High Impact
3	In my school, heavy rainfall causes noise that interferes with effective teaching and learning in the classroom and this affects coordination.	921	622	145	104	50	3.15	1.17	High Impact
4	In my school, heavy rainfall leads to collapse of school buildings thereby forcing the school management to budget extra funds for the maintenance of such facilities.	921	182	409	124	206	2.82	1.04	High Impact
5	In my school, heavy rainfall disrupts extra-curricular activities in primary schools.	921	534	207	130	50	3.11	1.01	High Impact
	Cluster Mean and Standard Deviation	921					3.07	0.953	High Impact

Source: Fieldwork, 2018

Table 1 showed that the respondents have the mean rating scores of items 1-5 are 3.23, 3.02, 3.15, 2.82 and 3.11 with the corresponding standard deviations of 0.73, 0.82, 1.17, 1.04 and 1.01 respectively. From Table 1, the respondents agreed that in their schools, heavy rainfall stopped students from attending schools and this affected discipline. Heavy rainfall also caused erosion thereby preventing parents/guardians from taking their children/wards to school. The respondents further agreed that heavy rainfall caused noise that interfered with effective teaching and learning in the classroom and affected

© 2019 Global Journals

coordination. The respondents similarly opined that heavy rainfall caused school buildings to collapse thereby forcing the school management to budget extra funds for the maintenance of such facilities. Moreover, the respondents also were of the opinion that heavy rainfall disrupted extra-curricular activities in secondary schools. The cluster mean of 3.07 with the standard deviation of 0.95 was above the cut-off point of 2.50. This means the respondents agreed that changing rainfall patterns influence the management of public secondary schools to a high extent.

Research Question Two: To what extent does flood impact the management of primary schools?

Table 2: Mean Ratings and Standard Deviation of the Impact of Flood on the Management of Primary Schools

S/No.	Item Description	N	VHI	HI	LI	VLI	*M*	*SD*	Decision
6	Flood covers roads that lead to my school thereby making pupils to stay away from attending school which affects proper coordination.	921	459	200	187	75	2.89	0.87	High Impact
7	Flood submerges classrooms in my area thereby disrupting effective teaching and learning as well as supervision.	921	300	242	275	104	3.16	0.96	High Impact
8	Flood water enters staff offices and destroys documents of schools in my area which influences effective record management.	921	422	345	100	54	2.63	0.80	High Impact
9	Flood submerges play grounds of schools in my school thereby disrupting students' extra-curricular activities.	921	282	309	125	205	3.33	0.87	High Impact
10	Families displaced by flood camp in my school thereby distorting school calendar.	921	534	107	230	50	2.62	1.01	High Impact
	Cluster Mean and Standard Deviation	921					2.93	0.90	High Impact

Source: Fieldwork, 2018

Table 2 showed that the mean ratings of items 6-10 are 2.89, 3.16, 2.63, 3.33 and 2.62 with the corresponding standard deviations of 0.87, 0.96, 0.80, 0.87 and 0.01 respectively. Item by item analysis showed that respondents were of the opinion that flood covered roads leading to schools thereby making pupils to stay away from attending school on time which affected proper coordination. Respondents also unanimously agreed that flood submerged classrooms thereby disrupting effective teaching and learning as well as supervision. The respondents further affirmed that flood water entered staff offices and destroyed documents of schools which affected effective record management. In addition to that, the respondents opined that flood submerged play grounds of schools thereby disrupting pupils' extra-curricular activities. Moreover, their responses showed that families displaced by flood were camped in respondents' schools thereby distorting schooling calendar. The cluster mean of 2.93 with the standard deviation of 0.90 was above the cut-off point of 2.50.This means that flood impact on the management of primary schools in Benue State of Nigeria to a high extent.

Hypothesis Ono: Changing rainfall patterns have no significant impact on the management of primary schools in Benue State.

