

**EFFECTS OF DROUGHT RELATED FACTORS ON PUPILS'
PARTICIPATION IN PRIMARY SCHOOLS IN THARAKA SOUTH SUB
COUNTY, THARAKA NITHI COUNTY, KENYA**

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DECLARATION

This research project is my original work and has not been presented to any other University for award of a degree.

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I dedicate this project to my father Josphat M'nyiri

ACKNOWLEDGEMENT

I sincerely thank God the almighty who has given me good mental health to undertake and accomplish this task.

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ABBREVIATIONS AND ACCRONYMS

ADB	African Development Bank
ASAL	Arid and Semi-Arid Lands
DANIDA	Danish International Development Agency
DEO	District Education Officer
EFA	Education for All
GER	Gross Enrollment Rate
GWAKO	Ground Water Abstraction in Kenya Outreach
ICPAC	IGAD Climate Prediction and Application Centre
IFAD	International Food and Agricultural Development
IGAD	Inter-Governmental Authority on Development
IRC	International Rescue Committee
KMD	Kenya Meteorological Department
MKEPP	Mount Kenya East Pilot Project
NER	Net Enrollment Rate
NGO	Non-Governmental Organization
ROK	Republic of Kenya
RWH	Rain Water Harvesting
SIDA	Swedish International Development Agency
UNDP	United Nations Development Programme
UNESCO	United Nations Education, Scientific and Cultural Organization
UNICEF	United Nations International Children's Education Funds
WHO	World Health Organization

ABSTRACT

Water is one of the most abundant resources on the planet, yet less than 1 percent of all water on the planet is freshwater available for our agricultural, industrial, and other consumptive uses. Human beings are currently facing issues with climate change including increasing temperature, drought, earlier spring melts, severe weather events, and diminishing fresh water resources. Water scarcity and unpredictable rainfall are not new phenomenon in Tharaka South Sub County. The purpose of this study was to investigate the effect of drought related factors on pupils' participation in primary schools in the semi-arid areas of Tharaka South Sub County in Tharaka Nithi County, Kenya. The objectives of the study were: Determine the effect of proximity of water sources, establish the effect of purchasing water on participation, school sanitary conditions and water storage facilities on pupils participation in primary schools. This study was conducted using the descriptive survey research method. The target population for this research was 2224 comprising of 41 head teachers, 343 teachers and 1840 pupils comprising class seven and eight pupils. The researcher employed simple random sampling to select 11 schools out of 41 public primary schools from where the respondents of the study were drawn from. The study utilized three sets of data collection instruments which are questionnaires for pupils and teachers, interview schedule for headteachers and observation schedule. Reliability was tested through test-retest method, and a correlation coefficient of 0.95 was obtained for teachers questionnaires and 0.89 for pupils questionnaires. The results of data analysis were presented using frequency distribution tables, bar graphs and pie charts. The study established that the proximity to water sources had an effect on the pupil's participation in education, in primary schools, in that some of parent's income was directed to purchasing water and this affected pupil's participation in education, as water is a basic need and was prioritized first, before education. The scarcity of water negatively affected sanitary conditions and that most of the schools lacked water for cleaning hands. This affected participation of pupils, and especially girls. The study recommends that; the Tharaka Nithi County Government and donors should make effort to provide tapped water to the schools. In the cases where tapped water is difficult to provide, the government should embark on drilling boreholes and wells around the school areas. The Kenyan National Government and the Non Governmental Organization's should provide tapped water to the households. In the cases where taped water will be difficult to install, the government should consider solar water pumps and boreholes to pump water for the locals, and this will reduce the money spent in buying water, among the households. The donors and the governments through the Constituency Development Funds should procure and distribute water storage tanks to the schools in the region. The government should also consider constructing dams in the local rivers, rock catchments and large water pans in the communities, to enhance rain water storage, for the community at large.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Globally, the Arid and Semi-Arid Lands (ASALs) make up more than 40 percent of the earth's surface and provide livelihoods to more than one billion people (Brooks & Trottier, 2012). According to the World Health Organization (WHO) statistics, it is estimated that about 1.1 billion people in the world do not have access to safe water World Health Organization and United Nations International Children's Education Fund (WHO & UNICEF, 2010). The United Nations' states that by 2025, 1.9 billion people will be living in countries or regions with absolute water scarcity, and two-thirds of the world population could be under stress conditions (UN, 2009).

The plausible, positive effect of education on risk reduction is noteworthy and can have important policy implications. Education is a human capital asset that can increase adaptive capacity, i.e., "the preconditions necessary to enable adaptation, including social and physical elements, and the ability to mobilize these elements" (Nelson 2007). Education is one important way individuals acquire knowledge, skills, and competences that could directly or indirectly influence coping capacities in times of crisis. More educated individuals may have improved access to information and a better ability to interpret and evaluate that information (Jerit 2006), including climate risks and self-protection. Education endows individuals

with real skills that are useful for work and for life, such as decision making abilities (Pudasaini 1983) and problem solving skills that can be useful in hard times.

For instance in Australia, despite the historical prevalence and severity of drought in Australia and the negative impact this has on the Australian economy, there have been few studies that examine the impact of drought on employment and which groups are most vulnerable to job loss. Much of the existing research has focused on the impacts of drought on farmers (e.g., Australian Bureau of Agricultural and Resource Economics [ABARE], 2008) with few studies having examined the flow-on effects to people working in other industries. Edwards, Gray and Hunter (2009) find that the labour market effects of drought can flow on to those living in drought-affected areas who are not employed in agriculture.

In Africa, water scarcity poses a major constraint to development United Nations Education, Scientific and Cultural Organization (UNESCO) (2009). Women and children across drought stricken areas walk up to 6 hours a day to collect water from distant sources, which prevents them from earning incomes and attending school respectively. Rather than attend school in times of water scarcity, children of 12 years and older are often grazing animals or looking for water for domestic use (Ngigi, 2009). This has a significant effect on school enrolment. In many pastoralist societies in Africa, the women and children are left in settlements,

while the men move with the livestock to search for water and pasture. In others, however, the entire family may move between available water points, making it difficult for the children to receive any kind of sustained education (Jeniffer, 2012). During droughts, education becomes a low priority in the struggle for survival, especially if school fees need to be paid, and enrolment plummets.

In sub Saharan Africa, Kenya included, year 2011 was the worst when about four million people were facing starvation in the country during the year. Abdi (2011) article on starvation in Africa, noted that people had resorted to eating wild fruits and tubers due to lack of food while most schools in the country closed earlier due to lack of food and water while many pupils dropped out and followed their parents who had migrated elsewhere with their livestock. Children in some countries like Somalia, Ethiopia miss school for a variety of reasons during water shortages such as sickness, helping the family, the expense of school fees, livelihood coping mechanisms and sanitation and hygiene all play a part in pulling children out of education. Sickness from water-related diseases is one of the major contributors to absenteeism from school in developing countries of Africa. Statistics indicate that an estimated 443 million school days are lost annually due to diarrhoeal disease resulting from drinking contaminated water in times of water scarcity (UNESCO, 2009).

At the World Conference on education for all, held in Jomtien, Thailand in March 1990, nations made strong commitments to the learning needs of young people. The goal was to accomplish not only access to education for all by the year 2000, but also the far more daunting challenge of learning achievement for all. This, unfortunately, was not achieved. Goal number two of the Millennium Development Goals (MDGs) aims at ensuring that by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling. A report by the Ministry of Planning and National Development, Kenya, noted with a lot of concern that arid and semi arid (ASAL) areas, pockets of poverty and drought are far from achieving this goal.

Basic education is the minimum provision of knowledge, attitudes, values, and experiences which should be made for every individual and which should be common to all Hummel, (1976). Education should be aimed at enabling each individual to develop his or her own potentialities, creativity and critical mind both for his or her own fulfillment and happiness and for serving as a useful citizen and producer of quality knowledge for the development of the community to which he/she belongs. Though various measures are being put in place to ensure education is affordable to all, there have been some factors that have been an obstacle to the learning cycle of pupils in various schools.

In Kenya, the ASALs occupy more than 80% of the country and are home to about 10 million people and approximately 70% of the national livestock herd (Otuoma, 2004). The ASALs in Kenya have the lowest development indicators and the highest incidence of poverty in the country (Ministry of Northern Kenya and other Arid Lands, 2009). Water scarcity in some parts of Kenya has impacted on children education (Asim, Vains, Yousaf & Ramzan, 2012).

Water scarcity and unpredictable rainfall are not new phenomenon in Tharaka South Sub County. Tharaka South Sub County is classified as ASAL (Arid and Semi-Arid Lands) and according to the Farm Management Handbook of Kenya Republic of Kenya, (2012); the sub county can only accommodate dry land crops such as millet, sorghum, cowpea and livestock keeping. However, with annual rainfall rarely exceeding 600 mm, even these crops suffer recurrent moisture stress, leading to crop failure due to poor rainfall distribution. The sub county is therefore one constantly in need of food relief and water. Moreover, access to safe water is a real concern during times of drought since sources of water for domestic and livestock use steadily decline. The re-charge of surface water bodies particularly earth dams, subsurface dams, earth pans, ponds, streams and seasonal rivers as well as recharge of aquifers for underground water are often greatly affected. These in a way, have an effect on the residents of the area, and particularly, the school going children who largely depend on availability of water.

Frequent droughts and aridity are a key constraint to rain-fed crop agriculture in Tharaka South Sub County. The consequence in crop failure is food insecurity which in turn leads to poverty and low school attendance. Tharaka South Sub County is not well endowed with water resources and can be classified as a water scarce region with less than 650m³ of freshwater per capita. The resource availability is highly variable both temporally and spatially with droughts occurring frequently with disastrous impacts on the local economy (Wambongo 2013).

