EFFECTS OF FLOOD DISASTER PREPAREDNESS ON LEARNING IN PUBLIC SECONDARY SCHOOLS IN BUNYALA DISTRICT, BUSIA COUNTY, KENYA

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DECLARATION

This research project is my original work and has not been presented for a degree in any other university.

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DEDICATION

I dedicate this project to my husband Joseph Kimei Nduulu and our children Kennedy Masila Kimei and Dennis Kiangi Kimei for their encouragement and support. I would also like to thank my brothers, sisters and parents for their prayers.

God bless you all.

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ABBREVIATIONS AND ACRONYMS

ADPC	Asian Disaster Preparedness Centre
ARC	Assessment Report Centre
DRR	Disaster Risk Reduction
GAR	Global Assessment Report
HIV/AIDS	Acquired Immunodeficiency Virus/Acquired Immune deficiency Syndrome
IFC	International Finance Corporation
MoE	Ministry of Education
NDMA	National Disaster Management Agency
UN-IDNDR	United Nations International Decade for Natural Disaster Reduction
UNDESD	United Nations Decade for sustainable Development
UNDP	United Nations Development Programme
UNDRO	United Nations Disaster Relief Organization
UNESCO	United Nations Education, Scientific and CulturalOrganization
UNICEF	United Nations International Children's EmergencyFund
UNISDR	United Nations International Strategy for Disaster Reduction

ABSTRACT

The purpose of this study was to determine the extent to which students, teachers and school principals are prepared to handle flood disasters in their institutions and specifically in Bunyala district in Kenya. The country experiences floods at the lower River Tana, the areas around the shores of Lake Victoria and the lower River Nzoia. The study concentrated mainly in Bunyala district in Busia County and particularly Budalangi division where schools in the south of the region are worst affected. The region is affected by both flash floods and river floods which are caused by heavy rainfall experienced in Cherengani hills and Mt Elgon.

The study found that when floods occur, classrooms, dormitories, toilets and playgrounds are severely flooded leading to closure of the schools. The consequence of this action leads to students missing school and therefore smooth learning is disrupted. In addition, text books, school documents, furniture and other equipment are destroyed making learning difficult for some while. The study also found out that local communities sometimes seek shelter in the schools which are situated in areas of high ground(thus not affected by floods) resulting to disrupting the schools' learning programmes. The impact of the floods also affect infrastructure since the roads become damaged or are impassable thus prohibiting movement of both students and teachers from accessing schools from their respective homesteads.

There is need to train teachers on flood disaster preparedness so that they can in turn teach the students and this will result to minimized destruction by floods. Disaster preparedness also needs to be integrated in the school curricula as this will enable students to become better equipped with the necessary knowledge to handle flood disaster. The study also found out that major challenges for example lack of capacity to limit the impact of the disaster and little emphasis in implementing flood drills in schools largely due to lack of resources have tended to affect the management of floods disaster in schools in Bunyala. It also emerged that poor early warning systems and inadequate flood disaster planning in Bunyala district continue to affect how flood disaster preparedness is attained.

This study targeted Principals, teachers and students in Public secondary school in Bunyala district. The study Sought to find out the preparedness of Principals and teachers towards floods, how the preparedness of students towards floods affects learning, the mitigation measures in place to respond to floods and challenges faced in disaster preparedness.A total of 7 secondary schools participated in the study. The samples that were studied were 7 Principals, 76 teachers, 328 students and 1 D.E.O. The methods used to collect the data were questionnaires, interview and focus group discussion. Analysis of data was done, using statistical package for social sciences (SPPS). Descriptive statistics such as frequencies and percentages were used to summarize the data.

Research findings revealed that 5 out of 7 schools were affected by floods directly when facilities are flooded or indirectly where schools' premises are used as shelter by the community when their homesteads are flooded. The findings also revealed that learning was

severely disrupted by such actions. The study has suggested the need to train principals, teachers and students on disaster preparedness and further recommended that KIE adopts disaster preparedness programmes in the school curriculum. The research also raises suggestions for further studies to cover the influence of early warning on disaster mitigation in public schools and disaster training of the school management in curbing disasters.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

According to United Nations International Strategy Disaster Reduction (UN ISDR), (2006-2007), when disasters strike, many people are affected but the most hit are children and especially those who attend school. In addition, infrastructure in schools is greatly destroyed or damaged therefore making it hard for learners to continue with their learning activities for a while. This is supported by the 2011 flood episode in Thailand which affected an estimated 3,214 learning institutions by causing a lot of damage to infrastructure (Thailand's worst flooding in decades impacts on education and culture heritage, 2011). Schools were closed and learners were forced to stay at home. In 2010, floods in Pakistan caused by the monsoon winds disrupted education services and severely damaged school infrastructure (Harris, 2010). This clearly shows the damage disasters can cause to education worldwide.

In recent years, Kenya has been exposed to both natural and man-made disasters which include floods, landslides, drought, fire, HIV/AIDS, terrorism, ethnic clashes and road accidents (United Nations International Strategy Disaster Reduction, 2006-2007). Both natural and man-made disasters cause a lot of suffering to those affected such as loss of life, disruption of economic activities and education programmes.

The highest frequency of the flood menace in Kenya occurs majorly in Bunyala Flood Plain and in particular Budalangi division. This division is known to bear the worst effect of flood menace in the country. Floods also affect other river basins surrounding the shores of Lake Victoria, Lower Tana River and along the coastal region.

According to Climate Change and Development in Bunyala Flood Plain-Budalangi, 2010, Bunyala Flood Plain is located in the Lake Victoria basin and is one of the highly densely populated regions in Kenya. Itlies near the mouth of river Nzoia as the river enters Lake Victoria. Nzoia River has a water catchment area of about 12,900 Km^2 and every time the river breaks its banks, it floods the Bunyala Flood Plain which is fairly flat. The region has an estimated population of 66,568 school children included according to the Bunyala District Short Rains Assessment report (2008). Schools are forced to be closed each time floods occur and therefore learning is adversely disrupted. These frequent floods pose serious consequences on education sector because schools get submerged temporarily, books and documents are destroyed and students and teachers are displaced while the schools are used as shelter by the displaced individuals.

The region suffers flash floods whereby they occur without warning and are largely due to dykes failure or effects of heavy rains in the highlands of

Cherangani hills, Kaptagat Hills and Mount Elgon which consequently cause the rivers to flood and result to the river banks breaking at low lands. It is also affected by river floods during heavy rains.

The Bunyala District Report (2008) revealed that severe floods have continued to be experienced in this district since 1937 and indeed 10,000 people including children were displaced in 2005 therefore causing destruction of infrastructure including learning institutions (Flood Mitigation Strategy Report, 2009). In December 2011, over 40,000 people school children included were displaced by floods (Ochieng', 2011).

Nicolai (2003) observed that learning institutions lack capacities to deal with floods and that disasters resulting from floods in schools can be prevented and its effects considerably reduced if schools take steps to reduce the risks. It is important that school communities understand how best to protect themselves and school property from these risks. The author further noted that it is less expensive to reduce disaster risks compared to the cost of loss of life and property. Lack of early warning mechanism and low capacity of teachers and education administrators in disaster preparedness and prevention have been identified as the factors making schools very vulnerable (Nicolai, 2003). There is constant lack of participation by the students, teachers and administrators in the designing of the emergency preparedness plan of their schools.UNESCO

(2010) states that though natural and man-made disasters may not be prevented, plans can be made to ensure preparedness. For disaster preparedness to be achieved in schools in Bunyala and other schools in Kenya, the Ministry of Education requires to promote capacity building of teachers and students and train teachers who will in turn prepare learners.