Table 3: Chi-square Test of the Impact of Changing Rainfall Patterns on the Management of Primary Schools

Responses	Observed Frequency	Expected Frequency	df	Level of Sig.	χ^2-Cal.	χ^2-Crit.	*P-value*	Decision
NI	27	230.3						
LI	83	230.3	3	0.05	568.09	7.82	.000	Significant
HI	462	230.3						
VHI	349	230.3						
Total	921							

Source: Fieldwork, 2018

Table 3 shows that χ^2-cal. $= 568.090^{a} > 7.815$; $P<.05$ with 3 degree of freedom. Thus, the null hypothesis which states that changing rainfall patterns have no significant impact on the management of primary schools was rejected. This means that changing rainfall patterns have significant negative impact on the management of primary schools in Benue State.

Hypothesis Two: Flood has no significant impact on the management of primary schools.

© 2019 Global Journals

Table 4: Chi-Square Test of the Impact of Flood on the Management of Primary Schools

Responses	Observed Frequency	Expected Frequency	df	Level of Sig.	χ^2-Cal.	χ^2-Crit.	*P-value*	Decision
NI	99	230.3						
LI	111	230.3	3	0.05	472.21	7.82	.000	Significant
HI	507	230.3						
VHI	204	230.3						
Total	921							

Source: Fieldwork, 2018

Table 4 shows that χ^2-cal.= 472.212$^{\alpha}$ > 7.815; *P<.05* with 3 degree of freedom. Thus, the null hypothesis which stated that flood has no significant impact on the management of primary schools was rejected. This result clearly shows that flood has significant impact on the management of primary schools.

IV. Discussion of Findings

The first finding revealed that changing rainfall patterns have significant impact on the management of primary schools in Benue State, Nigeria. This finding confirms Recha, Makokha, Traore, Shisanya, Lodoun and Sako (2012) who reported that persistence of below normal rainfall is a great risk to people's livelihood in Tharaka District in Kenya, where majority of people have been left vulnerable to hunger and famine. Schools were not left out as families could barely afford one square meal talk more of paying their children's school fee and other school necessities. Recha*et al,* further note that the situation led to heat and dust that severely affected pupils' health in the area. Similar observations have been reported by various scholars, for example intra-seasonal factors, such as the timing of the onset of first rains affecting crop-planting regimes (Tennant & Hewitson, 2002), the distribution and length of period of rain during the growing season (Mortimore & Adams, 2001), and the effectiveness of the rains in each precipitation event (Usman& Reason, 2004), are the real criteria that affect the people as well as the management of schools. IPCC (2007) reported that changes in rainfall amount and patterns also affect soil erosion rates and soil moisture, both of which affected body temperature as well as condition of roads that leads to schools in the area. However, Orogwu's (2009) study contravened the current findings as it discovered that rainfall has significant positive influence on human lives as it established that the temperature calm down the human body system that gives them the room to think more properly. Orogwu (2009) also found out that the calm temperature provided by rainfall influenced reading and better comprehension on the part of the students. This does not mean that the result of the current study is not relevant. The variation could be due to the nature of rainfall within the different areas as well as the kind of infrastructural facilities in place. The researchers' current observation during the fieldwork revealed that heave rainfall caused flood in the study area due to the poor drainage system as well as building of houses and schools on water channels. Pupils were unable to attend school or close from school as the roads that link schools with the homes were covered with water. The heavy rainfall also led to the falling down of some school buildings which would force the school management to make extra-budget to put them in place.

The second and the last finding revealed that flood has significant negative impact on the management of primary schools. This finding supports Kimei (2013) who found that five out of seven schools were affected by floods directly when facilities were flooded and indirectly when schools premises were used as shelter by the community when their homes were flooded. In times of flood, learning is severely disrupted by such flooding disasters as pupils and teachers are sent home during such disasters. This would thereby disrupt effective teaching and learning programmes in schools. Similarly, United Nations International Strategy Disaster Reduction (2006-2007) found that when flood disaster strikes, infrastructural facilities in the schools were greatly destroyed or damaged. This makes it hard for learners to continue with their learning activities for a long time. This is because the buildings, playgrounds, farmland and all records as well as instructional materials may be covered and destroyed by the flooding water. Hassanain (2006) concluded that floods disrupt the daily life of teachers and pupils and life might not return to normal quickly. The researchers discovered during their fieldwork that when flood occurred, important school facilities such as classrooms and playgrounds as well as documents were damaged thereby disrupting the daily routine of learning. It adversely affected the coverage of the syllabus and indirectly affected the school year calendar. Pupils were unable to play and have games which also affected school supervision and evaluation of their extra-curricular life.