Nearly the whole Tharaka South Sub County is straddled by perennial rivers that traverse the region from Mount Kenya before draining into river Tana. However, despite the apparent abundance of water resources, the Sub County continues to be subject to periodic drought and food insecurity. Little use is made of the available water resource for domestic and irrigation (Smucker & Wisner, 2008). In addition, there is mismanagement of existing boreholes, dams and pans. In addition, much of the rain water largely goes to waste as it is not harvested. Over 62 percent of households in Tharaka South Sub County have to travel for up to ten kilometers to fetch water. Waiting time at the source is more than two hours especially in wells and boreholes. Due to water scarcity that prevails in Tharaka South Sub County, very few pupils attended and participate in school activities, particularly female pupils (Wambongo, 2013). According to Wambongo, (2013) pupils missing classes in Tharaka South Sub County were reportedly in search of

casual labor, water harvesting and petty trade aimed at getting money to buy water.

The situation in Tharaka South Sub County is such that climatic changes and annual temperature variations are not uncommon (Icheria 2012). A research (Trocaire, 2012) confirms that some rivers and boreholes dug by the Swedish International Agency (SIDA) to mitigate the problem have dried out due to climate and man-made changes such as deforestation and overgrazing in the region (Trocaire, 2012). This in turn impacted the water availability and, in a combination of periods of drought, water scarcity was a probable occurrence. Mugendi, who is a head teacher at Kamagajiu primary school, says education in the area is adversely affected by water shortages with feeding programmes in schools hampered. There are local level initiatives by governments and Non-Governmental Organizations (NGOs) to help households In Tharaka South Sub County cope and recover from water scarcity and improve their resilience in the phase of drought. These include food relief and school feeding programme (Orindi & Ochieng, 2005). Recognizing the importance of institutions and policy, the Government of Kenya established or reformed institutions that are expected to pro-actively conserve and manage natural resources that are sensitive to climate change and variability. The Water Act 2002, the Forest Act 2005 (Republic of Kenya, 2005; Republic of Kenya, 2002c) and the National Climate Change Response Strategy are manifestations of these efforts. In addition, local and regional institutions, particularly Kenya Meteorological Department (KMD) and

IGAD Climate Prediction and Application Centre (ICPAC) continue to play a central role in the prediction and dissemination of climate forecast in mitigating the impacts of climate variability (Oduor, Mutea & Karanja, 2002). Despite the efforts to support adaptation of households, people of Tharaka South Sub County continue to suffer from food insecurity and poor living conditions due to unreliable rainfall and a weak adaptive capacity. An understanding of the magnitude of climate variability and Sub County's adaptive capacity to climate variability are key to vulnerability assessment. It is important to establish the effects of drought related factors on pupils' schooling in Tharaka South Sub County and the community's conceptualization of the problem of water scarcity as the foundation for strengthening adaptation to enhance children enrollment in primary schools.

1.2 Statement of the problem

Tharaka South Sub County is susceptible to rainfall variability and most of the households depend on water from stream flows and boreholes (Icheria 2012). This leaves the majority of the population vulnerable to water scarcity and limited livelihood options in times of extreme drought. In the sub-county, the education has been characterized by low school attendance; high levels of absenteeism, poor examination pass rate, and children's inability to proceed to secondary and tertiary levels of education (Tharaka South Sub-County Education Office 2013). The major constraint is the lack of water infrastructure especially during the

almost 7 month's dry season which spans April through to October every year. In such times, school-age children have no option than join their mothers and older siblings in trekking across the geographical terrain, searching for water of any sort for their households. As a result, school attendance suffers much and though schools do not shut down attendance is very irregular. Such a situation eventually compromises the long term aspirations and potentials of school children to emerge from the poverty status quo into which they were born due to place-of-birth disadvantage. Tharaka South sub-county has been characterized by high dropout in school, irregular attendance, low academic performance and low completion rates (Tharaka South Sub-County Education Office 2013). It is against this background that this study sought to investigate the the effect of drought related factors on pupils' participation in primary schools in the semi-arid areas of Tharaka South Sub County in Tharaka Nithi County, Kenya.

1.3 Purpose of the study

The purpose of this study was to investigate the effect of drought related factors on pupils' participation in primary schools in the semi-arid areas of Tharaka South Sub County in Tharaka Nithi County, Kenya.

1.4 Objectives of the study

The study was guided by the following objectives:

- i) Determine the effect of proximity of water sources on pupils' participation in primary schools in Tharaka South Sub County.

- ii) Establish the effect of purchasing water on pupils' participation in primary schools in Tharaka South Sub County.
- iii) Establish the effect of school sanitary conditions on pupils' participation in primary schools in Tharaka South Sub County.
- iv) Establish effect of water storage facilities on pupils participation in primary schools.

1.5 Research questions

This study sought to answer the following research questions:

- i) How does proximity of water sources affect pupils' participation in primary schools in Tharaka South Sub County?
- ii) What are the effects of purchasing water on pupils' participation in primary schools in Tharaka South Sub County?
- iii) What are the effects of school sanitary conditions on pupils' participation in primary schools in Tharaka South Sub County?
- iv) What are the effects of water storage facilities on pupils participation in primary schools?

1.6 Significance of the study

This study would provide useful information to the head teachers and teachers on ways and means of improving accessibility and participation rates of learners with in primary schools. The study may also form a basis of training people in ASALs and drought stricken areas on emergency water harvesting interventions.

1.7 Limitation of the Study

In the semi-arid region of Tharaka, the area is sparsely populated hence; the schools are located quite apart. The terrain in the area was a challenge to the researcher. These two factors may force the researcher to spend more time in data collection. However, the challenges were overcome by employing the services of a motorcycle rider who was able to locate shorter routes to the schools.

1.8 Delimitations of the Study

Nyaga in Mwiria and Wamahu (1995) contended that delimiting a study involves a purposive and conscious action in order to make the research manageable. The study focused on primary schools in Tharaka South Sub County. Although education financing involves participation of various parties such as children, parents, teachers, education officers, NGOs among others, the study only involved the pupils, teachers and the Sub County Education Officer. The study focused on establishing the effect of drought related factors on pupils' participation in primary schools.

1.9 Assumption of the study

The researcher assumes that the results of this study will provide a guide to both the community, government and other stakeholders in the management of water catchment areas and improve water harvesting techniques. The researcher also assumes that the respondents were truthful and give accurate and honest information free of any bias.

1.10 Definition of Terms

Intervention strategies: refers to deliberate actions designed to ensure water availability in the water scarce regions

Pupil's achievement: In this study, refers to how pupils in primary schools fair on in their education measured in examinations as compared to others in the same class.

Pupils' attendance: In this study refers to the actual number of days a pupil has been in school and participated in learning.

Pupils' enrollment: refers to the number of pupils registered in school in a given time

Pupils' Participation: refers to the access to education, retention, performance and graduation of learners in primary schools.

Pupils' retention: refers to having pupils in school throughout the learning period

Socio-economic factors; refers to a total measure of a person's work experience and of an individual's or family's economic and social position in relation to others, based on income, education, and occupation.

Water harvesting: refers to the accumulation and deposition of rainwater for reuse before it reaches the aquifer.

Water scarcity: is here defined as a gap between available supply and expressed demand of freshwater

Water source. refers to a source of water by nature of its construction or through active intervention, is likely to be protected from outside contamination.

1.11 Organization of the Study

The study comprised five Chapters. Chapter one, introduction, consists of background to the study, statement of the problem, purpose of the study, objectives and research questions, significance and limitations of the study, delimitations, basic assumptions and definition of key terms. Chapter two contains a review of literature related to the study, theoretical framework and conceptual frame work. Chapter three deals with the research methodology that comprises the research design, target population, sample size and sampling procedure, validity and reliability, procedures for data collection and data analysis techniques. Chapter four presents data analysis, interpretation and discussion of the study findings while Chapter five will deals with the summary, conclusion and recommendations for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter the researcher presents a review of literature along four main themes. The first part interrogates relevant studies on how water scarcity affects pupils' enrollment in primary schools. The second part discusses effect of borehole water on pupils' attendance and retention in primary schools. This is followed by a review of literature on the effect of emergency water interventions on pupils' health and hygiene and effect of water harvesting strategies on pupils' academic achievement. The final part of the chapter presents a theoretical and conceptual framework for this study.

2.2 An overview of effects of drought related factors on pupils participation in primary schools

Water and Sanitation are among the priorities of the world. The United Nation's Millennium Development Goals (MDGS) included the target to reduce by half the number of people without sustainable access to safe drinking water and basic sanitation by the year 2015 (ADB, 2011). Availability of adequate clean and safe water is necessary for the day-to-day running of schools as it is used for drinking, maintaining school hygiene in the classrooms and toilets as well as cooking food for learners. It is a requirement by the Ministry of Education to have a source of clean water before a school could be registered to operate. However, in the event of drought in ASALs, the available sources of water sometimes dry up

compromising school operations and learner participation (Save the Children, 2010).

School children who have access to safe water and sanitation are more likely to be healthy and do well in school (Tiira 2013). Tiira further argues that for menstruating girls, safe and separate sanitation facilities allow them to practice proper hygiene, which can improve school attendance. Water being life, its scarcity affects people's lives especially the education of children (Harlow, 1970). In Tharaka South Sub County the climatic conditions impacts negatively on children's learning as too much heat leads to loss of water, thus pupils become dehydrated. Learning is therefore affected as children's concentration is affected by dehydration and the need to go to and look for drinking water to hydrate themselves.

Primary school children in Tharaka South Sub County are affected by lack of clean water and inadequate sanitation at home and school (ROK 2001a). This has led to waste of time in search of water, queuing at the toilets at break and lunch hours in school resulting into lateness for lessons, spread of diseases like typhoid, truancy and absenteeism, dirtiness, overloading of pupils as they come to school in the morning carrying five litre jerry can of water and school bag, girl child lacks concentration due to abuse, mockery and insults from the boy child especially during menstrual flows, poor relationship between teachers, parents and pupils due to loss of jericans and sending pupils for water often, transfers and

dropouts due to water policy in the school that every pupil must carry water to school, messy pit latrines for teachers and pupils and hardship in implementing health policies for example hand washing after visiting the toilet which is not possible due to lack of hand washing points. These and many more issues to do with water, affect pupils' participation in school in ASAL areas.

