

ANALYSING THE EFFECT OF DROUGHT ON PERFORMANCE OF SCHOOL GOING CHILDREN IN PUBLIC PRIMARY SCHOOLS OF WEST POKOT COUNTY, KENYA

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ABSTRACT

Climate change is one of the major development challenges of the 21st Century and children are particularly more vulnerable as they are psychologically and physiologically less able than adults in adapting climate-related exposure. This study aims to analyze the effect of drought on performance of school-going children in public primary schools in West Pokot County, Kenya. The study specifically: Determine the effect of proximity of water sources, socio-economic activities, school sanitary conditions, and water storage facilities on performance of school-going children in public primary schools in West Pokot County, Kenya. The study would benefit the academicians, policymakers, and community members. The Human Needs Theory of Abraham Maslow guided the study. The study adopted descriptive research design with a target population of 2224 individuals comprising 41 head teachers, 343 teachers, and 1840 pupils. The study adopted a stratified random sampling technique and sample size of 335 determined using Krejcie & Morgan table (1970). The study used structured questionnaires and interview guides as the main tools of data collection. The supervisors validated the instrument. The reliability of the instrument was determined through a pilot study. Thereafter, Cronbach alpha coefficient of 0.79 was obtained from the instrument. This indicated that the instrument was reliable. Quantitative data was analyzed using descriptive statistics and presented in tables, while qualitative data was analyzed according to the themes based on research questions and the objectives and thereafter, inferences and conclusions drawn. The study concluded that proximity of water sources, socio-economic activities, school sanitary conditions, and water storage facilities influence performance of school-going children in public primary schools. It was recommended that the policy makers and community should consider proximity of water sources, socio-economic activities, school sanitary conditions, and water storage facilities when working towards improving performance of school-going children in public primary schools.

Keywords: *Proximity of Water Sources, Water Storage Facilities, Pupils' Participation*

INTRODUCTION

Climate change is one of the major development challenges of the 21st Century and children are particularly more vulnerable as they are psychologically and physiologically less able than adults

in adapting climate-related exposure (Doherty and Clayton, 2011; Oselumese et al., 2016). In this regard, ISCA (2008) had highlighted that, with increasing number of disasters being linked to changing climatic conditions, and the escalating frequency of droughts, floods, water scarcity, malaria and vector-borne diseases, children are likely to be adversely affected both as children and in their adult lives. The types of climate risks confronting school-aged children are diverse: ranging from direct physical impacts (such as cyclones, storm surges, flooding and extreme temperatures) to impacts on their education, psychological stress and nutritional challenges (UNICEF, 2011a). As underlined by UNICEF (2011b), children are disproportionately vulnerable to the impacts of climate change but remain invisible in climate change adaptation discourse; and as a result, climate change policies and program do not yet adequately recognize children's vulnerabilities. The specific nature of their vulnerability is multidimensional, shaped largely by the physical, social and emotional changes that take place over the course of childhood. Children are also more likely than adults to be killed or injured during disasters; they are particularly susceptible to air and water quality, temperature, humidity and vector-borne infections due to their less-developed physiology and immune system.

Bartlett (2008) and Oselumese et al. (2016) argued that there are links between climate change and education particularly during and immediately after extreme events or environmental and climate-related disasters. For instance, during extreme events, school infrastructure or roads and bridges to schools can be destroyed, limiting children's possibilities of attendance; children may be removed from school to support the household; the added burden of disease in areas suffering food and water insecurity can render children too weak to attend school. It can also reduce the time available for education when the household division of labour is restructured to cope with illness. In any case, ill or malnourished children lack the energy to be active learners. Climate change is likely to exacerbate the risk of dropout, mainly through its economic impacts on households and children (UNICEF, 2011b). Mbah (2014) and Nkeiruka (2014) also underlined that climate change-related problems adversely affect teaching and learning by causing lateness and absenteeism to school among teachers and students; destruction of school buildings and learning materials, unconducive learning environment, destruction of means of livelihood; incompleteness of curriculum content, ineffective instructional supervision, and poor performance in examinations. El Niño might cause shortages of water and food, leading to malnutrition and famine which would have impacts on school attendance and result in poor performance in academic work (Nkeiruka, 2014). Climate change induced scarcity of water in Vietnam, for instance, forced girls to miss grades frequently (Walker, 2012). Schools might be occupied as shelters for people displaced by climate change impacts, eventually forcing school children out of schools. Getting these children back to school once they drop out can be a serious challenge (UNICEF, 2015).