1.2 Statement of the Problem

Floods affect learning in schools by flooding classrooms, toilets and play grounds making it very difficult for learning to go one.There is therefore need for schools in Kenya and especially those in flood prone areas to be prepared for floods in order to reduce disaster risks associated with them. This way, students, teachers and principals will be able to protect themselves from floods. The Ministry of Education in Kenya encourages all public schools to take measures to ensure safety of learners when at school (Safety Standards For Schools in Kenya, (MoE), 2008). It expects schools to implement safety emergency and preparedness plans with an aim of preparing students, teachers and principal for disasters (MoE), (2008). However, there has been no training or capacity building the teachers and principals who are supposed to teach students on flood preparedness. In addition, the time table has no provision for the teaching of disaster risk reduction and therefore schools are not prepared for any disaster. This greatly affects learning every time there are floods.

Many schools in Bunyala district and other flood prone areas in Kenya are particularly unprepared for flood disasters. Many studies have been carried out on the impact of floods on education in Bunyala district and other regions that are affected by floods. However, little has been done on flood preparedness of students, teachers and principals in public Secondary Schools and more so in Bunyala district where floods are more frequent than any other area in the country and are almost anticipated in every rainy season. There is therefore a gap in disaster preparedness in secondary schools in Kenya.If students are well equipped with information and knowledge on flood disaster preparedness, they are able pass the same information to the community.

1.3 Purpose of the Study

The purpose of this study was to establish the effects of flood disaster preparedness on learningin public Secondary Schools in Bunyala district, Busia County.

1.4 Objectives of the Study

The objectives for the study were as stated below:-

i. To establish the preparedness of principals and teachers towards flood disasters in public Secondary schools in Bunyala district.
ii. To determine howdisaster preparedness of students towards floods affects learning in public Secondary Schools in Bunyaladistrict.

iii. To examine how the mitigation measures put in place to respond to flood disaster affects learning in public Secondary Schools in Bunyala district.

iv. To examine the challenges faced by principals, teachers and students in disaster preparedness in public Secondary schools in Bunyala district.

1.5 Research Questions

The questions for the study were as stated below:-

i. To what extent are principals and teachers prepared for floods in public Secondary Schools in Bunyala district?

ii. In what ways do students prepared for floods in public Secondary Schools in Bunyala district?

iii. What mitigation measures are in place to respond to floods disasters in public Secondary Schools in Bunyala district?

iv. What challenges face principals, teachers and students in disaster preparedness in public Secondary Schools in Bunyala district?

1.6 Significance of the Study

The findings of the study may provide important information to the Ministry of Education on the current situation of disaster preparedness in public Secondary Schools. It mayfurther provide relevant measures and knowledge which the Ministry of Education would base its decisions concerning preparedness in case of a disaster. The study may increase the understanding and awareness of risks related to floods among students, teachers and

principals andmay recommend further research on disaster risk reduction in schools. Itmayprovide vital information on flood preparedness to principals, teachers and students while providinginformation that maybe used to create awareness in schools.In case the Ministry of Education has had no earlier plans on training principals andteachers on flood preparedness and flood mitigation measures, it mayhave a chance to do so. The Ministry of Education mayalso be able to include disaster preparedness in the curriculum and the results of the study may be used to make recommendations on disaster preparedness for all schools which are found in flood prone zones in Kenya. The information from this study maylead to the Ministry of Education maximizing its preparedness messaging effectiveness.

1.7 Limitations of the Study

This research relied on the information provided by the respondent and therefore there may be no accurate answer.

During the study teachers and principals were un- cooperative and a few did not fill the questionnaire which lowered the response rate. In some schools exams were going on and some students were not able to participate in focus group discussion.

1.8 Delimitation of the Study

This study was carried out in Bunyala district only and concentrated on floods as the disaster that affects public secondary schools and not any other disaster. It focused on flood preparedness of students, teachers, and principalsin public

secondary schools only. The study concentrated on students, teachers, and principals and the District Education Officer as a target population while other stakeholders like parents and the community could have contributed useful information which this research did not factor.

1.9 Basic Assumptions of the Study

i. The research assumed that the respondents would give honest and correct information required.
ii. It assumed that students, teachers and principals in Bunyala district are prepared for floods.
iii. Thereare mitigationmeasures that have been put in place to reduce flood risks.
iv. The study also assumed that there are mechanisms to create awareness on floods in secondary schools.

1.10 Definition of Significant Terms

Disaster refers to a serious disruption of the functioning of a school by floods, causing widespread human, material, infrastructure and environmental losses which exceed the ability of the school community to cope using only its own resources.

Risk is the likelihood of floodsoccurring in schools.

Disaster Risk Reduction Is a systematic approach to identifying, assessing and reducing risks associated with floods in schools.

Disaster Preparedness refers to all activities and measures taken in advance to ensure effective response to the impact of floods, including the issuance of timely and effective early warning and the temporary removal of people and property from schools.

Mitigation refers to measures undertakento minimize the adverse impact of floods through educating teachers, administrators and students on flood reduction and establishing a student protection network ahead of the flood season.

Learningisthe set of planned activities in schools such as learning, teaching, and assessment and co-curricular.

1.11 Organization of the Study

This study is organized in five chapters. Chapter one is the introduction which cover background to the study, statement of the problem, purpose of the study, objectives of the study, limitations of the study, delimitations of the study, basic assumptions, and definition of significant terms. Chapter two covers the literature review, summary of the reviewed literature, theoretical framework and conceptual framework. Chapter three consists of research methodology, introduction, research designs, target population, sample size and sampling procedure, research instruments, instrument validity, instrument reliability, data collection procedures, and data analysis techniques. Chapter four consists of data analysis, presentation and discussion of research findings. Chapter

fivecovers summary of findings, conclusions and recommendation stemming from the research and suggestions for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter has been organized into eight sub-sections which include, Concept of Disaster Risk Reduction, Flood Disasters in the world, Flood Disasters in Kenya, Flood Disaster Preparedness, Mitigation of Flood Disasters, Challenges to Flood Disaster Preparedness in Schools, Summary of Literature Review, Theoretical framework and Conceptual Framework.

2.2 Concept of Disaster Risk Reduction

Disasters are the ultimate test of emergency response capability (Heide, 2000). The author further argues that the ability to effectively deal with disasters is becoming more relevant because of factors that tend to increase risk. Unfortunately, there are recurring difficulties with disasters response. Mutugi and Maingi (2011) have defined disaster as an event or series of events which give rise to casualties and/or damage or loss of property, infrastructure, essential services or means of livelihood on a scale which is beyond the normal capacity of the affected community to cope with unaided. This event disrupts the normal pattern of life and extraordinary emergency interventions are required to save and preserve human lives and/or the environment. Natural disasters damage infrastructure where schools are beyond repair and there is major loss of lives.