2.3 Effect of proximity to water sources on 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 were not comfortable sharing the borehole with the pupils. Indeed, cases of violence and pupil denial to access such water were frequently reported by various administrators of different schools.

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 metres 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 Tharaka South 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 Tharaka South Sub County.

2.4 Effect of buying water on pupils participation in primary schools

Njeru and Orodho (2003) posits that due to high rates of poverty at household level in ASAL regions poor households fail to sustain an uninterrupted participation of children in school due to inability to meet various requirements such as buying water for domestic use and for children to carry to school. This has resulted in adequate school participation among the poor. Studies also done in Malawi, Ghana, Zambia, Ethiopia and Tanzania have shown that children are hindered form effective participation in schooling due to inability to afford such costs (Kelly, 1999).

In conformity with this situation, Mingat (2002) established that the richest households, in ASAL areas, 76 percent of their children attend school compared to 40 percent of the poorest households. This means that children from poor households have much lower attendance than those from richer households. Pscharapoulos (1985) cited in Chepkenei, (2004) concur with Mingat (2002) that the level of the family income is one of the most powerful influences on primary school enrolments rates in the developing countries. Onyango (2000) showed that parental socio-economic background influences their children's participation in education. This is especially so in ASAL areas where children of the poor families are not provided with adequate educational materials as the cost of buying water deprives them opportunity for equal learning compared to children who are able to buy water when the commodity gets scarce.

Odaga and Haneveld (1995) asserts that children in rural areas In Kenya miss out of school as a result of social-cultural and economic factors such as engaging them in agricultural work, domestic work such as cooking collecting fuel fetching and hawking water. These practices have a negative impact on children participation in school.

According to Save the Children (2010) primary school pupils from Tharaka South Sub County have to walk for around three hours to fetch water, making them late for class or causing them to miss school altogether. If pupils are late for

class they are often punished severely, making them go home instead to avoid punishment.

According to UNDP/IFAD (2011) children walk distances of up to one kilometre just to get drinking water. This used to disrupt lessons as the children spent more time walking to and from the nearest water point. UNICEF (2006) contends that girls in particular are absent due to water-collection duties.

According to Plan international (2013) and National Drought Management Authority (2013), water sources in Tharaka South Sub county are located far from the villages, requiring children and in particular girls, to travel through treacherous terrain to reach them. During the wet season, children often have accidents while scaling steep and muddy hillsides going to and from springs carrying 20 litre buckets of water on their backs. Regular carrying such a heavy weight is particularly damaging to the neck, shoulders, spine and legs. During the dry season water scarcity creates conflict between communities. Children have to wait in line for water for long periods and as tensions rise, physical and verbal abuse can occur as they scramble to fetch water and also provide an opportunity for their animals to drink. This study will seek to establish the effect of socio-economic factors relating to water (buying and fetching water) on pupils' participation in primary schools in Tharaka South Sub County.

2.5 Effects of school sanitary conditions on pupils participation in primary schools

School factors are the conditions inherent to the school that either limit or enhance the involvement of pupils in primary education. Issues considered under the school in relation to water are such water availability, sanitary facilities and school hygiene.

Local surveys conducted by Ground-Water Abstraction in Kenya Outreach (GWAKO) team (2007) in the Nyando and Miwani Divisions show 93 out of 104 primary schools, and 7 out of 11 secondary schools do not have access to safe water. School populations average approximately 516 students per school with ranging in age from 6 to 14 years. Majority of the school access the water needs from the murky ponds.

A wide range of human and ecological health crises are related to inadequate access to fresh clean water (Gleick, 2008). Interventions aimed at providing good quality water is necessary to ensure that water-borne disease transmission is minimal among school going children (Khasnis & Nettleman, 2010). Access to clean water, for both animal and human consumption, is a major component of the pastoralists' livelihoods in Tharaka South Sub County and their natural resources management and therefore should be taken into account when designing appropriate water interventions. In Tharaka South Sub County, the problem of pupils' declining health and hygiene are exacerbated by lack of access to clean water. Data available from the World Health Organization (1999) reveal that

water-related diseases such as typhoid, cholera and dysentery, diarrhoea, intestinal worm infestation caused an estimated 3.4 million children to be on and off school in Sub Saharan Africa (WHO, 1999).

Poor sanitation in schools impairs children growth and development. It also limits school attendance and retention of learners and negatively affects learners' ability to concentrate and learn (UN, 2009). About 40 percent of the World's 400 million school-age children are infested with intestinal worms. About 1 in 10 school age girls do not attend school during menstruation or drop out at puberty because of lack of clean and private sanitation facilities (UN, 2009). Of all the children between the ages of five and fourteen in the world, 87 percent live in developing countries. For these children, the risk of death is now fourteen times higher than for children of the same age groups in the industrialized countries. That risk can be reduced enormously when children stay in a healthy environment and get used to practicing good hygiene both in and out of school (WHO, 2010).

A survey carried out in India among primary school children, revealed that about half ailments found are related to unsanitary conditions and lack of personal hygiene (UNICEF& IRC, 1998) which makes children to irregularly attend school. A study in Senegal (Republique du Senegal & UNICEF, 2012) showed that of over 5000 schools, 53 percent had no water supply and 46 percent had no sanitation facilities and only half of the schools had separate facilities for girls and boys (Republique du Senegal & UNICEF, 2012). To improve the water supply

situation boreholes were drilled targeting to provide access to safe water to communities. Previously, women and girls were forced to travel up to 3km to obtain water, a chore that often occupies several hours of the day. This resorted to missing classes for some hours of the day or in attendance altogether. This impacted negatively on children school attendance and retention in Senegal.

Recent surveys IRC/UNICEF (2010) focusing on latrine coverage show many primary schools have one or two functioning latrines for the entire school population. Lack of adequate water and sanitation facilities in school affects girls' education in particular. Most girls must fetch water every day before attending school from muddy waterholes or unimproved hand dug wells. This obligatory and time-consuming task prevents girl students from attending classes regularly. They are often punished or humiliated for arriving late because of their duties. Little access to latrines may also negatively impact attendance when their needs for privacy are compromised significantly

Adequate water and water supply facilities in schools are essential for proper sanitation, and school hygiene. Poor quality and insufficient quantity of water for basic hygiene combined with lack of access to improved sanitation, together lead to the vast majority of diarrheal diseases. Aggravated cases of diarrhea result in children missing school. In addition, even when they are in school, 400 million children are often unable to learn effectively as they suffer both physical and

mental impairments caused by diseases such as typhoid and cholera, which are transmitted through contaminated water and food (Freeman, 2009).

Under these conditions, schools become unsafe places where diseases are transmitted. Poor health affects a child's ability to learn and therefore influences their prospects in life. School sanitation and hygiene is a worthwhile investment for many particular reasons. This study will seek to establish the effect of school factors (water availability, sanitary facilities and hygiene) on pupils' participation in primary schools in Tharaka South Sub County.

2.6 Effects of water storage on pupils' participation in primary schools

Strategies for coping with water scarcity as a result 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 stop gap 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 roof tops 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 Tharaka South Sub County.

2.7 Summary of Literature Review

The literature reviewed in this chapter presents various studies carried out in different places across the globe, on matters pertaining to effects of availability of water, on pupil's school attendance. The literature review also covers the various

methods of acquiring water and their effects on the participation of pupils in education. The literature further reviews the effects of water availability/unavailability in schools, on pupil's participation, sanitation and pupils hygiene. These studies have been carried out in various countries across the globe, and whose contexts in terms of educational and climatic, may vary from the context in Tharaka south. Furthermore research focusing on the effect of drought related factors on pupils' participation in primary schools in Kenya and in particular in Tharaka South Sub County are inadequate. This study seeks to fill this gap.

2.8 Theoretical Framework

This study was guided by the Human Needs Theory of Abraham Maslow (Maslow, 1954). 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.