Research indicates that vulnerable households can withdraw children from school as part of their coping strategy to deal with shocks to income. A drop in income of households due to climate change impacts is more likely to cause cuts in food expenditure, substituting less nutritious food or consuming less, with profoundly detrimental effects on child development. Similarly, adjustments in consumption could result in a reduction in spending on health care and school related costs. As a result, a shock to incomes often means lower school attendance, performance or even dropout. With that, some children, particularly the older ones, would take up paid work to help support the household. UNICEF (2008) stated that when income of the family is deteriorated due to climate change, children are forced to incorporate paid or unpaid work into their routine whilst still attending school which adversely obstructed their academic performance

by taking away their time and energy from school and school-related tasks. What makes things worse is that, the rate of dropout is high for children from poor families. In this regard, a study by Tassew and Adiam (2015) in Kenya revealed a unit increase in the wealth index was found to increase the child's chances of completing primary school by 37.6 percent. Domestic duties may be redistributed to children, generally girls, who will then offer less time to school and leisure (UNICEF, 2008/2011 & Bartlett, 2008). Tassew and Adiam (2015) revealed that there is high probability of dropping out from schools and forced children to take part in domestic activities, unpaid activities and paid labour due to shocks. As compared with boys, girls are often responsible for fetching the household supply of water and collecting firewood, and they are forced to travel greater distances as sources become scarcer. As a result, they have less time to spend on school-work and leisure, both of which are vital for children's social and intellectual development (Orazem and Gunnarsson, 2003; UNICEF, 2008/2011b; UNESCO, 2012; AKLDP, 2016).

Climate change induced disasters could also trigger displacement of people which has serious consequences for children. It fragments families and disrupt social networks; interrupts children's education and may result in leaving the school system altogether (UNICEF, 2008). Climate shocks affect human capital accumulation (among the key capitals which enable to improve resilience of people to climate shocks as well as priority development goals) and it will seriously fall as the risk of disaster increases. Muthaa et al., (2013) and UNCED (1992) underscored that education is critical for promoting sustainable development and improving the capacity of people to address environment and development issues. However, additional stress from global warming will make it more difficult to achieve existing development targets for education (UNCED, 1992; UNDP, 2007 and Crespo, 2009). A study by World Bank (2010), confirmed that a one standard deviation increase in the coefficient of variation of rainfall could reduce grade attainment by 0.2 grades. Similarly, Jensen (2000) found that enrolment rates declined by 20% in climate change exposed regions; and Alderman et al. (2006) reported that drought-affected households delayed starting school of children on average by 3.7 months. Tassew and Adiam (2015) in Kenya disclosed statistically significant effect of shocks on students' dropout rate in primary schools; a child from a household that had experienced shocks was found to be less likely to complete primary education by 32.2 per cent compared with a child whose household had not experienced any such shocks. A recent study by AKLDP (2016) in the aftermath of El Niño-driven drought in Gonder zone (Kenya) disclosed a steep surge in the dropout rate of students to help their families in collecting water and firewood and to do other household and farming chores, or that their parents was not able to afford the cost of school logistics. Mbah (2014) revealed that flooding in Nigeria had caused the loss of homes of many people which led to mass movement of people which in turn adversely affected the education of many children. School buildings and learning materials was swept off thereby disrupting the education of the children. Walker (2012) on the other hand stressed that climate change would particularly affect the struggle to achieve access to education particularly in developing countries where their human capital accumulation is very low. As emphasized by World Bank (2010), children may be affected by school withdrawal in response to climatic shocks, with long-run and irreversible impacts on human capital and, subsequently, lifetime earnings. Higher levels of risk should result in a greater incentive to increase the number of hours worked by children and reduce investments in education. Such interruption and/or impediment to access of education have a detrimental impact on learning outcomes (UNDP, 2007). The study will seek to analyze

the effect of drought on school going children public primary schools in West Pokot County Kenya.

Statement of the Problem

Some of the leading killers of children worldwide are highly sensitive to climate change. Higher temperature has been linked to increased rate of malnutrition, cholera, diarrhea disease and vector-borne diseases like dengue and malaria (UNICEF, 2011a). Danysh et al. (2014) disclosed that children born during and after 1997/98 El Niño in Peru were on average shorter and had less lean mass for their age than expected. Changes in temperature or precipitation can cause changes in the seasonality of some allergenic species, changes in the distribution of some disease vectors and changes in the seasonal distribution of malaria, dengue, tick-borne diseases, cholera and other diarrhea diseases which would affect children. Climate change may also impact school attendance and educational attainment through its effects on children's health and nutritional status (UNICEF, 2008). Extreme weather events and changes in maximum temperature (heat waves) can increase the incidence of mortality and morbidity (UNICEF, 2011a; Nkeiruka, 2014 and Oselumese et al., 2016). On the other hand, climate change might force governments to squeeze their budget on education in dealing with climate change impacts such as disasters or droughts which have undesirable impact on enrolment and quality of education (UNICEF, 2008). The study will seek to analyze the effect of drought on school going children public primary schools in West Pokot County Kenya.