Under the theme “Disaster Risk Reduction Begins at School”, the UN ISDR (2008) report has set goals of school disaster prevention which include: to save lives and prevent injuries; to prevent interruption of education due to recurring natural hazards, and to develop a resilient citizenry able to reduce impacts of recurring hazards. The objectives are to create and maintain safe learning environments, teach and learn disaster prevention, and build a culture of safety around school communities. With also the theme of “Building a Culture of Prevention”, the UNISDR (2007) stated that disaster risk reduction is everyone’s business, and to be a reality and part of everyone’s daily life a culture of disaster safety should prevail within the society and this can best be attained through school.

The Hyogo Framework for Action 2005-2015 under the theme, “Use knowledge, innovation and education to build a culture of safety and resilience at all levels” states that disasters can be substantially reduced if people are well informed and motivated towards a culture of disaster prevention and resilience. The 2006-2007 World Campaign on Disaster Reduction entitled “Disaster Risk Reduction Begins at School” stated that various initiatives have been taken worldwide to make school buildings safer, and have disaster risk reduction taught in schools (ISDR, 2006- 2007).

According to UNESCO (2007), floods regularly prevent millions of children from attending school. Known and expected disasters such as floods can be

mitigated by the application of knowledge and education. Prior planning and preparedness can prevent these events from becoming disasters.

2.3 Flood Disasters in the World

According to Wisner & Adams (2003), flood disasters are more predictable compared to earthquakes. The authors further noted that floods are generally characterized as relatively slow-onset. Countries such as Pakistan, Thailand, Bangladesh, Myanmar, Haiti, Mozambique and Namibia are prone to flood disasters.

According to Flood Damaged Schools Lead to EducationWorries (2010), floods caused serious damage to schools in Muzaffargarh District in the province of Pujab in Pakistan. During the floods, 1.6 million children were affected as schools were damaged or the same were used as shelters. Some 7,820 schools were partially or fully damaged by floods leaving children not being able to go to school.In year 2007, the country of Bangladesh had over 4,600 primary schools being closed while others were used as shelters by affected families (www.irinnews.org/2007). This resulted to school attendance dropping by 20%. According to Emergency Appeal Hurricane Sandy (2012), hurricane sandy passed to the west of Haiti in October 2012 causing heavy rains and flooding. Hundreds of public buildings and facilities including schools were destroyed. More than 100 schools were closed down due to damage and over 50 were completely destroyed. Flooding damaged teaching

and learning materials of more than 500 schools throughout the country.Disaster Risk Reduction through Schools (2010) reported that the country of Myanmar experienced cycloneNargis in 2010 and it impacted heavily on the lives of children while education was interrupted and delayed. More than 4,000 schools were badly damaged with toilets, books, equipment and furniture getting destroyed.

In Africa, countries such as Mozambique, Namibia and South Africa are frequently hit by floods. According to http:/planinternational.org/about-plan/resource of February 2013, floods affected Mozambique and it extensively destroyed books and desks in the schools. According to Floods, Drought Impact Negatively on Children (2001), floods impacted negatively on education in Mozambique in 2000 & 2001 and children's education was disrupted in flood stricken areas with schools and educational institutions becoming severely damaged. The quality and continuity of education became disrupted as a consequence.In Namibia, KavangoandCaprivi regions schools were seriously hit by floods leading to students being out of school for several months while books and furniture were destroyed(Shejavali (2009).

2.4 Flood Disasters in Kenya

Among the natural disasters that have plagued the country is flooding.(Mutugi&Maingi, 2010).There are certain geographical areas in Kenya that experience seasonal flooding for example Budalangi division of

Bunyala District where river Nzoia and Yala destroy dykes resulting in flooding leading to loss of lives and interruption of learning programmes (Mutugi&Maingi, 2010). Abuodha&Omenge (2004) noted that floods occasionally cause disasters in Kenya at the areas highly susceptible being Budalangiand the lower parts of the Tana River.

The rainfall pattern in Budalangidivision,Bunyala district is mainly bi-modal and the major season occurs in March to May while the short rains occur in October to December. For the purpose of this research, the author concentrated on Budalangi area. Massive water inflows emanating from the bursting of River Nzoia banks is the main cause of the Budalangi floods (Abuodha&Omenge, 2004). The river originates from the high ground areas of Mt Elgon, Kaptagat and Cherangani Hills and drain into Lake Victoria. Mt Elgon and Cherangani Hills are known to have high rainfall amounts almost throughout the year. According to Kibiiy, Kivuva, Karongo, Muturi, Dulo, Roudldy, Kimaro&Magezi-Akii(2010), Nzoia basin is characterized by three physiographic regions namely the highlands, the upper plateau and the lower middle with very high rainfall belt from Mumias through Kakamega to Kaimosi and lowlands including Busia which experiences the majority of the flooding that occurs in the basin. They also observed that the area has more human settlements in the Flood plain and increased human activity. Therefore as the river flows towards its outfall into the lake, it meanders through a wide flood plain and the Yala swamp while its channel width increases and the

heights of the banks reduces considerably thus causing spilling of floodwaters over the banks and consequent flooding of large areas on either side (Kibiiy et al, 2010).It is therefore predictable that flooding in Budalangi will happen during rainy seasons and yet preparedness that would prevent interruption of learning programmes is apparently lacking.

2.5 Flood Disaster Preparedness and its Effects on Learning

Disaster preparedness refers to activities and measures taken in advance to ensure effective response to the impact of disasters, including the issuance of timely and effective early warning and temporary removal of people and property from a threatened location (ISDR, 2002).Preparedness efforts aim at ensuring that the resources necessary for responding effectively in the event of a disaster are in place and that those faced with having to respond know how to use those resources. The activities that are commonly associated with disaster preparedness include developing processes to ensure readiness, formulating disaster plans and developing skills and competencies to ensure effective performance of disaster related tasks.

According to UN ISDR (2006-2007), when a natural hazard strikes, children are among the most vulnerable population group, especially those attending school in times of disaster. Furthermore during disasters, school buildings are destroyed, taking away the precious lives of children and teachers and stalling access to education in the aftermath of disaster. This is supported by the

Pakistan floods in 2010 which disrupted education services and severely damaged school infrastructure (Harris 2010). According to Thailand's worst flooding in decades impacts on education and culture heritage (2011), floods affected an estimated 3,214 learning institutions by causing a lot of damage to infrastructure. Schools were closed and learners were forced to stay at home hence interrupting learning. Therefore children need to be protected before disaster strikes. Protecting children during natural hazards requires two distinct yet inseparable priorities for action: disaster risk education and school safety as reported by ISDR (2006).

Natural and man-made disasters cannot be prevented, but at least communities can plan for them through disaster management involving preparedness and mitigation measures as indicated by UNESCO (2010).Hassanain (2006) maintains that school occupants, mostly untrained children on evacuation drills, are at a risk of incurring high rate of fatalities and/or injuries in the case of floods mainly because they may be less able to take the quick action necessary.

According to Hassanain (2006), floods disrupt the daily life of teachers and students and lifemight not return to normal quickly. Classrooms and playgrounds are flooded hence disrupting the daily routine of learning and coverage of the syllabus is affected. Students are unable to play and have games. Furthermore, families affected by floods may take shelter in schools

not affected by floods hence disrupting learning in these schools. When education is interrupted or limited, students may drop out or the rate of absenteeism may rise (IFC, 2009). These known and expected hazards can be mitigated with the determined application of knowledge, education and ingenuity (IFC, 2009).