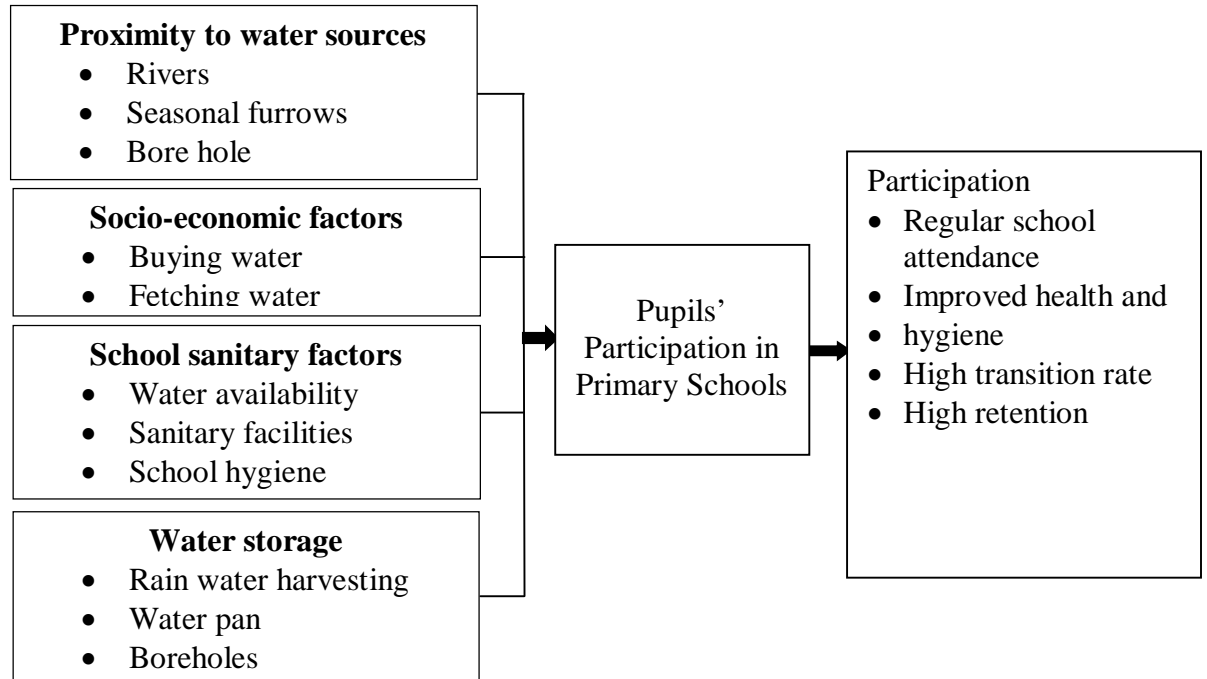
Maslow says that a human being goes through a hierarchy needs starting with physical needs for example food to much higher needs for example emotions. For a child to achieve this, care givers for example teachers or parents should ensure that they provide clean and safe water to the child in order to have a healthy growth. Safety and security needs are referred to as freedom from fear and anxiety and also protection from emotional harm. Children should be provided with safety and security so as to do well in school and even at home. Failure to provide security creates discontentment. The social needs include love and belonging where children should be acceptable and provided with friendship (Tang & West, 1997). The self-esteem needs are the prestige needs whereby one feels he/she wants to be recognized. This makes children feel proud of themselves. The utmost need is the self-actualization, which is the motive to become all that a person is able to be. This requires self-drive so as to achieve the goal one desires. According to Maslow's hierarchy of needs, it demonstrates that when needs are met or fulfilled, pupils are generally happy and contented. The atmosphere in the school is good and learning goes on smoothly. The reverse is true in that when the needs are not met or fulfilled there is discontentment.

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. For a developing country like Kenya, it means that education wastage must be prevented by making basic needs like water, food, clothing and shelter available to all citizens (Villarica, 2012). Since man cannot survive without water and food, the government should make an effort to reduce water scarcity especially in ASALs. Where food aid is available for instance in schools through school feeding programmes, water trucking should also be availed. This will encourage good health, high motivation, participation, attention in class and will obviously reduce dropouts, absenteeism and truancy and enhance academic performance, health and hygiene as well as completion rates.

2.8 Conceptual Framework

A conceptual framework showing the relationship of the variables of study is shown on the figure 2.1

Figure 2.1: Effects of drought related factors on Pupils' Participation in Primary Schools



A conceptual framework showing the relationship of variables of the study is shown in figure 2.1. In the framework, the independent variables are; proximity to water sources, socio-economic factors, school sanitary factors and water storage. The intervening variables are; pupils' participation in primary schools, while the dependent variables is the pupils participation in schools.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter the researcher presents the methodology that was adopted in carrying out the research. It focuses on the research design, target population, location of the study, sampling procedure and sample size, research instruments, validity of instruments, reliability of instruments, data collection procedure and data analysis.

3.2 Research design

This study was conducted using the descriptive survey research method. The descriptive survey is chosen for the study because it allows the researchers to study phenomena that do not allow for manipulation of variables (Kombo & Tromp, 2006). The result of such investigation makes it possible to find explanation of the social phenomenon in question. The survey design was chosen because it provided a means to contextually interpret and understand the effect of drought on pupils' participation in primary schools. The research design was also help in measuring the respondents' attitudes, opinions, habits or any of the variety of education or social issues in a large population.

3.3 Target population

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 class

seven and eight pupils of 41 public primary schools in Tharaka South Sub County (Tharaka Nithi County Education Office, 2013).

3.4 Sample size and sampling procedures

According to Kathuri and Pals (1993) 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 class seven and eight pupils to participate in this study giving a sample of 275 pupil respondents.

To obtain the sample of head teachers, the researcher purposively included the head teachers from the schools selected randomly from the list of 41 schools in the Sub County that was the sampling frame. The teachers to participate in the study were selected through simple random sampling using a list of teachers from the selected school that constituted the sampling frame. Five teachers from each of the 11 schools were randomly selected to constitute a sample of 55 teacher respondents.

Table 3.1. Sample matrix

Category	Total population	Sampling procedure	Sample
Headteachers	41	Purposive sampling	11
Teachers	343	Random sampling	55
Pupils : Girls	1104	Stratified random	165
Boys	736	sampling	110
Total	2224		335

3.5 Research instruments

The study utilized three sets of data collection instruments which are questionnaires, interview schedule and observation schedule.

The data for this study was collected using two questionnaires namely; questionnaire for teachers and pupils. The questionnaire was used for data collection because they offered considerable advantage in administration and gave respondents freedom to express their views or opinion. This view is supported by as Kiess and Bloomquist (1985).

The questionnaire for teachers (Appendix A) contains six sections. Section A generated respondents background information, Section B determined the effect of proximity of water sources on pupils' participation in primary schools. Section C established the effect of buying and fetching water on pupils' participation in primary school; Section D established the effect of school sanitary conditions on pupils' participation in primary schools and E sought to establish effect of water storage strategies used in Tharaka South Sub County to cope with the problem of water scarcity on pupils' participation in primary schools. The questionnaire for

pupils (Appendix B) contains six sections. Section A generated respondents background information, Section B determined the effect of proximity of water sources on pupils' participation in primary schools. Section C established the effect of buying and fetching water on pupils' participation in primary school; Section D established the effect of school sanitary conditions on pupils' participation in primary schools and E sought to establish effect of water storage strategies used in Tharaka South Sub County to cope with the problem of water scarcity on pupils' participation in primary schools.

Mugenda and Mugenda (2002) defines interview schedule as a set of questions that the interviewer asks when interviewing. Data from the Headteachers was collected using phenomenological face to face interview. The interview created a context where the participant speak freely and openly by utilizing communication techniques such as clarification, paraphrasing, and summarizing, probing and minimal verbal as well as non-verbal responses. During the interview the researcher used bracketing (putting preconceived ideas aside) and intuiting. The interview was conducted until data is saturated as determined by the interview guide.

Observation is a tool that provides information about the actual behavior, condition or situation in a given scenario. Oso and Onen (2009), argues that observation schedule allows the researcher to see for himself what people do, rather than what they say they do. The researcher used observation schedule to

collect data on the availability and conditions of the water sources and storage facilities in the schools.

3.6 Validity of the instruments

According to Connaway and Powell (2010) validity of the instrument is the accuracy and meaningfulness of inferences which are based on the research results. It is the degree to which results obtained from the analysis of the data actually represent the phenomenon under study. To enhance content validity, the questionnaires were pre-tested before the actual research and inconsistencies corrected. In addition, the researchers consulted the experts in the field of research in order to ascertain and clarify that the test instruments can measure what they are intended to measure. This helped the researcher to rectify and come up with good reliable instruments and also to ensure credibility of the results.

3.7 Reliability of the instruments

Reliability of the research instrument is its level of internal consistency over time (Connaway& Powell, 2010). A reliable instrument therefore, is the one that constantly produces the expected results when used more than once to collect data from two samples drawn from the same population. Reliability was tested through test-retest method. Individuals who were randomly selected were asked to fill the questionnaire and then fill the same questionnaire again after two weeks. The results from the two tests were then correlated using the Pearson r (Pearson Product Moment Correlation) to produce a stability coefficient. A correlation

coefficient of at least 0.88 for pupils and 0.96 for teachers were obtained and therefore the instruments were deemed reliable.

3.8 Data collection procedure

To carry out the study, permission and authority was sought from the National Council for Science Technology and Innovation. Subsequent clearance to carry out the study was obtained from the District Education Officer (DEO) in Tharaka South Sub County. The researcher then paid a visit to the participating schools to inform the respondents of the intended study and create some rapport. The pilot study was then conducted and corrections made to the questionnaires. The researcher booked appointments to with the respondents and administered the questionnaires personally to the respondents in each school at different times. The filled questionnaires were collected immediately.

3.9 Data Analysis Techniques

Kerlinger (1986) defines data analysis as categorizing, manipulating and summarizing of data in order to obtain answers to research questions. This study employed descriptive statistics to analyze the data obtained. Gay (1992) asserts that descriptive survey data is commonly represented through use of frequencies and percentages. Data from the field was collected, cleaned, coded and recorded. Data collected by use of the questionnaire, will be coded, and analyzed, using Statistical Package for Social Scientists (SPSS 21). Quantitative analysis entailed analyzing numbers about a situation by choosing specific aspects of that situation. Descriptive statistics was used to analyze the quantitative data obtained. This

specifically included percentages and frequency counts. 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.

3.10 Ethical considerations

During the study the researcher focused on some ethical issues, which were considered during the data collection phase. The ethical issues to be considered in this study include confidentiality and privacy of the information collected and anonymity of the questionnaires. In the area of informed consent, the respondents were informed on the purpose of the study, and what data collected was used for. The permission was also sought from the principal, before the administration of the research instruments.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND DISCUSSIONS

4.1 Introduction

This chapter covers the analysis of data and presentation of results for the study. The data presented covers respondent's demographic data that includes genders, age academic qualifications and the number of years teachers have served. The chapter presents the results and discussion of the study objectives.

4.2 Questionnaire return rate

The study administered the research instruments to the subjects and the response rate is shown by the data on Table 4.1.

Table 4.1: Return Rate

Category of the respondents	Sampled	Returned	Percentage return rate (%)
Pupils	275	266	96.7
Teachers	51	48	94.1
Headteachers	11	11	100
Total	326	314	

The information on table 4.1 indicates that 96.7 percent of the pupil's questionnaires were returned. The study further established that 94.1 percent of the teacher's questionnaires were returned. All the sampled headteachers were

available for the interviews. This information indicates that the study was ideal as respondents were available for the study.