Objectives of the Study

The study was guided by the following objectives:

- i. To determine the effect of proximity of water sources on pupils' participation in primary schools in West Pokot Sub County.
- ii. To assess the effect of water storage facilities on pupils' participation in primary schools.

LITERATURE REVIEW

Empirical Review

Proximity to Water Sources and Pupils Participation in Primary Schools

The location of the water sources relative to the home and school compound is an important aspect that affects pupils' access to education (Midgley, Dejene & Mattick, 2012). Midgley, Dejene and Mattick (2012) reported that most schools in rural arid areas of Ghana had the main drinking water sources outside the school compound. In such instances, the communities was not comfortable sharing the borehole with the pupils. Indeed, various administrators of different schools frequently reported cases of violence and pupil denial to access such water.

Blanton, Ombeki, Oluoch, Mwaki, Wannemuehler and Quick (2010) contend that water collection is an important activity in the rural Kenyan context. Rural households spend an average of 40 minutes each day on water collection, while urban households spend only 9 minutes. A water source within 100 meters from the school compound would be considered as near since children can easily walk there and return during a break times. Beyond 100M, children may delay and this may reduce study time. Schools whose main water sources are more than 500M away have a challenge with accessing the water source and therefore should be considered for intervention.

Chambers and Conway (1992) argue that droughts and seasonality of water sources affects livelihoods in a number of ways notwithstanding, predisposing children to truancy and dropout. Bakker (2013) on the other hand posits that access to water influences school enrollment. The water source within most of the schools in West Pokot Sub County is from shallow wells in seasonal furrows. The quality of these sources is wanting in that many of the schools acquire

water borne, water related and water based diseases. There, is therefore, a critical need to carry out a study to determine the effect of water sources on pupils' participation in primary schools in West Pokot Sub County.

Water Storage Facilities and Pupils' Participation in Primary Schools

Strategies for coping with water scarcity because of drought are hereby discussed as being promoted as a suitable water supply system for domestic and school use in dry lands. Different types of interventions are being applied in the ASALs and can be grouped into the following three categories: rooftop harvesting systems, surface catchment systems, and runoff systems (UNDP/IFAD, 2011). Some of the intervention strategies used are highlighted here-under:

Enfors and Gordon (2008) posit that boreholes sunk within the school compound have a significant impact on pupils' participation in primary schooling. This provides pupils with water to quench their thirst during academic hours, have water to clean the classrooms, toilets and other social amenities and fetch some to take home.

UNDP/IFAD, DANIDA, plan international as well as SIDA are supporting sinking of boreholes and distribution of water tanks for water harvesting in primary schools. So far, these agencies have targeted districts in ASAL areas in the North, North East and Eastern Kenya. Water boreholes have provided safe water for use among communities and schools in drought stricken areas (Walugendo, 2004).

Emergency water trucking would assist in supplying safe and clean water to institutions such as schools and households. The only available interventions are the boreholes sunk by SIDA and IFAD situated in strategic locations in the Sub County. There is no organized water trucking services, which would act as a stopgap measure in cases of borehole breakdown to cushion primary school children of the water problem. Adolescent girls are especially vulnerable to dropping out as many are reluctant to continue their schooling because toilet and washing facilities are not private, not safe or simply not available. When schools have adequate facilities in particular ones that facilitate menstrual hygiene a major obstacle to attendance is removed.

Rainwater harvesting from rooftops can be described as the immediate collection of rainwater from house roofs upon rains. Rain water harvesting systems can help improve water provision where required and encourage water conservation, thereby reducing the demand on existing water sources and thus raising of standards of living through improved health and sanitation (Aroka, 2010).

UNDP/IFAD (2011) found that use of rooftop harvesting systems is a traditional partial supply source in Tharaka, Kitui, Karai, and Machakos areas. The survey showed that 46% of households in these areas collected roof runoff as a supplementary supply at various times during the year. IFAD has developed a ground tank storage system for harvesting water (such as earth dams and surface catchments and reservoirs for the watering of cattle and increasingly as sources of domestic supply for the farmers as well as water kiosks to vendor piped water.