V. Conclusion

Based on the results of the study, it has been established that climate change related factors in the areas of changing rainfall patterns and flood have significant impact on the management of primary

© 2019 Global Journals

schools in Benue State of Nigeria. This therefore, forms the bases why it is necessary to have knowledge of the environment especially the climate, as any little change in it may influence all the aspects of life including the school and its management.

VI. Recommendations

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

1. School management should take precautionary measures in maintaining school facilities that are exposed to continuous rainfall. Ceilings should also be installed in the classrooms to avoid unbearable noise that may be caused by the sound of rainfall.
2. Educational planners should make sure that henceforth; schools should not be sited in flood prone areas and should train principals and teachers on disaster preparedness for those schools already sited in such areas.

References Références Referencias

1. Abdullahi, F. (2015). Impact of climate change on regional development. *African Journal of Environmental Science,* 17(2), 112-119.
2. Achor, E. E., & Ejigbo, M. A. (2006). *A guide to writing research report.* Kano: Sam Artrade Limited.
3. Ajayi, S. O. P. (2006). *Comprehensive geography for senior secondary schools: Sure belt for WASSCE, NECO, GCE and JAMB*. Lagos: Johnson Publishers Limited
4. Amakiri, A. A. D. (2010). The secondary school teacher and classroom management in climate change. In A. O. Ayeni, U. G. Emetarom, S. O. Nwafor, & A. I. Atanda, (Eds). *Educational Management, Environmental Literacy and Climate Change,* p 115-119.
5. Amakiri, A. D. (2007). Alternative strategies for secondary school students' discipline management in River State. *Journal of General Studies,* 1(1), 58-63.
6. Amanchukwu, N. R., Amadi-Ali, T. & Ololube, N. P. (2015). *Climate change education in Nigeria: The role of curriculum.* Port-Harcourt: Science and Academic Publishing.
7. Ayoade, J. O. (2003). *Climate change*. Ibadan: Vantage Publishers.
8. Benue State Emergency Management Agency (2015). *Official report on 2014 flood episode.* Makurdi: Government Print.
9. Chiedozie, O. L., Ezeugbor, O. C., & Okoye, O. F. (2015). Climate change awareness and institutional management strategies by principals of secondary schools in Anabra State. *British Journal of Education,* 3(8), 32-40.
10. Ekpoh, I. J. (2009). *Climate, society and environment*. Calabar: St. Paul Publishing Company.
11. Hassanain, M. A. (2006). Towards a design and an operation of five safe school facilities. *Disaster Prevention and Management*, 15(5), 132-139.
12. Ileuma, S., & Isah, E. A. (2010). Educational challenges of climate change in developing countries: Policy options for Nigeria. *Educational Management, Environmental Literacy and Climate Change,* p 51-58.
13. Intergovernmental Panel for Climate Change (2007). Climate change: The forth assessment report (AR4). Synthesis report of policy makers. *Retrieved on 10th August, 2009 from http://www.IPCC.ch/pdf/assessmentreport/ar4/syr/ar4-spm.*
14. Intergovernmental Panel on Climate Change (2001). Climate Change 2001: Impacts, adaption and vulnerability. Summary for policy makers (A Report of working group 11 of the intergovernmental panel on climate change) WMO, UNEP. Retrieved from *http://www.IPCC.ch/pub/wg 2SPMfinal.Pdf*.
15. John, A. (2006). *Climate change in Africa*. Kenya: Miracle Prints.
16. Jor, J. N. (2018). Climate change and management of Colleges of Education in North Central Geo-Political Zone of Nigeria. Unpublished PhD Dissertation at Benue State University, Makurdi, Benue State.
17. Kimei, M. (2013). Effects of flood disaster preparedness on learning in public secondary schools in Bunyala District, Busia County, Kenya. Unpublished Master's Dissertation in Educational Administration and Planning, University of Nairobi.
18. Manjengwa, J., Matema, C., Mataruka, J., Tirivanhu, D., Tamanikwa, M., & Feresu, S. (2014). *Children and climate change in Zimbabwe*. Harare: UNICEF and Institute of Environmental Science.
19. Mbah, B. A. (2014). Challenges of climate change on provision of and accessibility to quality education in Nigeria. *International Journal of Education Learning and Development*, 2(4), 26-32.
20. Mike, F. (2016). *Components of water cycle*. New York: AGS Publishers.
21. Ministry of Education, Science and Technology (2017). *Benue State official gazette on school mapping.* Makurdi: Government Print.
22. Mortimore, M. J., & Adams, W. M. (2001).Farmer adaptation, change and crisis. *Sahel. Global Environmental Change*, 1(1), 49-57.
23. Obasi, K. K. (2010). Climate change and the challenges of educational planning: An integrated approach. In A. O. Ayeni, U. G. Emetarom, S. O. Nwafor & A. I. Atanda (Eds). *Educational Management, Environmental Literacy and Climate Change.* Ibadan, *p33-38.*