4.3 Demographic data of respondents

The demographic data provides information about the population structure, and helps create a mental picture of the subgroups that exist in the overall population. Researchers obtain demographic information from the study subjects to understand sample characteristics and to determine if samples are representative of the populations of interest. In this study, the researcher investigated the respondent's characteristics by establishing their gender, age, academic qualification and experience.

4.3.1 Gender of the respondents

The study sought to establish gender of the teachers and pupils. The findings obtained are presented on the Table 4.2

Table 4.2. Gender of the respondents

Respondents	Male		Female	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Teachers	32	62.7	19	37.3
Pupils	124	46.8	142	53.2
Total	156		161	

The study established that 62.7 percent of the teacher respondents were male, as compared to 37.3 percent that were female. The study further established that 53.2

percent of the pupils were female, as compared to 46.8 percent that were male. This information implies that there was a gender disparity in teachers in the region, in favour of males.

4.3.2 Age distribution of the pupils

The study sought to establish the age distribution of the pupils, and the findings obtained are presented on the Table 4.3

Table 4.3 Age distribution of the pupils

Age	Frequency	Percentage (%)
10-12 years	16	6.1
13-15 years	185	70.4
16-18 years	58	22.0
19 years and above	4	1.5
Total	263	100

The study established that 70.4 percent of the pupils were aged between 13-15 years, while 22.0 percent were aged 16-18 years. This information implies that the majority of pupils who took part in this study were below 15 years.

4.3.3 Age distribution of teachers

The study sought to establish the age distribution of the teachers and the findings obtained are presented on the Table 4.4

Table 4.4 Age distribution of teachers

Age	Frequency	Percentage (%)
25-30 years	18	35.3
31-40 years	19	37.2
41 years and above	14	27.5
Total	51	100

The study established that 37.2 percent of the teachers were aged between 31-40 years, 35.3 were aged 25-30 years while 27.5 percent were aged 41 years and above. This information implies that the age of teachers was evenly distributed among the study population, and therefore the responses obtained may be consistent as they possess views of people with varied ages

4.3.4 Highest professional qualification

The study sought to establish the highest professional qualification and the findings obtained are presented on the Table 4.5

Table 4.5. Highest professional qualification

Age	Frequency	Percentage (%)
P1	13	25.5
Diploma	14	27.5
Bachelors degree	12	23.5
Masters degree	12	23.5
Total	51	100

The study established that the 27.5 percent of the teachers had a diploma qualification, 25.5 percent had a P1 certificate while 23.5 percent had bachelors and masters degree. This information reveals that the teachers who took part in this study were all trained and hence met the professional qualifications of being teachers

4.3.6 Length of service as a teacher

The study sought to find out the teachers length of service as a teacher, and the results obtained are presented on the Table 4.6

Table 4.6 Length of service as a teacher

Years	Frequency	Percentage (%)
1-5 years	12	24.0
6-10 years	8	15.2
11-15 years	14	27.5
16 years and above	17	33.3
Total	51	100

The study established that the 33.3 percent of the teachers were teachers for 16 years and above, while 27.5 percent had served as teachers for 11-15 years. As Mahoney (1988) stated, increased tenure in an organization is positively related to experience. This information shows that the teachers that took part in this study had teaching experience and therefore their responses were considered valid.

4.3.7 Length of service as a teacher in the current station

The study sought to establish the time served in the current school and the findings obtained are presented on the Table 4.7

Table 4.7 Length of service as a teacher in the current station

Years	Frequency	Percentage (%)
6-10 years	10	19.6
11-15 years	41	80.4
Total	51	100

The study established that the 80.4 percent of the teachers were teachers in the current station for 11-15 years, while 19.6 percent were teachers in the current station for 6-10 years. This information implies that the teachers, who took part in this study, had knowledge on water scarcity in the area, and how it affected participation of pupils in schools.

4.4 Effect of proximity of water sources on pupils' participation in primary schools

To establish the effects of proximity of water sources on pupils' participation in primary school, the study sought to establish from the pupils, the nearest water sources from their homes. The pupil's responses are presented on the Table 4.8

Table 4.8 Nearest water source from home

Distance	Frequency	Percentage (%)
Less than 2 km	77	29.3
Between 2 to 5 km	128	48.7
Above 5 km	58	22.0
Total	263	100

The study established that 48.7 percent of the pupil walked between 2 to 5 kilometers to access water sources while at home, while 29.3 percent walked less than 2 kilometers. This meant that the majorities of the pupils live in areas far from a permanent water sources, and had to walk for long distances to acquire water. As Midgley, Dejene and Mattick, (2012) stated, the location of the water sources relative to the home and school compound is an important aspect that affects pupils' access to education.

From the headteachers interviews, it was established that the pupils did take a long duration when they go to fetch water. This indicated that there was a long distance from the water sources, which eventually affected the school routines.

The study further sought to establish from the pupils, the length of time they took, to access the water source, from their homes and the results obtained are presented on the Table 4.9.

Table 4.9 Length of time taken to access the water source

Time taken	Frequency	Percentage (%)
Walk for 30 min	32	12.2
Up to 1 hour	90	34.2
Up to 2 hours	96	36.5
More than 2 hours	45	17.1
Total	263	100

According to table 4.9, 36.5 percent of the pupils indicated that they had to walk for up to 2 hours, in search of water, while 34.2 percent indicated that they had to walk for 1 hour, to access water. This meant that the pupils spent time accessing water sources while at home, and this may have had an effect on attendance of the pupils, as water is a basic need. As Blanton, Ombeki, Oluoch, Mwaki, Wannemuehler and Quick (2010) contend that a water source within 100 metres from the school compound would be considered as near since children can easily walk there and return during a break times. Beyond 100 metres, children may delay and this may reduce study time.

The study further sought to establish from the teachers the frequency in which they faced water scarcity in the schools. The findings obtained are presented on the Table 4.10

Table 4.10 Frequency of water scarcity in the schools

Scarcity of water	Frequency	Percentage (%)
Frequently	22	43.1
Occasionally	10	19.6
Seldom	11	21.6
Never	8	15.7
Total	51	100.0

According to table 4.10, 43.1 percent of the teachers indicated that the water scarcity was being experienced in the area, frequently, while 21.6 percent indicated water scarcity was seldom experienced. This information suggests that water scarcity was being experienced in Schools in Tharaka unlike the situation in Ghana, where 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.

The data from the headteachers interviews revealed that the headteachers stated that the situation is worsening and that even if the conditions are extremely adverse, they might get to adverse extents. The headteachers further stated that the pupils did drop out of the schools during the drought seasons, as some of the parents failed to pay the school levies for them. This was as a result of water scarcity, as parents directed their incomes to purchasing water.

The teachers indicated that there were some pupils who dropped out of school, as a result of water scarcity. The teachers further stated that some of the pupils who

came from the areas that were furthest from the water sources arrived to school late and some of them usually gave the excuse of fetching water. These findings agree with the argument of Chambers and Conway (1992) who argued that droughts and seasonality of water sources affects livelihoods in a number of ways notwithstanding, predisposing children to truancy and dropout.

The study further sought to establish the sources of water that are close to the homes and school. The pupils responded on the sources of water nearest to their homes, while the teachers responded to the sources of water nearest to the schools. Findings obtained are presented on the Table 4.11.

Table 4.11. Sources of water those are close to the school

Scarcity of water	Frequency	Percentage (%)
Dam	4	7.1
Tap	11	22.4
Well	5	9.7
River	15	29.4
Tank	16	31.4
Total	51	100.0

The information on table 4.11 reveals that 31.4 percent of the teachers indicated that the nearest water source in the schools was a water tank, while 29.4 percent indicated that their source of water was a river. This indicated that the water that was used in the area was stored water in tanks and from rivers. However the water from the water tanks was not adequate to last throughout the drought season and

therefore intervention measures needed to focus on a long term solution to the problem. Some of the rivers were also seasonal, and dried up shortly after the end of the rains. In intervention to this, the head teachers suggested more comprehensive rain water harvesting by the schools and households.

The data from the observation schedules revealed that most of the schools had water tanks to store water in the schools. The study further established that most of the schools had water taps that were dry, dried wells and boreholes and water tanks that were empty. This indicated that the water sources in the schools were seasonal and that during the dry seasons, there was water scarcity.

To find out the Effect of proximity of water sources on pupils' participation in primary schools, the teachers were asked to present their views on a 5 point likert scale (strongly agree (SA) Agree (A) Undecided (UN), Disagree (D) or strongly disagree (SD)), and the results obtained are presented on the Table 4.12

Table 4.12 Teachers responses on effect of proximity of water sources on pupils' participation in primary schools

Teachers responses on effect of proximity of water sources on pupils' participation in primary schools	SD		D		UN		A		SA	
	1		2		3		4		5	
	F	%	F	%	F	%	F	%	F	%
Scarcity of water has led to decreased enrollment of pupils in schools.	12	23.5	6	11.8	2	3.9	13	25.5	18	35.3
Proximity to water sources has enabled regular school attendance	6	11.8	3	5.9	2	3.9	21	41.2	19	37.3
Pupils living in areas proximal to water sources have better health and hygiene	7	13.7	6	11.8	3	5.9	16	31.4	19	37.3
Proximity to water sources has enabled improved performance	7	13.7	6	11.8	0	0	30	58.8	8	15.7
Schools near water sources have higher pupil retention, than those that are far.	5	9.8	3	5.9	0	0	23	45.1	20	39.2
Schools near water sources have higher transition rates, than those that are far	0	0	8	15.7	5	9.8	24	47.1	14	27.5

N=51

The study established that 35.3 percent of the teachers strongly agreed that scarcity of water has led to decreased enrollment of pupils in schools. The study

further established that proximity to water sources has enabled regular school attendance, as was revealed by 41.2 percent of the teachers who agreed. According to UNDP/IFAD (2011) children walk distances of up to one kilometer just to get drinking water. This used to disrupt lessons as the children spent more time walking to and from the nearest water point. UNICEF (2006) contends that girls in particular are absent due to water-collection duties.