Asian Disaster Preparedness Center, (ADPC) (2008), cited in UNISDR (2008), reported the destructive nature of disasters to schools in Cambodia as follows. Seventy-eight per cent of school principals in disaster-prone areas reported that their schools are affected by flooding for more than 3 months every year. Sixty percent of these schools were subject to closure for up to 2.5 months but only 10 % had an alternative location for school arranged. Flooded and damagedroadsmake schools inaccessible resulting to high absenteeism rates for both teachers and students. Principals estimate that half of students drop out due to financial problems and other difficulties caused by floods. During heavy floods, students and teachers may be washed away leading to loss of life while others are displaced as families migrate to higher grounds. In addition, there is loss of furniture, textbooks, and damage to equipment. When floods occur during examinations time, the activity is disrupted and students may end up missing the exams. Therefore preparing for the possible occurrence of floods and it effects is important.

According to Disaster Planning for school, during preparedness stage, schools need to clearly state the roles different teachers and students will play during emergency. According to School with Disaster Preparedness (2011), there are several things schools can do in preparedness. These include developing a disaster preparedness and emergency plan; conducting periodic drills; training teachers on how floods affect learning programmes and how to evacuate students; holding frequent workshops for teachers on preparedness and teaching students and teachers on first aid among others.For disaster preparedness to be achieved in schools, Disaster Management Act (Kenya) requires National Disaster Management Agency (NDMA) to promote disaster management capacity building, training and education throughout the country, including schools.

According to the National Disaster Management Framework of 2005, Disaster risk reduction education must be integrated in primary and secondary school curricula. With the theme “Let our children teach us”, the UNISDR (2007) argued that children taught about disasters, can pass on to their parents what they have learnt about hazards and risk reduction.

The repetitive damage caused by the natural flood disaster in Budalangisuggest that students, teachers and administrators are not adequately prepared for disaster prevention, control and mitigation (Mutugi, 2009). It is likely that programmes on DRR have not been developed and adequately

implemented at school level or there is disconnect between the National Disaster and Management Agency and curriculum development from the Ministry of Education.

2.6 Mitigation of Flood Disasters and its Effects on Learning

According to international Finance Corporation, disasters can be mitigated with the determined application of knowledge, education and ingenuity. This is by enabling people to have the knowledge of the floods, how often the floods occur, and the actions they need to take when the floods occur.In addition, there should be education programmes to ensure that teachers and students understand flood risks and flood warning systems in order to reduce the impact of floods. UN ISDR (2006) defines flood mitigation as the measures undertaken to minimize the adverse impacts of floods. The main goal of mitigation and prevention of floods is to minimize the effects they have on people and property.

MacMillan (1998) and Knight (2012) described mitigation as measures people in flood prone areas can take before, during and after floods.Before floods the authors wrote, there is need for people to learn warning signs given by the meteorological department. Planning and practicing evacuation routes, determining grounds that are safe from floods, developing an emergency communication plan in case of separation, and building schools in raised grounds among others. The authors further described measures people can

take during floods which include listening to the radio for latest emergency alerts, evacuating as fast as they are told to, climbing to high ground and remaining there and avoid walking through flood waters.

2.7 Challenges to Flood Disaster Preparedness in Schools

According to the World Bank Development Report, while no country in the world is entirely safe, lack of capacity to limit the impact of disasters remains a major burden for developing countries (World Bank, 2004). The devastation caused by the floods is a reflection of the lack of disaster preparedness nationwide. Most of the risk to the population is associated with the incapacity of governments to ensure provision for infrastructure.

According to Torrey (1998) many countries are unprepared for disasters due to lack of applied research for instance on the cyclic nature of floods. According to Draft National Policy for Disaster Management in Kenya (2009), there is little emphasis in implementing flood drills in schools largely due to lack of resources and training for teachers on what to do when disasters strike. The report further states that there is lack of teacher training on disaster risk preparedness hence teachers are not in a position to teach it. In addition, there is inadequate research in Disaster Risk Reduction (DRR) due to lack of funds hence the country has limited information on certain areas such as floods. Furthermore, parents tend to put more emphasis on academic learning rather than disaster drills.In addition, time pressure in school curriculum is a major

challenge. The syllabus is too wide and it becomes hard to spare time to teach DRR which has not been included in the syllabus. It is also difficult to sensitize people on DRR as it is perceived as a less of a priority as opposed to pressing issues of poverty, health and education. Other challenges facing schools in dealing with disasters include poor early warning systems to schools about impending floods as well as poorly built schools which are not flood disaster proof. There is also lack of participation by teachers in flood planning measures and lack of capacity building on flood disaster preparedness, mitigation and response.

2.8 Summary of literature review

Priority 3 of the Hyogo Framework for Action 2005-2015 states that through the use of knowledge, innovation and education, disaster can be reduced. UNESCO (2007) supports the fact that disasters such as floods can be mitigated by the application of knowledge and education. The World Campaign on Disaster Reduction (2006- 2007) states that DRR should be taught in schools.

On the other hand School with Disaster Preparedness (2011) holds a different view in the approach towards disaster preparedness in schools.It states that preparedness should include developing emergency plans, conducting periodic drills, training teachers and holding workshops. It is clear that there is

inconsistency in the way disaster preparedness should be done and therefore there is a gap hence the need to carry out this study.

2.9 Theoretical framework

The personal behavior change model for disaster preparedness is based on the social science theory. The theory describes the factors that influence whether or not a person engages in disaster preparedness activities. Federal Emergency Management Agency (FEMA) (2006) states that, to achieve disaster preparedness in a community, educators must gain understanding of barriers to personal preparedness. This model gives five stages towards personal change. Pre-contemplation stage is where the individual is not intending to change in the near future. The second stage is contemplation where the individual is not prepared to take action at present but intends to do so in the near future. The third stage is preparation stage where the individual is considering changing his/her behavior. The fourth stage is the action stage where the individual has made a behavior change in the recent past but the changes are not well established. Maintenance is the final stage in which the individual has engaged his/her behavior and is working to sustain the change.

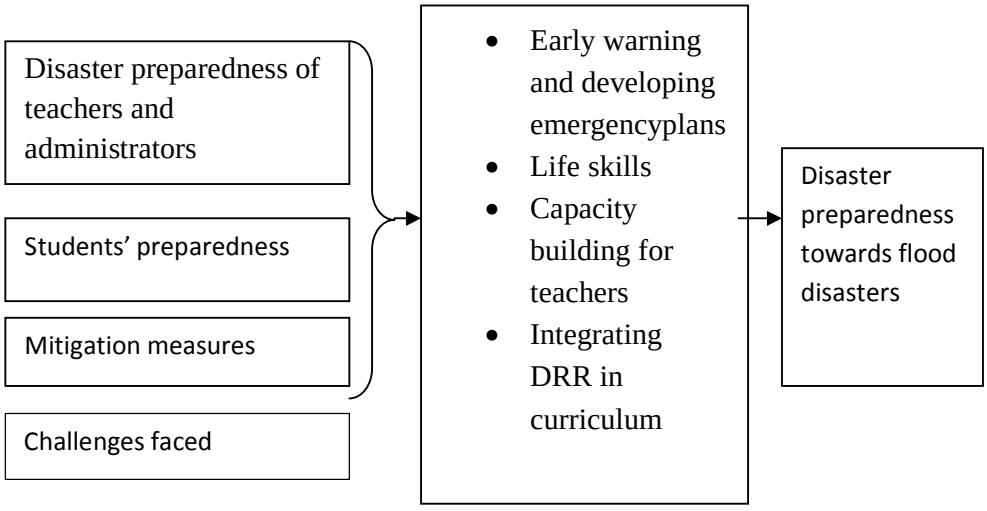
In order for behavior change towards disaster preparedness to occur, individuals need to change in knowledge, attitudes and skills. The outcome of the above measures will be behavior change. Individuals will be knowledgeable of disaster risks and the impact it may have on them. They will

have knowledge of the recommended preparedness measures. In terms of attitudes, individuals are personally concerned about disaster risks and feel the urgency to take preparedness measures. On skill change, individuals are able to assess their personal skills and are able to carry out effective preparedness actions.