Water pans have the potential to reduce pressure on freshwater resources (Garg and Wani, 2013) and improve water availability (Boers and Ben-Asher, 1982). Water pans decentralizes water supply to households and small community levels, improving access (Viala, 2008). The studies reviewed in this chapter present variables of water shortage/availability and how they relate to the education and school attendance. However, the majority of these studies have been carried out in different parts of the world. Little is known regarding the situation in Kenya on the influence of water intervention strategies on pupils' participation in primary schools. This study therefore seeks to fill this gap by investigating the effect of different water harvesting strategies and interventions on pupils' participation in primary schools in West Pokot Sub County.

Theoretical Framework

The Human Needs Theory of Abraham Maslow (Maslow, 1954) guided this study. According to this theory, there are certain minimum requirements that are essential to decent standards of living. These are known as physiological needs. They include food, water, shelter, health and clothing. They are primary needs and have to be catered for before other needs such as security and shelter, sense of belonging and affection, love, esteem and finally self-actualization are pursued. Maslow proposed that man's drive towards certain direction can be arranged in a hierarchical order according to his needs as follows: The first level of physiological needs is the needs that everyone needs on a daily basis for survival and includes basic needs like food, water, air, shelter and clothing. The second level is that of security of the self and of the physiological needs. The third level is of social need, which is a need to belong to a certain group or association. This includes friendship, love and belonging. The fourth level is that of self-esteem, which a sense of self-respect and self-motivation is. It also includes how one may relate to other people. The last level is of self-actualization, whereby man strives towards a viable experience and personal growth. This model highlights the importance of water and food provision. From a broader view of development, it means that countries must also struggle to provide basic needs for use by their population.

Conceptual Framework

A conceptual framework showing the relationship of the variables of study is shown on the figure 1

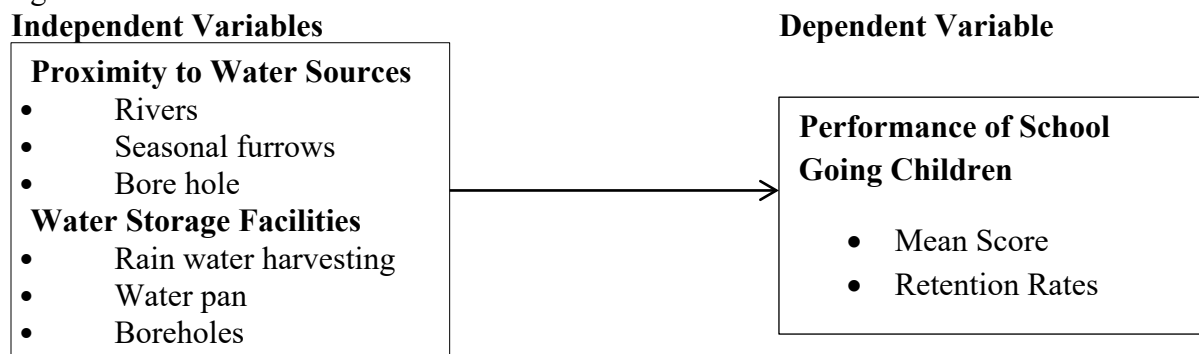


Figure 1: Conceptual Framework

Source: Researcher (2024)

RESEARCH METHODOLOGY

This study was conducted using the descriptive survey research method. The descriptive survey was chosen for the study because it allows the researchers to study phenomena that do not allow for manipulation of variables (Kombo & Tromp, 2006). The target population for this research was 2224 comprising of 41 head teachers, 343 teachers and 1840 pupils comprising of 1104 girls and 736 boys in grade seven and eight pupils of 41 public primary schools in West Pokot County (West Pokot County Education Office, 2023). According to Kathuri and Pals (2013) for an accessible population of 2224 respondents, a sample size of 327 is considered minimum. To take care of non-respondents a sample size of 336 respondents was used for the study. The researcher employed simple random sampling to select 11 schools out of 41 public primary schools from where the respondent of the study was drawn from. The accessible population of pupils was stratified by gender and the researcher then selected 15 percent from each category as recommended by Mugenda and Mugenda (2008). Thus from 1104 girls, 165 was randomly selected while from 736 boys, 110 was randomly selected from a sampling frame of grade seven

and eight pupils to participate in this study giving a sample of 275 pupil respondents. The study utilized three sets of data collection instruments, which are questionnaires, interview schedule and observation schedule. This study employed descriptive statistics to analyze the data obtained. Data collected by use of the questionnaire, was coded, and analyzed, using Statistical Package for Social Scientists (SPSS 26). On the other hand, qualitative analysis entailed analyzing in words or pictures by collecting data, recording peoples' experiences not selecting any pre-chosen aspect. The qualitative data obtained in this study was analyzed by organizing them into similar themes and tallying the number of similar responses. The results of data analysis were presented using frequency distribution tables.