Pupils living in areas proximal to water sources have better health and hygiene, as was revealed by 37.3 percent of the teachers who strongly agreed. These findings agree with a survey carried out in India among primary school children, revealed that about half ailments found are related to unsanitary conditions and lack of personal hygiene UNICEF and IRC, (1998) which makes children to irregularly attend school. The study further established that proximity to water sources had enabled improved performance, as was revealed by 58.8 percent of the teachers.

The information further revealed that 45.1 percent of the teachers agreed that Schools near water sources have higher pupil retention, than those that are far. Asim, Vains, Yousaf and Ramzan, (2012) noted, water scarcity in some parts of Kenya has impacted on children education. The study further established that Schools near water sources have higher transition rates, than those that are far, as was agreed by 47.1 percent of the teachers.

The study further sought to establish from the pupils opinions on effect of proximity of water sources on pupils' participation in primary schools, the

teachers were asked to present their views on a 5 point likert scale (strongly agree (SA) Agree (A) Undecided (UN), Disagree (D) or strongly disagree (SD)), and the results obtained are presented on the Table 4.13.

Table 4.13 Pupils responses on effect of proximity of water sources on pupils' participation in primary schools

Teachers responses on effect of proximity of water sources on pupils' participation in primary schools	SD		D		UN		A		SA	
	1		2		3		4		5	
	F	%	F	%	F	%	F	%	F	%
Scarcity of water has led to decreased enrollment of pupils in schools.	3	1.1	21	8.0	6	2.3	44	16.7	191	71.9
Proximity to water sources has enabled regular school attendance	21	0.8	8	3.0	8	3.0	39	14.8	208	78.3
Pupils living in areas proximal to water sources have better health and hygiene	21	0.8	0	0	6	2.3	49	18.6	208	78.3
Proximity to water sources has enabled improved performance	9	3.4	22	8.4	10	3.8	45	17.1	179	67.3
Schools near water sources have higher pupil retention, than those that are far.	7	2.7	14	5.3	9	3.4	57	21.7	177	66.9
Schools near water sources have higher transition rates, than those that are far	3	1.1	13	4.9	20	7.6	89	33.5	140	52.9

N=266

The study established that 71.9 percent of the pupils strongly agreed that scarcity of water has led to decreased enrollment of pupils in schools. 78.3 percent of the pupils strongly agreed that proximity to water sources has enabled regular school attendance. As Jeniffer, (2012) noted, in some cases in arid areas the entire family may move between available water points, making it difficult for the children to receive any kind of sustained education.

Pupils living in areas proximal to water sources have better health and hygiene as was indicated by 78.3 percent of the pupils. These findings agree with Freeman, (2009) who established that poor quality and insufficient quantity of water for basic hygiene combined with lack of access to improved sanitation, together lead to the vast majority of diarrheal diseases. Aggravated cases of diarrhea result in children missing school. The pupils were of the opinion that Proximity to water sources has enabled improved performance as was revealed by the 67.3 percent of the respondents.

The study further established that 66.9 percent of the pupils strongly agreed that Schools near water sources have higher pupil retention, than those that are far. The study further established that Schools near water sources have higher transition rates, than those that are far, as was strongly agreed by 52.9 percent of the respondents. As 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.

4.6 Effects of purchasing water on pupils participation in school.

Parental socio-economic background influences their children’s participation in education (Onyango, 2000). This is especially so in ASAL areas where children of the poor families are not provided with adequate educational materials as the cost of buying water deprives them opportunity for equal learning compared to children who are able to buy water when the commodity gets scarce. The study sought to establish from the pupils if income levels of household members have an influence on the family’s ability to buy water in times of drought. The responses obtained are presented on the Table 4.14

Table 4.14 Income levels influence on the family’s ability to buy water

Response	Frequency	Percentage (%)
Yes	139	52.2
No	127	47.8
Total	266	100.0

The study established that 52.2 percent of the respondents agreed that income levels of household members had an influence on the family’s ability to buy water in times of drought. This may have had an effect on participation of learners in schools during the drought seasons, as the parents who could comfortably afford to purchase water, provided a good chance for their children to attend school since the children did not have to spend their school time fetching water. These findings

agree with Njeru and Orodho (2003) who posits that due to high rates of poverty at household level in ASAL regions poor households fail to sustain an uninterrupted participation of children in school due to inability to meet various requirements such as buying water for domestic use and for children to carry to school.

The study further sought to establish if the occupation of parents of the children in your school influence their participation in schools. Findings are presented on the Table 4.15

Table 4.15. Influence of the occupation of parents on participation in schools

Response	Frequency	Percentage (%)
Yes	38	74.5
No	13	25.5
Total	51	100.0

The study established that the 74.5 percent of the respondents agreed that the parents occupation did have an effect on pupils participation in schools. The study further established that this was because the parents, who were employed, were able to provide their children with water, during the drought seasons, and therefore the children had a better chance of attending the schools. In conformity with this situation, Mingat (2002) established that the richest households, in ASAL areas, 76 percent of their children attend school compared to 40 percent of

the poorest households. This means that children from poor households have much lower attendance than those from richer households.

The study sought to establish if parents provided children with water to bring to school in times of drought. The findings obtained are presented on the Table 4.16

Table 4.16 Children bring water to school in times of drought

Response	Frequency	Percentage (%)
Yes	27	52.1
No	24	47.9
Total	51	100.0

The study established that 52.1 percent of the teachers agreed that the parents gave water to pupils during the time of drought, while 47.9 percent of the respondents disagreed. This implies that some of the pupils went to school without water, during the times of drought. As Ngigi (2009) stated, rather than attend school in times of water scarcity, children of 12 years and older are often grazing animals or looking for water for domestic use. This has a significant effect on school enrolment.

The pupils indicated that the pupils who did not come with water to school had to go fetch from the river, to quench their thirst. Some of the schools had piped water, and the pupils obtained water from the taps. Other schools had tanks and the pupils used the water in the tanks.

4.7 Effect of sanitary conditions on pupils' participation in school

Poor sanitation in schools impairs children growth and development (UN, 2009). It also limits school attendance and retention of learners and negatively affects learners' ability to concentrate and learn (UN, 2009). About 40 percent of the World's 400 million school-age children are infested with intestinal worms. The study sought to establish the conditions of sanitary facilities in the schools. The respondents were requested to rate the condition of the sanitary facilities in the schools, with (Excellent (E), Very good (VG), Good (G), Fair (F) and Poor (P)) and the responses obtained are presented on the Table 4.17.

Table 4.17 Pupils responses on the conditions of sanitary facilities in the schools

Question	E		VG		G		F		P	
	F	%	F	%	F	%	F	%	F	%
How would you describe the availability of water in your school?	41	15.6	24	9.1	39	14.8	30	11.4	130	49.0
How would you describe status of the toilets in your schools?	48	18.3	25	9.5	42	16.0	46	17.5	103	38.8

N=266

The information on table 4.17 revealed that 49.0 percent of the pupils rated the availability of water in the school as poor. This is a problem to the pupils, as data available from the World Health Organization (1999) revealed that water-related diseases such as typhoid, cholera and dysentery, diarrhoea, intestinal worm infestation caused an estimated 3.4 million children to be on and off school in Sub

Saharan Africa (WHO, 1999). The study further established that 38.8 percent of the respondents described the status of the toilets as poor. This implies that the water and sanitation facilities were poor in majority of the schools in Tharaka, and this may have had an effect on the participation of learners, especially in the drought seasons.

The study further sought to establish if there were points where the children could wash their hands in the schools. The responses obtained are revealed on the table 4.18.

Table 4.18 Availability of water points in schools

Response	Frequency	Percentage (%)
Yes	149	56.0
No	117	44.0
Total	266	100.0

The study established that 56.0 percent of the pupils indicated that there were no points where the children could wash their hands in the school. Data collected by the observation schedule also revealed that most of the schools did not have water points for cleaning hands after visiting the toilets, for both teachers and pupil's toilets. This was a sign of poor sanitation facilities, as washing hands regularly is way of controlling communicable diseases in the schools. That risk can be reduced enormously when children stay in a healthy environment and get used to practicing good hygiene both in and out of school (WHO, 2010).

The data from the observation schedules indicated that in most of the schools, the conditions of the toilets was poor, and that most schools did not have water points to wash hands, after visiting the toilets.

The study further sought to establish if the school had special sanitary facilities for girls in the school. The findings obtained are then presented on the table 4.19

Table 4.19 Special sanitary facilities for girls in the school

Response	Frequency	Percentage (%)
Yes	146	55.1
No	120	44.9
Total	266	100

The study established that 55.1 percent of the respondents stated that the School had special sanitary facilities for girls in the school, while 44.9 percent indicated that their schools did not have them. This information implies that the schools had sanitary facilities for girls, and this may have positively affected the participation and of girls in the schools. As Tiira (2013) stated, school children who have access to safe water and sanitation are more likely to be healthy and do well in school. Tiira further argues that for menstruating girls, safe and separate sanitation facilities allow them to practice proper hygiene, which can improve school attendance.

4.8 Effect of water storage, on participation of pupils.

The study sought to establish the forms of water storage facilities do you have in the schools. From the observation schedule, most of the schools had water tanks for storage of water. The water came from rain water harvesting during the rain seasons (by use of gutters), some schools had piped water, which was being stored in the tanks for future use. Some of the schools also did send the pupils to go and fetch water from the neighboring rivers.