Personal Behaviour Change Model was chosen because it addresses the several stages through which individuals change their behaviour towards disaster preparedness. The theory applies to the study because once an individual attains the maintenance stage they gain knowledge, attitudes and skills on disaster preparedness which is the ultimate goal.

2.10 Conceptual Framework

Figure 2.1 Conceptual Framework: Flood Disaster Preparedness of Students, Teachers and Administrators.



The above diagram shows the activities that are put in place to prepare students, teachers and administrators. When teachers and administrators are trained in flood disaster preparedness, they are able to teach the students unlike where the teachers are not trained and so the students are unprepared and there may be casualties when floods occur. Where students are exposed to evacuation drills and are taught life skills, there would befewer casualties during flood disasters as compared to where there are no evacuation drills and life skills for students since students are able to respond to the disaster immediately.Schools that have disaster preparedness plans are ready for flood disasters.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the explanation of research methodology applied in undertaking this study. The section is organized in the following sub-headings; Research design; Target Population; Sample and Sampling Procedure; Research Instruments; Instrument Validity; Instrument Reliability; Data Collection Procedure and Data Analysis Techniques.

3.2 Research Design

The researcher useddescriptive survey design to find out the extent to which schools are prepared towards flood disaster and mitigating measures taken to reduce floods. The study sought to determine and describe the level of flood preparedness in public secondary schools in Bunyala district. Both qualitative and quantitative methods were used.

3.3 Target Population

According to Mugenda&Mugenda (1999), target population is that population to which a researcher wants to generalize the results of the study. Bunyala district has one division, Budalangi where the target population was drawn from. The target population of this study consisted of secondary school administrators, teachers and students in flood prone areas of Budalangi division in Bunyala district. Records from the Ministry of Education indicated that there were seven public Secondary Schools in Budalangi division,

Bunyala district. All the schools were studied. Seven principals, 94 teachers, 2,237 students and one District Education Officer were involved in the study.

3.4 Sample and Sampling Procedure

The current study coveredBunyala District in Busia County and the population defined for this research was limited to teachers, students and school principals. Since the number of secondary schools in the division is seven, all of them werestudied. Purposive sampling was be used for all the principalshence all were included in the study. The selection of the sample size for the students and teachers was guided by Fisher, Laing, Stoeckel& Townsend (1998).

$$n = \frac{Z^2pqD}{d^2}$$

Where n= is the desired sample size of teachers and students (population is > 10,000).

Z=standard deviation usually 1.96 which corresponds to 95% confidence level.

P= the proportion in the target population estimated to have a particular characteristic=0.5

q= 1-p (1-0.5)=0.5, d=0.05 which is the degree of accuracy, D=1, the design effect

$$n=(1.96^2)(0.5)\frac{(0.5)}{0.05^2}$$

n=384

This formula has been modified for a population of less than 10,000

So, nf = $\frac{n}{1+n/N}$

Where nf=desired sample size if the population is less than 10,000 people (n<10,000).

n= Sample population

N= Study population (total number of students/ teachers)

nf= $\frac{384}{1+ 384/ 2237}$ Thisgave a sample of 328 students.

nf= $\frac{384}{1+ 384/ 94}$ Thisgave a sample of 76 teachers

Using stratified proportionate sampling the sample size for teachers and students from each school is as shown in Table 3.1

Table 3.1: Target Population and Sample Size

Secondary Schools	No. of boys	Sample size	No. of Girls	Sample size	No. of female teachers	Sample size	No. of male teachers	Sample size
John Osogo	327	48	0	0	1	1	15	12
Budalangi	605	88	0	0	6	5	15	12
St Cecilia	0	0	280	41	8	6	9	8
Makunda	343	50	149	22	0	0	16	13
Musoma	83	16	41	8	0	0	8	2
St Anne	0	0	244	36	3	3	6	5
Mundere	0	0	165	24	3	3	4	3
Total	1358	202	879	131	21	18	73	55

The students were selected from form 1, 2, 3 and 4 classes from each secondary school using random sampling technique. A selected sample in

each of the selected secondary schools were provided with the structured questionnaires. Also the researcher applied focus group discussion at each school where unstructured open ended questionnaires were administered.

3.5 The Research Instruments

Structured closed ended and unstructured open ended questionnaires, in-depth interviews, focus group discussion and direct observation were the instruments to be applied to collect the data. The principals' questionnaire had 4 parts. These are Part A demographic Data; Part BFlood disaster preparedness of administrators; Part C flood preparedness of students; Part D challenges.Teacher's questionnaire has 3 parts which included: - Part A demographic data; Part B Flood disaster preparedness of teachers; Part C challenges. Students questionnaire has 3 parts which include: - Part A Demographic Data; Part B Flood disaster education; Part C Student flood disaster preparedness.

Information on the extent of disaster preparedness was obtained through a questionnaire administered to the principals, teachers and students. Data related to mitigating measures in place, challenges and ways of disseminating information were collected through interviewing the District Education Officer. Data related to creating awareness were collected through focus group discussion consisting of students randomly selected from form 1, 2, 3, and 4.

3.6 Instrument Validity

Validity is the degree to which a test measures what it purports to measure. This is the degree to which the findings of the data actually represent the problem under study. Content validity was used. To ensure validity of the instruments is achieved, the researcher ensured that all the questions in the questionnaire are based on the research objectives and questions. In addition, the researcher ensured that questions asked are clear and easy to respond to and that none is ambiguous.

3.7 Instrument Reliability

Reliability is a measure of degree to which a particular measuring procedure provides consistent results or data after a repeated trial. It is the level of consistency with which an instrument achieves the same results upon successive trials over a period of time. This type of reliability assumes that there was no change in the construct being measured.In order to test the reliability of the questionnaire for this study, test re-test technique was used. Questionnaires were given to the respondents and two weeks later the same respondents were given the same questionnaire again. Pearson Product moment correlation coefficient was used to determine the reliability of the questionnaire and the results obtained indicated a positive correlation of 0.81 using the following formulae:

$$r = \frac{\sum(X - \bar{X})(Y - \bar{Y})}{\sqrt{\sum(X - \bar{X})^2(Y - \bar{Y})^2}}$$

Where X are the values of the test while Yarethe values of the re-test.