DATA ANALYSIS AND DISCUSSION

Response Rate

A total of 335 questionnaires were sent out to the respondents to fill. 252 questionnaires were returned for analysis. The returned 252 questionnaires accounted for 75.22% response rate. A response rate of 70% and above is adequate (Mugenda & Mugenda, 2003), accordingly, a response rate of 75.22% was acceptable for data analysis. Table 2 shows the response rate.

Proximity to Water Sources and Pupils Participation in Primary Schools

The study adopted descriptive and inferential statistical analysis. This helped to establish the influence of proximity to water sources on performance of school going children in public primary schools of West Pokot County Kenya. For analysis, descriptive statistics (frequency, percentage, and mean distribution) for the level of agreement on a five-point Likert scale of the variable, proximity to water sources was determined and summarized in Table 1.

Table 1: Proximity to Water Sources and Pupils Participation in Primary Schools

Statements		SD	D	U	A	SA	Mean
That communities share the borehole with the pupils	F	14	18	16	107	97	4.01
	%	5.6	7.1	6.3	42.5	38.5	
Water source within most of the schools is from shallow wells in seasonal furrows	F	3	32	16	99	102	4.05
	%	1.2	12.7	6.3	39.3	40.5	
Pupils living in areas proximal to water sources have better health and hygiene	F	6	11	34	81	120	4.18
	%	2.4	4.4	13.5	32.1	47.6	
Rivers are several kilometers from the schools	F	31	4	16	98	103	3.94
	%	12.3	1.6	6.3	38.9	40.9	

Source: Researcher, (2024)

Table 1 shows that 107(42.5%) of the respondents agreed that communities share the borehole with the pupils, 97(38.5%) strongly agreed, 18(7.1%) disagreed, 16(6.3%) were undecided and 14(5.6%) strongly disagreed with the statement. The study findings suggested that the respondents agreed (Mean=4.01) that communities share the borehole with the pupils. An interviewee who had the following to say supported this-

"...the communities are not comfortable sharing the borehole with the pupils. Indeed, cases of violence and pupil denial to access such water was frequently reported by various administrators of different schools...Male Participant, 50 years, Head Teacher..."

This is in line with the findings of Midgley, Dejene and Mattick, (2012) that location of the water sources relative to the home and school compound is an important aspect that affects pupils' access to education. They reported that most schools in rural arid areas of Ghana had the main drinking water sources outside the school compound. In such instances, the communities

was not comfortable sharing the borehole with the pupils. Indeed, various administrators of different schools frequently reported cases of violence and pupil denial to access such water.

Similarly, 102(40.5%) of the respondents strongly agreed with the statement that water source within most of the schools is from shallow wells in seasonal furrows, 99(39.5%) agreed, 32(12.7%) disagreed, 16(6.3%) were undecided and 3 (1.2%) strongly disagreed with the statement. It emerged from the study that the respondents agreed (Mean=4.05) that that Water source within most of the schools is from shallow wells in seasonal furrows.

On whether pupils living in areas proximal to water sources have better health and hygiene, 120(47.6%) of the respondents strongly agreed with the statement, 81(32.1%) agreed, 34(13.5%) were undecided, 11(4.4%) disagreed and 6(24%) strongly disagreed with the statement. The study findings suggested that the respondents agreed (Mean=4.18) that pupils living in areas proximal to water sources have better health and hygiene to staff.

Lastly, 103(40.9%) of the respondents strongly agreed with the statement that rivers are several kilometers from the schools, 98(38.9%) agreed, 31(12.3%) strongly disagreed, 16(6.3%) were undecided and 4(1.6%) disagreed with the statement. It emerged from the study that the respondents tended to agree (Mean=3.94).

These findings are in agreement with recent studies performed by Midgley, Dejene and Mattick, (2012) that the location of the water sources relative to the home and school compound is an important aspect that affects pupils' access to education Midgley, Dejene and Mattick (2012) reported that most schools in rural arid areas of Ghana had the main drinking water sources outside the school compound. In such instances, the communities was not comfortable sharing the borehole with the pupils. Indeed, various administrators of different schools frequently reported cases of violence and pupil denial to access such water.

Blanton, Ombeki, Oluoch, Mwaki, Wannemuehler and Quick (2010) contend that water collection is an important activity in the rural Kenyan context. Rural households spend an average of 40 minutes each day on water collection, while urban households spend only 9 minutes. A water source within 100 meters from the school compound would be considered as near since children can easily walk there and return during a break times. Beyond 100M, children may delay and this may reduce study time. Schools whose main water sources are more than 500M away have a challenge with accessing the water source and therefore should be considered for intervention.