The study further sought to establish if the water storage was adequate for all the pupils in the school. The findings obtained are presented on the Table 4.20

Table 4.20 Pupils responses on adequacy of water storage in schools.

Response	Frequency	Percentage (%)
Yes	155	59.0
No	111	41.0
Total	266	100.0

The study established that 59.0 percent of the pupils indicated that the storage was not adequate for all the pupils. This may have caused problems as water is a basic need, and some of the pupils wasted their precious school time to go fetch water. The respondents suggested that the government through the ministry of water and natural resources should consider construction of water dams in the large and permanent rivers in the area. These would provide water to the residents and the schools throughout the dry spell.

The study further sought to establish who took charge of the water storage facility, and the findings obtained are presented on the Table 4.21.

Table 4.21 Who took charge of water storage facilities

Response	Frequency	Percentage (%)
Government	30	11.4
Church	16	6.1
Individuals	6	2.3
NGO's	214	80.2
Total	266	100

The study established that 80.2 percent of the water storage facilities in the school were donate by well wishers and NGO's in the region. This information reveals that the Non Governmental organizations played a great role in providing the basic necessities such as water to the residents of Tharaka. The headteachers suggested that the Tharaka Sub county administration should embark on construction of water pans to harvest rain water, for use during the dry seasons. This would greatly mitigate the problem of water scarcity in the region. The availability of water in the region will reduce the effects of drought related factors on education and therefore will improve on participation of learners in the region.

The study further sought to find out whether water storage has positively enhanced pupils participation in the schools. The findings obtained are presented in a Table 4.22

Table 4.22 Teachers responses on effects of water storage on pupils participation

Response	Frequency	Percentage (%)
Yes	46	91.0
No	5	9.0
Total	51	100.0

The study established that 91 percent of the teachers agreed that water storage has positively enhanced pupil's participation in the schools. This was so because in the schools that stored water, the pupils did not waste their school time to fetch water from the external water sources. Therefore the water storage did affect the pupil's participation in schools.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In this chapter, a summary of the main study findings is presented, together with a conclusion of the study. The chapter further covers recommendations of the study as well as suggestions for further studies.

5.2 Summary of the study

The purpose of this study was to investigate the effect of drought related factors on pupils' participation in primary schools in the semi-arid areas of Tharaka South Sub County in Tharaka Nithi County, Kenya. The objectives of this study were; to determine the effect of proximity of water sources on pupils' participation in primary schools in Tharaka South Sub County, to establish the effect of purchasing water on pupils' participation in primary schools in Tharaka South Sub County, to establish the effect of school sanitary conditions on pupils' participation in primary schools in Tharaka South Sub County and to establish effect of water storage facilities on pupils participation in primary schools. The study adopted a descriptive survey design utilizing quantitative and qualitative approaches. The target population for this study was 2224 participants involving head teachers, teachers and pupils. A sample size of 341 participants, comprising of 11 head teachers, 55 teachers and 275 pupils was used for the study. The data for this study were collected using two types of instruments; questionnaires for teachers and pupils, interviews for headteachers and an observation checklist. The researcher used the test retest method to estimate

the degree to which the same results could be obtained within a repeated measure of the same concept. Correlations of 0.88 for pupils, 0.96 for teacher's questionnaire were obtained. The results of the data analysis have been presented using frequency distribution tables, bar graphs and charts according to the objectives and research questions.

5.3 Summary of the main findings

The study sought to investigate the effect of drought related factors on pupils' participation in primary schools in the semi-arid areas of Tharaka South Sub County in Tharaka Nithi County, Kenya. The first objective sought to determine the effect of proximity of water sources on pupils' participation in primary schools in Tharaka South Sub County. The study established that 48.7 percent of the pupil walked less than 5 kilometers to access water sources while at home (Table 4.8), the pupils indicated that they had to walk for up to 2 hours, in search of water. 43.1 percent of the of the teachers indicated that the water scarcity was being experienced in the area (Table 4.10). The teachers indicated that there were pupils who dropped out of school, as a result of water scarcity. However, the situation is worsening and that even if the conditions are extremely adverse; they might get to adverse extents. The respondents indicated that the nearest water source in the area was a water tank. Scarcity of water has led to decreased enrollment of pupils in schools and that proximity to water sources has enabled regular school attendance. Schools near water sources had higher pupil retention, than those that are far.

The second objective of the study sought to establish the effect of purchasing water on pupils' participation in primary schools in Tharaka South Sub County. The study established that; that income level of household members had an influence on the family's ability to buy water in times of drought. The parent's occupation did have an effect on pupil's participation in schools. The parents gave water to pupils during the time of drought. The pupils indicated that the pupils who did not come with water to school had to go fetch from the river, to quench their thirst. Some of the schools had piped water, and the pupils obtained water from the taps.

The third objective of the study sought to establish the effect of sanitary conditions on pupils' participation in school. The study established that; the respondents rated the availability of water in the school as poor. The respondents described the status of the toilets as poor. This implies that the water and sanitation facilities were poor in majority of the schools in Tharaka. The study established that in majority of the schools, there were no points where the children could wash their hands in the school. The respondents stated that the School had special sanitary facilities for girls and children with special needs in the school. The respondents indicated that the conditions of the facilities were excellent.

The fourth objective of the study sought to establish effect of water storage facilities on pupils participation in primary schools. The study established that; the majority of the schools had water tanks for storage of water in the schools.

The water came from rain water harvesting during the rain seasons (by use of gutters), some schools had piped water, which was being stored in the tanks for future use. 59 percent of the pupils indicated that the storage was not adequate for all the pupils (Table 4.20). 80.2 percent of the water storage facilities in the school were donated by well wishers and NGO's in the region (Table 4.21). The study established that 91 percent of the teachers agreed that water storage has positively enhanced pupil's participation in the schools (Table 4.22).

5.3 Conclusions

Based on the findings of this study, the study concludes as follows;

- i) That the proximity to water sources had an effect on the pupil's participation in education, in primary schools in that the more proximal the schools were to the water sources, the higher the participation.
- ii) The parent's income was directed to purchasing water and this had a negative effect on the pupil's participation in education, as water is a basic need and was prioritized first, before education. During the drought seasons, the parents opted to direct the funds they had, to the efforts of obtaining water. This led to lower attendance of pupils in schools, since the parents did not consider some of the school levies as important as water.
- iii) The scarcity of water had an impact on sanitary conditions and that most of the schools lacked water for cleaning hands. This had a derailed

participation of pupils, and especially girls, for example during their monthly periods, hence lower attendance.

- iv) The majority of the schools had water storage units. However, the sources of water were the problem, as rain water harvesting was only possible during the rain seasons, and the water harvested was not enough to last until the dry season. This led to lower attendance and participation of pupils in education, during the dry spell.

5.4 Recommendation

Based on the findings of the study, the researcher makes the following recommendations.

- i) The government and donors should consider Tharaka South sub-county as an emergency zone and make effort to provide tapped water to the schools. In the cases where tapped water is difficult to provide, the government through the Ministry of Environment, Water and Natural Resources should embark on drilling boreholes and wells around the school areas. This will ensure that all the schools in the region are proximal to a water source and this will increase the participation of pupils.
- ii) The Tharaka Nithi County Government and the NGO's should provide taped water to the households. In the cases where taped water will be difficult to install, the government should consider solar water pumps and boreholes to pump water for the locals, and this will reduce the money spent

in buying water, among the households. This will enhance the participation of pupils in the schools, as water will be available and pupils will not spend time going to fetch water from other sources. The government through the Ministry of Special Programmes should also consider constructing dams in the local rivers, rock catchments and large water pans in the communities, to enhance rain water storage, for the community at large.

- iii) The schools should build standard latrines for the pupils and teachers. Water points for cleaning hands should be installed at designated areas, around the latrines, to ensure that pupils clean hands after visiting the toilets. This move will improve on sanitation and hygiene of the pupils in the schools, leading to better health of the pupils and hence better participation of the pupils.
- iv) The donors and the governments through the CDF should procure and distribute water storage tanks to the schools in the region. Where possible, the schools should also build concrete tanks for water storage, as these tanks can store large volumes of water. The school management should also procure water treatment chemicals, to ensure that the water being used in the school is free of germs.

5.5 Suggestions for further research

Based on the findings of this study, further research is suggested in the following areas

- i) A similar study is suggested in the entire Tharaka Nithi County, and establish how other arid parts of the county deal with the problem of drought.
- ii) A study is suggested to analyze the rates of participation of girls in the schools, during the dry seasons. This is because girls are more affected by the lack of water, than boys.
- iii) A study should be carried out on other factors affecting participation of pupils in schools in Tharaka Sub County.

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APPENDIX A

INTRODUCTORY LETTER

University of Nairobi
Department of Educational
Administration and planning
P.O Box 232
Chogoria

The Head teacher
.....Primary School
P.O Box.....

Dear Sir/Madam,

REF: REQUEST FOR PERMISSION TO CONDUCT RESEARCH

I am a student enrolled with the University of Nairobi. I am conducting a study on **Effects of drought related factors, on pupils' participation in primary schools in Tharaka South Sub County, Tharaka Nithi County, Kenya**, as part of the requirement for the award of a degree in Master of Education in Emergencies. Please allow me to collect data from your school. The researcher promises to treat the identity of respondents confidentially and use information provided for research purpose only. Thank you for your cooperation.

Yours faithfully,

Isaac Mbaabu M`Nyiri

APPENDIX B
QUESTIONNAIRE FOR TEACHERS

Introduction

Please respond to each question by ticking the appropriate response in the spaces provided. Your responses will be completely confidential and will be used by the researcher for the purpose of this study only. Therefore, do not write your name anywhere in this questionnaire. You're kindly requested to respond to all items applicable to you.

Section A: Background information

Please answer the following questions by either ticking (✓) or filling the spaces provided where applicable.