3.8 Data collection procedure

A permit was obtained from National Council for Science and Technology.Authority to conduct the study was obtained from Bunyala District Education Office.Pre-visit to the schools under study was made in order tobook appointments with the school administrators for the administration of questionnaires. During the same time appointment with the District Education Office for interview were arranged. A time limit of one week was given to those filling the questionnaire after which they were collected for data analysis.

3.9 Data Analysis Techniques

The raw data was systematically organized, coded, tabulated and analyzed both quantitatively and qualitatively. Data was cross-examined to ascertain their accuracy, competences and identify those items wrongly responded to, spelling mistakes and blank spaces. Quantitative data was then entered into the computer for analysis using the Statistical Package for Social Sciences (SPSS) version 12.0. This generated the frequencies and percentages which was used to discuss the findings. Frequency distribution tables were used to present the data while descriptive statistics such as percentages and frequencies were used to present the qualitative data (research questions). Qualitative data was analyzed thematically according to the themes in the research objectives.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents data analysis, presentation and interpretation of findings. The data presented in this chapter were processed using Statistical Package for Social Sciences (SPSS). All themes discussing the same research questions were presented and analysed together. The items focussing on a particular theme were presented together.

4.2 Response rate

Questionnaire return is the proportion of the questionnaires returned after they have been issued to the respondents. Out of the 7 principals, 76 teachers, 328 students and 1 DEO sampled during the study, the DEO, 7 principals, 61 teachers and 307 students filled and returned the questionnaires. The return rates were above 80% and hence were deemed adequate for data analysis. Questionnaire return rate in presented in Table 4.0

Table 4.0 Questionnaire Return Rate

	sample	Rate of Return	Percentage
Principal	7	7	100%
Teachers	76	61	80.2%
Student	328	307	93.6%

4.3 Demographic Data of the Respondents

This section presents the demographic data respondents that were sampled. The section presents the demographic data of the principals, teachers and students.

4.3.1 Demographic Data of the Principals

The demographic data of the principal was based on their gender and the duration they had been in the current school. To establish the gender of the principals, they were asked to indicate their gender.

Table 4.1 Gender of the Principals

Gender	**F**	**%**
Male	4	57.1
Female	3	42.9
Total	**7**	**100.0**

Data shows that majority (57.1%) of the principals were male while (42.9%) of principals were female. The data implies that there were relatively more

male principals than female. The researcher also sought to establish the duration that the principals had been in the current school. The data is presented in Table 4.2.

Table 4.2 Distribution of Principals According to years they had been in the current School

Years	**F**	**%**
Below 1 year	1	14.3
2 - 5 years	2	28.6
6 - 10 years	3	42.9
11 - 15 years	1	14.3
Total	**7**	**100.0**

Data shows that 28.6% of principals had been in the current school for between 2 and 5 years while 42.9% of principal for between 6 and 10 years. The data implies that principals had been in the current station for a relatively long duration hence they were able to provide information on the effects of flood disaster preparedness on learning.

4.3.2 Demographic Data of the Teachers

The demographic data of the teachers was based on their gender and the duration they had been in the current school. To establish the gender of the teacher, they were asked to indicate their gender. The data is presented in Table 4.3.

Table 4.3 Distribution of Teachers According to Gender

Gender	F	%
Male	46	75.4
Female	15	24.6
Total	**61**	**100.0**

Data shows that majority (75.4%) of teachers were male while 24.6% of teachers were female. The data concurs with the data on the principals that there were generally more male teachers than female teachers in the district. Asked to indicate the number of years that they had been in the current station, the teachers responded as presented in Table 4.4.

Table 4.4 Distribution of Teachers According to years they had been in the current School

Years	F	%
Below 1 year	26	42.6
2 -5 years	22	36.1
6 - 10 years	5	8.2
11 - 15 years	8	13.1
Total	**61**	**100.0**

Data shows that 42.6% of teachers had been in the current school for less than one year, 36.1%for between 2 and 5 years, 8.2% for between 6 and 10 years while 13.1% for between 11 and 15 years. Data shows that teachers in the

sampled schools had been in the schools for over two years which is adequate duration for them to provide information on the effects of flood disaster preparedness on learning.

4.3.3 Demographic Data of the Students

The demographic data of the students was based on their gender, age and the class. To establish the gender of the students, they were asked to indicate their gender. The data is represented in Table 4.5

Table 4.5 Gender of the Students

Gender	**F**	**%**
Male	161	52.4
Female	146	47.6
Total	**307**	**100.0**

Majority (52.4%) of students were male while 47.6% of students were female. The data shows that there were relatively equal numbers of male and female students. Table 4.6 presents the distribution of students according to their classes.

Table 4.6 Distribution of Students According to Class

Class	F	%
Form 1	62	20.2
Form 2	76	24.8
Form 3	141	45.9
Form 4	28	9.1
Total	**307**	**100.0**

Data shows that 20.2% of students were from form one, 24.8%from form two, 45.9%from form three while 9.1% of students were from four. The data shows that most of the students were in form three. These students have been in the school for about two and a half years and hence are able to provide information on the effects of flood disaster preparedness on learning. The students were also asked to indicate their age. The data is presented in Table 4.7

Table 4.7 Distribution of Students by Age

Age	F	%
12-14 years	27	8.8
15-17 years	152	49.5
18 years & above	128	41.7
Total	**307**	**100.0**

Data shows that 8.8% of students were aged between 12 and 14 years, 49.5% between 15 and 17 years while 41.7% were above 18 years of age. The data implies that these students are relatively mature to understand the effects of flood disaster preparedness on learning.

4.4 Findings of Flood Preparedness of Principals and Teachers

To establish the extent that the principals and teachers were prepared for floods in public Secondary Schools, the respondents were asked to respond to items that sought to investigate the same. Data is presented in the following section.

The study sought to establish whether the DEO had ever attended a training or workshop on flood disaster preparedness. Findings indicated that the DEO in the area of the study had attended training 3 months prior to the study and trained on how to deal with floods. Asked whether there were emergency drills conducted in schools in this district, the DEO said that there were no emergency drills.

The study sought to establish whether there were disasters that frequently affected the school. The principals responded as Table 4.8

Table 4.8 Principals' Response on Disasters that frequently affect Schools

Frequency of Disasters	**F**	**%**
Schools affected	5	71.4
Not affected	2	28.6
Total	**7**	**100.0**

Data revealed that majority (71.4%) of principals indicated that there were disasters that frequently affected their school.

The teachers were also asked to indicate whether there were disasters that frequently affected their schools. The data is presented in Table 4.9.

Table 4.9 Teachers' Response on Disasters that frequently affect Schools

Frequency of Disasters	**F**	**%**
Schools affected	37	60.7
Not affected	24	39.3
Total	**61**	**100.0**

Data revealed that majority (60.7%) of teachers indicated that there were disasters that frequently affected the school. The data concurs with the principals' responses that there were disasters that affected schools hence the need to train teachers on disaster preparedness. The findings on whether there are disasters that frequently affect schools in the region are similar to the study

carried out by United Nations International Strategy Disaster Reduction (2006-2007) in Kenya which indicated that the country is affected by various disasters.