Chambers and Conway (1992) argue that droughts and seasonality of water sources affects livelihoods in a number of ways notwithstanding, predisposing children to truancy and dropout. Bakker (2013) on the other hand posits that access to water influences school enrollment. The water source within most of the schools in West Pokot Sub County is from shallow wells in seasonal furrows. The quality of these sources is wanting in that many of the schools acquire water borne, water related and water based diseases. There, is therefore, a critical need to carry out a study to determine the effect of water sources on pupils' participation in primary schools in West Pokot Sub County.

These descriptive statistics of objective one was followed by a Chi-square test of association. The Chi-square test at $p \leq 0.05$ significance level illustrating statistically significant association between proximity to water sources and performance of school going children in public primary schools of West Pokot County Kenya is as summarized in Table 2. To achieve this, the hypothesis below was tested.

H₀₁: *There is no significant association between proximity to water sources and performance of school going children in public primary schools of West Pokot County Kenya.*

Table 2: Chi-Square Test of Association between Proximity to Water Sources and Pupils Participation in Primary Schools

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	543.352 ^a	133	.000
Likelihood Ratio	285.079	133	.000
Linear-by-Linear Association	87.708	1	.000
N of Valid Cases	252		

a. 152 cells (97.05%) have expected count less than 5. The minimum expected count is .01.

Source: Researcher, (2024)

Table 2 shows that the p value (p=0.000) for criteria used in proximity to water sources was less than 0.05. Therefore, the hypothesis, “there is no significant association between proximity to water sources and performance of school going children in public primary schools of West Pokot County Kenya” was rejected. This implies that there is statistically significant association between proximity to water sources and performance of school going children in public primary schools of West Pokot County Kenya.

Water Storage Facilities on Pupils’ Participation in Primary Schools

The study adopted descriptive and inferential statistical analysis. This helped to determine the influence of water storage facilities on performance of school going children in public primary schools of West Pokot County Kenya. For analysis, descriptive statistics (frequency, percentage, and mean distribution) for the level of agreement on a five-point Likert scale of the variable, water storage were examined and summarized in Table 3.

Table 3: Water Storage Facilities and Pupils Participation in Primary Schools

Statements		SD	D	U	A	SA	Mean
That boreholes sunk within the school compound have a significant impact on pupils’ participation in primary schooling	F	19	27	10	102	94	3.89
	%	7.5	10.7	4.0	40.5	37.3	
Water boreholes have provided safe water for use among communities and schools in drought stricken areas	F	6	19	23	99	105	4.10
	%	2.4	7.5	9.1	39.3	41.7	
Emergency water trucking would assist in supplying safe and clean water to institutions such as schools and households.	F	13	3	19	66	149	4.34
	%	6.0	1.2	7.5	26.2	59.1	
Rain water harvesting systems can help improve water provision where required and encourage water conservation, thereby reducing the demand on existing water sources	F	7	6	19	91	129	4.31
	%	2.8	2.4	7.5	36.1	51.2	

Source: Researcher, (2023)

Table 3 shows that 102(40.5%) of the respondents agreed with the statement that boreholes sunk within the school compound have a significant impact on pupils’ participation in primary schooling, 94(37.3%) strongly agreed, 27(10.7%) disagreed, 19(7.5%) strongly disagreed and 10(4.0%) were undecided on the statement. The study findings suggested that the respondents tended to agree (Mean=3.89) that boreholes sunk within the school compound have a significant impact on pupils’ participation in primary schooling. An interviewee who had the following to say supported this;

“...Emergency water trucking would assist in supplying safe and clean water to institutions such as schools and households. The only available interventions are the boreholes sunk by SIDA and IFAD situated in strategic locations in the Sub County. There is no organized water trucking services which would act as a stop gap measure in cases of borehole breakdown to cushion primary school children of the water problem...” Female Participant, 52 years, Headteacher.

Additionally, 105(41.7%) of the respondents strongly agreed with the statement that water boreholes have provided safe water for use among communities and schools in drought stricken areas, 99(39.3%) agreed, 23(9.1%) were undecided, 19(7.5%) disagreed and 6 (2.4%) strongly disagreed with the statement. It emerged from the study that the respondents agreed (Mean=4.10) that water boreholes have provided safe water for use among communities and schools in drought stricken areas,

On whether the emergency water trucking would assist in supplying safe and clean water to institutions such as schools and households, 149(59.1%) of the respondents strongly agreed with the statement, 66(26.2%) agreed, 19(7.5%) were undecided, 13(6.0%) strongly disagreed and 3 (1.2%) disagreed with the statement. The study findings suggested that the respondents agreed (Mean=4.34) that emergency water trucking would assist in supplying safe and clean water to institutions such as schools and households.