1. What is your gender?

Male []

Female []

2. What is your age bracket?

25 - 30 years []

31 - 40years []

41 and above []

3. What is your highest professional qualification?

Ph. D []

M. Ed []

B. Ed []

Dip

P1

4. What is your teaching experience?

a) As a classroom teacher: 1 – 5 years

6 - 10 years

11- 15 years

15 years and above

b) As head teacher: 1 – 5 years

6 - 10 years

11- 15 years

15 years and above

5. How many years have you been to the present station?

1 – 5 years

6 - 10 years

11- 15 years

15 years and above

6. How often do you experience water scarcity within the school vicinity?

Frequently

Occasionally

Seldom

Never

7. During what season do children mostly drop out of school?.....

8. a) Do you normally have children who leave school due to water scarcity?

Yes No

b) If the answer to 8 a is Yes, do they ever come back.....

c) If the answer to 8 b is Yes, how many days do they take before they resume classes?.....

d) Who between boys and girls are more affected if the answer to 8 a is Yes...

Section B: Effect of proximity of water sources on pupils' participation in primary schools

9. What is the most common source of water used by households in this area?

Dam Tap Well River Tank borehole

10. Please react to the statements on how access to water by households has affected pupils participation in your school by indicating whether you strongly agree (SA) Agree (A) Undecided (UN), Disagree (D) or strongly disagree (SD). Please tick (✓) against each statement your best opinion.

	SA 5	A 4	UN 3	D 2	SD 1
Scarcity of water has led to decreased enrollment of pupils in schools.					
Proximity to water sources has enabled regular school attendance					
Pupils living in areas proximal to water sources have					

better health and hygiene					
Proximity to water sources has enabled improved performance					
Schools near water sources have higher pupil retention, than those that are far.					
Schools near water sources have higher transition rates, than those that are far					

Section C: Effect of purchasing water on pupils’ participation in school

11. Do you think the income levels of household members have an influence on the family’s ability to buy water in times of drought? Yes No

12. Does the occupation of parents of the children in your school influence their participation in schools? Yes No . Explain how.....

13. Do parents in your school provide children with water to bring to school in times of drought? Yes No If yes, do they buy or what is the source of the water?

If no, give a reason?.....

Section D: Effect of Sanitary conditions on pupils’ participation in school

14. How would you describe the availability of water in your school?

Excellent Very good Good Fair Poor

15. How would you describe status of the toilets in your schools?

Excellent Very good Good Fair Poor

16. Are there water points for pupils to wash their hands after visiting the toilet?

Yes No

17. Do you have special sanitary facilities for girls and children with special needs in your school? Yes No . If yes how would you describe status of these facilities in meeting the children's needs? Excellent Very good Good

Fair Poor

Section E: Effect of water storage, on participation of pupils.

18. i) what forms of water storage facilities do you have in your school?

1.
2.
3.
4.

ii) is the storage adequate for all the pupils in the school? Yes No .

19. Who takes charge of the water storage facilities you have mentioned in 18 above?

Government Churches Individuals NGOs

20. Do you think that the water storage have positively enhanced pupils participation in your school? Yes No .

APPENDIX C

QUESTIONNAIRE FOR PUPILS'

Instructions to pupils

- a) Do not write your name in this questionnaire
- b) The information you will give will be treated confidentially.
- c) Indicate your choice by use of a tick [✓] where applicable.

Section A: Background information

Please answer the following questions by either ticking (✓) or filling the spaces provided where applicable.

1. School
2. Age
3. Class
4. Gender Male [] Female []
5. How close is the nearest water source from your home?
[] Less than 2 km [] Less than 5 km [] Above 5 km
6. Roughly, how long does it take you to reach the source of water you use at home?
[] Walk for 30 min [] Up to 1 hour [] Up to 2 hours [] More than 2 hours

Section B: Effect of proximity of water sources on pupils' participation in primary schools

9. What is the most common source of water used by households in this area?
Dam [] Tap [] Well [] River [] Tank [] borehole
10. Please react to the statements on how access to water by households has affected pupils participation in your school by indicating whether you strongly agree (SA) Agree (A) Undecided (UN), Disagree (D) or strongly disagree (SD). Please tick (✓) against each statement your best opinion.

	SA 5	A 4	UN 3	D 2	SD 1
Scarcity of water has led to decreased enrollment of pupils in schools.					
Proximity to water sources has enabled regular school attendance					
Pupils living in areas proximal to water sources have better health and hygiene					
Proximity to water sources has enabled improved performance					
Schools near water sources have higher pupil retention, than those that are far.					
Schools near water sources have higher transition rates, than those that are far					

Section C: Effect of purchasing water on pupils’ participation in school

11. Do you think the income levels of household members have an influence on the family’s ability to buy water in times of drought? Yes [] No []

12. Does the occupation of parents of the children in your school influence their participation in schools? Yes [] No []. Explain how.....

13. Do parents in your school provide children with water to bring to school in times of drought? Yes [] No [] If yes, do they buy or what is the source of the water?

If no, give a reason?.....

Section D: Effect of Sanitary conditions on pupils' participation in school

14. How would you describe the availability of water in your school?

Excellent Very good Good Fair Poor

15. How would you describe status of the toilets in your schools?

Excellent Very good Good Fair Poor

16. Are there water points for pupils to wash their hands after visiting the toilet?

Yes No

17. Do you have special sanitary facilities for girls and children with special needs in your school? Yes No . If yes how would you describe status of these facilities in meeting the children's needs? Excellent Very good Good

Fair Poor

Section E: Effect of water storage, on participation of pupils.

18. i) what forms of water storage facilities do you have in your school?

1.
2.
3.
4.

ii) is the storage adequate for all the pupils in the school? Yes No .

19. Who takes charge of the water storage facilities you have mentioned in 18 above?

Government Churches Individuals NGOs

20. Do you think that the water storage have positively enhanced pupils participation in your school? Yes [] No [].

APPENDIX D

INTERVIEW SCHEDULE FOR HEADTEACHERS

1. What is your gender?
2. What is your age bracket?
3. What is your highest professional qualification?
4. What is your teaching experience as head teacher?
5. How many years have you been to the present station?
6. How often do you experience water scarcity within the school vicinity?
7. During what season do children mostly drop out of school?
8. Do you normally have children who leave school due to water scarcity?
9. If the answer to 8 a is Yes, do they ever come back
10. If the answer to 8 b is Yes, how many days do they take before they resume classes?
11. Do you think the income levels of household members have an influence on the family's ability to buy water in times of drought?
12. Does the occupation of parents of the children in your school influence their participation in schools?
13. Do parents in your school provide children with water to bring to school in times of drought?
14. How would you describe the availability of water in your school?
15. How would you describe status of the toilets in your schools?
16. Are there water points for pupils to wash their hands after visiting the toilet?
17. Do you have special sanitary facilities for girls and children with special needs in your school?
18. is the storage adequate for all the pupils in the school?
19. Do you think that the water storage have positively enhanced pupils participation in your school?

APPENDIX E

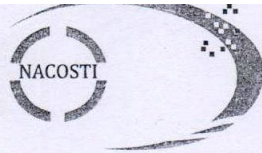
OBSERVATION SCHEDULE

Please tick on the presence, adequateness and the conditions of the following resources in the school

Resource	Availability	Adequateness	Condition
Plastic Water tanks			
Concrete tanks			
Water taps			
Boreholes			
Water pans			
Roof water harvesting			
Water pumps			
Water fetching by pupils			
Hand washing points			
Proximity to permanent water source			
Water trucking			
Toilets and latrines			

APPENDIX F

RESEARCH AUTHORIZATION



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,
2241349, 310571, 2219420
Fax: +254-20-318245, 318249
Email: secretary@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No.

Date:

22nd October, 2014

NACOSTI/P/14/2380/3551


Isaac Mbaabu M Nyiri
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on "*Effects of drought related factors on pupils participation in primary schools in Tharaka South Sub County, Tharaka Nithi County, Kenya,*" I am pleased to inform you that you have been authorized to undertake research in **Tharaka Nithi County** for a period ending **30th November, 2014**.

You are advised to report to **the County Commissioner and the County Director of Education, Tharaka Nithi County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.


DR. S. K. LANGAT, OGW
FOR: SECRETARY/CEO

Copy to:

The County Commissioner
The County Director of Education
Tharaka Nithi County.

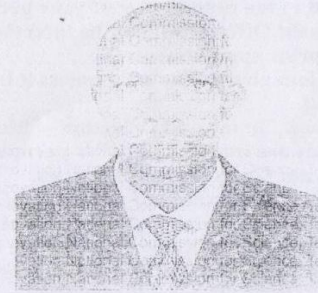
APPENDIX G

RESEARCH CLEARANCE PERMIT

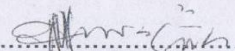
THIS IS TO CERTIFY THAT:
MR. ISAAC MBAABU M NYIRI
of UNIVERSITY OF NAIROBI, 232-60401
chogoria, has been permitted to conduct
research in *Tharaka-Nithi County*.

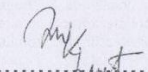
Permit No : NACOSTI/P/14/2380/3551
Date Of Issue : 22nd October, 2014
Fee Received : Ksh 1,000

on the topic: **EFFECTS OF DROUGHT
RELATED FACTORS ON PUPILS
PARTICIPATION IN PRIMARY SCHOOLS IN
THARAKA SOUTH SUB COUNTY,
THARAKA NITHI COUNTY, KENYA.**



for the period ending:
30th November, 2014


Applicant's
Signature


Secretary
National Commission for Science,
Technology & Innovation

CONDITIONS

1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit
2. Government Officers will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) hard copies and one(1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice.



REPUBLIC OF KENYA

NACOSTI

National Commission for Science,
Technology and Innovation

RESEARCH CLEARANCE
PERMIT

Serial No. A

2630

CONDITIONS: see back page