The principals were asked to indicate the types of disasters they their schools experienced. They responded as presented in Table 4.10

Table 4.10 Principals' Response on Disasters that frequently Affected Schools

Disasters	**F**	**%**
Floods	4	57.1
Water borne diseases and floods	1	14.3
No Response	2	28.6
Total	**7**	**100.0**

Majority (57.1%) of principal indicated that floods were the disaster that frequently affected their school while 14.3% of principals indicated water borne diseases and floods. The data show that schools in the area were affected by floods hence the need for disaster preparedness. The same question was posed to the teachers to which they responded as indicated in Table 4.11

Table 4.11 Teachers' Response on the Disasters Affecting Schools

Disaster	**F**	**%**
Floods	26	42.6
Water borne diseases	2	3.3
Mosquitoes infestation	4	6.6
Drought	4	6.6
Fire	1	1.6
No Response	24	39.3
Total	**61**	**100.0**

Data shows that 42.6% of teachers indicated that floodsfrequently affected school, 3.3% of teachers indicated that schools were affected by water borne diseases, (6.6%) of teachers said that the area is affected by drought, the same number of teachers said that schools were affected by mosquito while 1.6% of teachers indicated that schools were affected by fire. The data shows that there were various types of disaster but floods were the major disaster.

When the DEO was asked to indicate the types of disasters that occurred in Budalangi division, he said that it was floods. This agreed with majority 571.4%) of principals and majority (55.7%) of teachers as they also indicated that floods were among the disasters in their schools. These findings are similar to the study carried out by Mutugi&Maingi,(2010) which indicated

that floods affected Bunyala district. These findings also concur with the study carried out by Abuodha&Omenge, (2004) which showed that Budalangi is one of the most susceptible areas to floods.

Asked whether he was aware of the floods, the DEO indicated that he was aware. Asked to indicate the cause of floods, the principals responded as indicated in Table 4.12

Table 4.12 Principals' Response on the Causes of Floods

Cause of floods	**F**	**%**
Heavy rains and weak or low dykes	2	28.6
Silting of river channel and high rainfall	1	14.3
Water catchment areas	1	14.3
Heavy rainfall around Mr. Elgon and weak dykes that cannot hold water	1	14.3
Unpredictable high rains and poor forest cover	1	14.3
No response	1	14.3
Total	**7**	**100.0**

Table 4.12 shows that 28.6% of principals indicated that heavy rains and weak or low dykes were the cause of floods, 14.3% of principals indicated silting of river channel and high rainfall around Mr. Elgon and weak dykes that cannot

hold water while the same number of principals indicated that unpredictable high rains and poor forest cover were the causes of floods in the schools.

When teachers were asked to indicate the causes of floods in their schools, they said that it was due to their schools being located in the flood plain of River Nzoia; breakage of dykes and siltation of river channel, excess rainfall in Cherangani hills, River Nzoia bursting its banks because of heavy rainfall, erosionof soils into rivers leading to siltation of river valley hence raising the water level, schools being located in a lowland and lack of proper measures on mitigation. These finding are similar to the study carried out by Abuodha&Omenge (2004) which indicated that the main cause of flooding was massive water inflows emanating from the bursting of River Nzoia. The findings also concur with the same authors study that heavy rainfall from Cherengani hills and Mt. Elgon cause flooding in Budalangi.

The researcher further sought from the principals whether their schools had ever been affected by floods. The data is presented in Table 4.13

Table 4.13 Principals' Response on Whether Schools haveever been affected by Floods

Schools affected	**F**	**%**
Affected	5	71.4
Not affected	2	28.6
Total	**7**	**100.0**

Data revealed that majority (71.4%) of principals indicated that their school has ever been affected by floods.

When teachers were asked to indicate the same, majority (54.1%) of teacher also indicated that their schools had been affected by floods. The results are similar to the study carried out by Climate Change and Development in Bunyala Flood Plain (2010) which showed that schools in Budalangi are affected by floods. These findings concur with the study that was carried out in Haiti by Emergency Appeal Hurricane Sandy (2012) which indicated that floods affected over 100 schools. The same findings also concur with a study carried out in Namibia by Shejavali (2009)which indicated that schools were seriously affected by floods.

The principals were asked the frequency at which floods affected their schools. The data is presented in Table 4.14

Table 4.14 Principals' Response on the Frequency at which Floods affect their Schools

Frequency	**F**	**%**
Annually	5	71.4
Periodically	1	14.3
No response	1	14.3
Total	**7**	**100.0**

Majority (71.4%) of principals indicated that floods affected their school annually while 14.3% of principals indicated that it affected the schools periodically. The data shows that schools were frequently affected by floods. Posed with the same question, the teachers responded as indicate in Table 4.15

Table 4.15 Teachers' Responses on the Frequency at which floods affect their Schools

Frequency	**F**	**%**
Annually	20	32.8
Once in 2 years	13	21.3
Twice a year	4	6.6
occasionally	2	3.3
No response	22	36.1
Total	**61**	**100.0**

Data shows that 32.8% of teachers indicated that floods affected their schools annually, 21.3% indicated once in 2 years, 6.6%twice a year while 3.3% of teachers indicated that it affected their schools occasionally. The data concurs with that of the principals that schools were frequently affected by floods. The results are similar to the study carried out by Kibiiy et al (2010)which indicated that flooding in Budalangi occur during the rainy season.

Asked to indicate the last time that floods affected their school, the respondents further indicated that their schools were affected by flood in year 2013, December 2011, year 2011, 2007 and 2008.

The principals were asked to indicate the measures taken by schools before floods occurred. The data is presented in table 4.16

Table 4.16 Principals' Response on the Measures taken by Schools before Floods Occur

Measures	**Yes**		**No**	
	F	**%**	**F**	**%**
Early warning	6	85.7	1	14.3
Temporary removal of students	2	28.6	5	71.4
Temporary removal of property	2	28.6	5	71.4

Majority (85.7%) of principals indicated that there was warning before floods occurred in their school while 71.4% of principal indicated that there was neither temporary removal of students nor temporary removal of property. The data shows that schools did not remove students and property which implied that there is no preparedness towards floods in most schools hence learning was affected.

The teachers were asked to indicate the measures taken by schools before floods occurred. The data is presented in table 4.17

Table 4.17 Teachers' Response on the Measures that Schools take before Floods Occur

Measure	Yes		No	
Early warning	**F**	**%**	**F**	**%**
Temporary removal of students	34	55.7	27	44.3
Temporary removal of property	23	37.7	38	62.3
Early warning	23	37.7	38	62.3

Majority (55.7%) of teachers indicated that there was early warning before floods occurred in their school while 62.3% of teachers indicated that there was neither temporary removal of students nor temporary removal of property. The data concurs with that of the principals that students and property were not removed before floods could occurred.

These results concur with a study carried out by Torrey (1998) which indicated that many countries are unprepared for disasters due to lack of information on the cyclic nature of floods.

Majority (71.4%) of principals and majority (52.5%) of teachers further indicated that when floods occurred there was damage of physical facilities. Destruction of property implied that there was no preparedness and hence learning was also affected.

When the DEO was asked to indicate the physical facilities that were most affected in schools, he said that toilets, classrooms, dormitories and playgrounds were most affected by floods in some schools.

Table 4.18 shows principal responses on the property that were affected by floods.