Lastly, 129(51.2%) of the respondents strongly agreed with the statement that rain water harvesting systems can help improve water provision where required and encourage water conservation, thereby reducing the demand on existing water sources, 91(36.1%) agreed, 19(7.5%) were undecided, 7(2.8%) strongly disagreed and 6(2.4%) disagreed with the statement. It emerged from the study that the respondents agreed (Mean=4.31) that rain water harvesting systems can help improve water provision where required and encourage water conservation, thereby reducing the demand on existing water sources

These findings agree with strategies for coping with water scarcity because of drought are hereby discussed as being promoted as a suitable water supply system for domestic and school use in dry lands. Different types of interventions are being applied in the ASALs and can be grouped into the following three categories: rooftop harvesting systems, surface catchment systems, and runoff systems (UNDP/IFAD, 2011). Some of the intervention strategies used are highlighted here-under: Enfors and Gordon (2008) posit that boreholes sunk within the school compound have a significant impact on pupils’ participation in primary schooling. This provides pupils with water to quench their thirst during academic hours, have water to clean the classrooms, toilets and other social amenities and fetch some to take home.

UNDP/IFAD, DANIDA, plan international as well as SIDA are supporting sinking of boreholes and distribution of water tanks for water harvesting in primary schools. So far, these agencies have targeted districts in ASAL areas in the North, North East and Eastern Kenya. Water boreholes have provided safe water for use among communities and schools in drought stricken areas (Walugendo, 2004).

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facilities are not private, not safe or simply not available. When schools have adequate facilities in particular ones that facilitate menstrual hygiene a major obstacle to attendance is removed.

Rainwater harvesting from rooftops can be described as the immediate collection of rainwater from house roofs upon rains. Rain water harvesting systems can help improve water provision where required and encourage water conservation, thereby reducing the demand on existing water sources and thus raising of standards of living through improved health and sanitation (Aroka, 2010).

UNDP/IFAD (2011) found that use of rooftop harvesting systems is a traditional partial supply source in Tharaka, Kitui, Karai, and Machakos areas. The survey showed that 46% of households in these areas collected roof runoff as a supplementary supply at various times during the year. IFAD has developed a ground tank storage system for harvesting water (such as earth dams and surface catchments and reservoirs for the watering of cattle and increasingly as sources of domestic supply for the farmers as well as water kiosks to vendor piped water.

Water pans have the potential to reduce pressure on freshwater resources (Garg and Wani, 2013) and improve water availability (Boers and Ben-Asher, 1982). Water pans decentralizes water supply to households and small community levels, improving access (Viala, 2008). The studies reviewed in this chapter present variables of water shortage/availability and how they relate to the education and school attendance. However, the majority of these studies have been carried out in different parts of the world. Little is known regarding the situation in Kenya on the influence of water intervention strategies on pupils' participation in primary schools. This study therefore seeks to fill this gap by investigating the effect of different water harvesting strategies and interventions on pupils' participation in primary schools in West Pokot Sub County.

These descriptive statistics of objective four were followed by a Chi-square test of association. The Chi-square test at $p \leq 0.05$ significance level illustrating statistically significant association between water storage facilities and performance of school going children in public primary schools of West Pokot County Kenya is as summarized in Table 3. To achieve this, the hypothesis below was tested.

H₀₂: *There is no significant association between water storage facilities and performance of school going children in public primary schools of West Pokot County Kenya.*

Table 4: Water Storage Facilities and Pupils Participation in Primary Schools

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	577.435 ^a	132	.000
Likelihood Ratio	317.519	132	.000
Linear-by-Linear Association	109.456	1	.000
N of Valid Cases	252		

a. 152 cells (97.4%) have expected count less than 5. The minimum expected count is .01.

Source: Researcher, (2024)

Table 4 shows that the p value ($p=0.000$) for water storage facilities was less than 0.05. Therefore, the hypothesis, “there is no significant association between water storage facilities and performance of school going children in public primary schools of West Pokot County Kenya.” was rejected. This implies that there is statistically significant association between water storage facilities and performance of school going children in public primary schools of West Pokot County Kenya.