© 2019 Global Journals

24. Ojo, O. Ojo, K. & Oni, F. (2006). *Fundamentals of physical and dynamic climatology* (3rd ed.). Lagos: SEDEC Publishers.
25. Orogwu, E. (2009). Climate change and environmental education. *Journal of Environmental Research,* 6(3), 72-81.
26. Osuji, H. G. N. (2010). Creating a conducive and effective learning environment. In C. V. Ozuzu, R. N. Achiunine, & U. G. Emetarom (Eds). *Elements of classroom organization and management.*
27. Pinga, M. (2018). Climate change related factors and classroom management in public secondary schools in the North Central Zone of Nigeria. Unpublished PhD Thesis at Benue State university, Makurdi, Benue State.
28. Ramalho, G. (2006). An urgent need for environmental education. *Education Review*, 94(3), 11-14.
29. Recha, C. W., Makokha, G. L. Traore, P. S., Shisanya, C., Lodoun, T. & Sako, A. (2012). Determination of seasonal rainfall variability, onset and cessation in semi-arid Tharaka district, Kenya. Theoretical and Applied Climatology, 108:479–494. DOI 10.1007/s00704-011-0544-3.
30. Tamuno, T. T. (2004). *Introduction to geography and environmental studies*. Port-Harcourt: NSSI Books.
31. Tamuno, T. T. (2007). Climate change over the Niger Delta region, Nigeria. Doctoral Seminar, University of Nigeria, Nsukka.
32. Tennant, W. J. & Hewitson, B. C. (2002). Intra-seasonal rainfall characteristics and their importance to the seasonal prediction problem. *International Journal of Climatology*, 2(2), 1033-1048.
33. UNISDR (2006).*Let our children teach us: A review of the role of education and knowledge in disaster risk education*. Geneva: UNISDR.
34. UNISDR (2007). *Acting with common purpose: Proceedings of the first session of the global platform for disaster risk reduction*. Geneva: UNISDR.
35. United Nations Framework Convention on Climate Change (2002). *World Bank Report. Annual World Bank conference on development economies.* Washington D. C.
36. Usman, M. T., & Reason, C. J. C. (2004). Dry spell frequencies and their variability over Southern Africa. *Climate Research*, 2(6), 199-211.
37. Yawe, A. A., Pinga, M., & Ivase, A. S. (2018). Perceived influence of flood disaster on the management of secondary schools in Makurdi Education Zone of Benue State, Nigeria. *International Journal of Innovative Education Research,* 7(1), 1-6.

© 2019 Global Journals