CONCLUSION AND RECOMMENDATIONS

Conclusion

From the findings, the study concludes that drought influence performance of school going children in public primary schools of West Pokot County Kenya. The Chi-square test of association revealed that there is statistically significant association between proximity to water sources and performance of school going children in public primary schools of West Pokot County Kenya. A further conclusion was made, going by the results of the Chi-square test that the relationship between proximity to water sources and performance of school going children in public primary schools was positive meaning that an increase in proximity to water sources would lead to significant improvement in performance of school going children in public primary schools. Lastly, the Chi-square test of association revealed that there is statistically significant association between water storage facilities, and performance of school going children in public primary schools of West Pokot County Kenya. A further conclusion was made, going by the results of the Chi-square test that the relationship between water storage facilities, and performance of school going children in public primary schools was positive meaning that an increase in water storage facilities, would lead to significant improvement in performance of school going children in public primary schools.

Recommendations

The study recommends that proximity to water sources such as rivers, seasonal furrows and boreholes are necessary for enhanced performance of school going children in public primary schools. Therefore, the management of public primary schools of West Pokot County should strive to embrace effective proximity to water sources to improve performance of school going children in public primary schools.

Finally, with regard to water, storage facilities (sunk boreholes, emergency water trucking and rainwater harvesting systems), the study recommends and appeals to schools stakeholders, policy makers and management of public primary schools of West Pokot County to embrace on the water storage facilities and many others in order to improve academic performance of school going children in public primary schools of West Pokot County Kenya.

REFERENCES

- AKLDP (2016). El Niño in Ethiopia: impacts of drought on young rural women in Amhara National Regional State; field notes. The Agriculture Knowledge, Learning, Documentation and Policy Project (AKLDP). Accessed from www.reliefweb.int/.../ethiopia/el-ni-o-ethiopia-impacts-drought-youngon 9/02/2017
- Alderman, H., Hoddinott, J., & Kinsey, B. (2006). Long term consequences of early childhood malnutrition. *Oxford Economic Papers*; 58(3): 450-474.
- Bartlett. S. (2008). Climate Change and Urban Children: Impacts and Implications for Adaptation in Low- and Middle-Income Countries. London: IIED.
- Crespo, CJ. (2009). Natural disasters and human capital accumulation, policy research working paper. The World Bank, Washington DC.
- Danysh, HE, Gilman RH, Wells JC, Pan WK, Zaitchik B, González G, Alvarez M and Checkley, W (2014). El Niño adversely affected childhood stature and lean mass in northern Peru. *Climate change responses*; 1(7): 1-10.
- Doherty, TJ & Clayton, S. (2011). The Psychological Impacts of Global Climate Change. Jensen R (2000). Agricultural volatility and investments in children. *American Economic Review*; 90(2):399-404. Doi.org/10.1257/aer.90.2.399

- 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.
- Muthaa. GM, M'muyuri MM, Bururia D and Mwenda EE (2013). Dropout among Male Pupils in Primary Schools of Igembe District, Kenya. *Creative Education*; 4(3):180-184.
- Nkeiruka. F (2014). Climate Change and Implication for Senior Secondary School Financial Accounting Curriculum Development in Nigeria. *Journal of Education and Practice*; 5(26): 153-157
- Orazem. PF and Gunnarsson V (2003). Child labour, school attendance and performance: A review.
- Oselumese. IB, Omoike D and Andrew O (2016). Environmental influence on students' academic performance in secondary school. *International Journal of Fundamental Psychology and Social Sciences*;6(1):10-14. DOI:10.14331/ijfpss.2016.330058.
- Tassew. W., & Adiam Hagos (2015). Economic shocks and children's dropout from primary school: implications for education policy in Ethiopia. *AfricaEducation Review*; 12(1); 28-47. DOI: 10.1080/18146627.2015.1036548
- UNDP (2007). Fighting climate change: human solidarity in a divided world, human development report2007/08, UNDP, Palgrave McMillan, New York
- UNESCO (2012). Education Sector Responses to Climate Change: Background Paper with International Examples. Asia and Pacific Regional Bureau for Education; Bangkok, Thailand.
- UNICEF (2015). Ethiopia: Drought Crisis Immediate Needs Overview. Retrived from <https://www.unicef.ie/.../4-6-million-children-require-life-saving-on-8/2/2007>.
- UNICEF (2011a). Children's Vulnerability to Climate Change and Disaster Impacts in East Asia and the Pacific. UNICEF East Asia and Pacific Regional Office; Bangkok, Thailand
- UNICEF (2011b). Exploring the Impact of Climate Change on Children in SouthAfrica. Pretoria: UNICEF South Africa Eshetu and Tessema
- UNICEF (2008). Our climate, our children, our responsibility: the implications of climate change for the world's children. www.unicef.org.uk/climatechange(Accessed on 6/01/2017)
- Walker, D. (2012). Childhood vulnerability to climate change in marginalized Vietnamese communities: the case for participation; background note.
- World Bank (2010). World development report: Development and climate change. Technical report, World Bank.