Table 4.18 Principals Response on the Facilities Affected by Floods

Facilities	**Yes**		**No**	
	F	**%**	**F**	**%**
Textbooks	5	71.4	2	28.6
Toilets	4	57.1	3	42.9
Furniture	4	57.1	3	42.9
Equipment	2	28.6	5	71.4
Play grounds	4	57.1	3	42.9

Data showed that majority (71.4%) of principals indicated that textbooks were affected by floods, (57.1%) of principals indicated toilets, furniture and the same number of principals indicated that play grounds were affected by the flood. The data shows that both physical and teaching/learning materials were affected during floods which affected learning. This shows that schools are unprepared for floods.

Table 4.19 shows Teachers' response on the facilities affected by floods.

Table 4.19 Teachers' Response on the Facilities Affected by Floods

Facilities	Yes		No	
	F	%	F	%
Textbooks	37	60.7	24	39.3
Toilets	38	62.3	23	37.7
Furniture	37	60.7	24	39.3
Equipment	22	36.1	39	63.9
Play grounds	31	50.8	30	49.2

Majority (60.7%) of teachers indicated that textbooks and furniture were affected by floods, 62.3% indicated toilets while majority (50.8%) of teachers indicated that play grounds were affected. The data concurs with that of the principals that physical and teaching/ learning materials were affected during floods which hampered teaching and learning in the schools. The findings are similar to the study carried out by Asian Disaster Preparedness Center (2008) in Cambodia which indicated that facilities such as textbooks, furniture and equipment severely affected by floods. The findings also concur with the results of a study carried out by Hassanain (2006) which indicated that play grounds were affected by floods hence making it hard for students not to have games for several days.

The principals were asked to indicate whether text books and documents were stored in a safe place to protect them from floods. The data is presented in Table 4.20

Table 4.20 Principals' Response on Whether Text Books and Documents Were Stored in a Safe Place

Storage of books	**F**	**%**
Stored Safely	6	85.7
Not stored Safely	1	14.3
Total	**7**	**100.0**

Data shows that majority (85.7%) of principals indicated that text books and documents were stored in a safe place to protect them from floods. Asked where the textbooks and documents were stored to protect them from floods, they responded as tabulated in Table 4.21.

Table 4.21 Principals' Response on Storage ofText Books and Documents

Type of Storage	**F**	**%**
Cupboards	1	14.3
Shelves and cabinets	1	14.3
Offices	1	14.3
Metallic cupboards	1	14.3
On top of tables and raised shelves	1	14.3
No Response	2	28.6
Total	**7**	**100.0**

Table 4.21 shows that 14.3% of principals indicated that books and documents were stored in cupboards to protect them from floods, the same number of principal indicated that they were stored in shelves , cabinets, offices, metallic cupboards and the same number also indicated that they put them on top of tables and raised shelves. The data shows that different measures were taken to protect school property from destruction which shows some level of preparedness.

Teachers were also asked where the text books and documents were stored to protect them from floods. Their responses are presented in Table 4.22

Table 4.22 Teachers' Response on Storage ofText Books and Documents

Type of Storage	**F**	**%**
Higher grounds	15	24.6
Library	19	31.1
Principals' office	2	3.3
Neighbouring school	3	4.9
Raised office	1	1.6
DCS' office	3	4.9
Book store	3	4.9
No Response	15	24.6
Total	**61**	**100.0**

Data shows that 24.6% of teachers indicated thattext books and documents were stored on a higher ground to protect them from floods, 31.1% of teachers indicated that they were kept in library, 3.3% of teachers said that they were kept them in the Principals' office while 4.89% of teachers indicated that they were kept in the DCS' office and book store. The data shows that schools had put up different measures to ensure that school property was well protected during floods.

The principals were further asked whether text books and documents had been destroyed by floods in the past. The data is presented in Table 4.23.

Table 4.23 Principals' Response on Destruction ofText Books and Documents

Destruction of books	**F**	**%**
Books destroyed	2	28.6
Not destroyed	5	71.4
Total	**7**	**100.0**

Majority (71.4%) of principals indicated that text books and documents had never been destroyed by floods in the past. The data shows that in majority of the schools, measures had been put in place and hence text books and other documents had not been destroyed by floods.

Asked to indicate the measures taken to prevent damage of textbooks and documents in future, they responded as indicated in Table 4.24

Table 4.24 Principals' Response on the Measures taken to Prevent Damage of Textbooks and Documents in future

	F	%
Place them in a raised place when river volume rises	1	14.3
Creation of raised shelves and raising floors of new buildings	1	14.3
No Response	5	71.4
Total	**7**	**100.0**

Majority (71.4%) of principals had not taken any measures to prevent damage of text books and documents in future while 14.3% of principals planned to place textbooks and documents in a raised place when river volume rises while the same number of principals had raised floors of new buildings to prevent water from entering into buildings. This shows that there was preparedness towards floods in future in a few schools.

When teachers were asked to respond to the same item, they responded as presented in Table 4.25

Table 4.25 Teachers' Responses on the Measures taken to Prevent Damage of Textbooks and Documents in future

Measures Taken	F	%
Improving the book cabins and shelves	8	13.1
Placing them on higher shelves and tables	13	21.3
Putting books in a raised ground	2	3.3
No Response	38	62.3
Total	**61**	**100.0**

Data shows that 13.1% of teachers indicated that there were book cabins and shelvesused to store books and documents to protect them from damagein future, 21.3% of teachers said that books were placedon higher shelves and tables while majority (62.3%) of teachers indicated that there were no measures in place to prevent damage of text books and documents in future. The data implied that a few had schools had put up measures to ensure that property was not destroyed during floods. It is however important for all schools affected by floods to have plans for the future on how to prevent textbooks and documents from being destroyed by floods.

The principals were further asked whether when floods occur the classrooms were flooded. Their responses are presented in Table 4.26

Table 4.26 Principals' Response on whether when Floods occur the Classroom were Flooded

State of Classrooms	F	%
Flooded	2	28.6
Not Flooded	5	71.4
Total	**7**	**100.0**

Majority (71.4%) of principals indicated that when floods occurred the classrooms were not flooded. This agreed with majority 42(68.9%) of teachers who also indicated that their classrooms were not flooded when floods occurred. The reason why classrooms in the region are not affected is because they have been built on a raised ground unlike the toilets and play grounds that are found the low lying areas. These findings disagree with the study carried out in Cambodia (ADPC, 2008) which indicated that classrooms were flooded for several months which meant that students and teachers did not attend school hence disrupting learning.

Asked how floods affected learning, the principals responded as presented in Table 4.27

Table 4.27 Principals' Response on how Floods Affected Learning

Effects of floods	**F**	**%**
Students go home and candidates are relocated	1	14.3
Students and teachers do not attend school	1	14.3
No Response	5	71.4
Total	**7**	**100.0**

Data shows that 14.3% of the principals indicated that students were sent home and only candidates are relocated to other schools. This was because of inadequate facilities to accommodate all students. The principals went further and explained that both students and teachers did not attend school when floods occurred which affected learning.

The teachers were also asked how floods affected learning. Their responses are presented in Table 4.28

Table 4.28 Teachers'Response on how Floods affected Learning

Effects of Floods	F	%
Learning stops	13	21.3
Learning is temporary halted	14	23.0
We are not able to cover syllabus in time	1	1.6
Students and teachers don't come to school	1	1.6
No Response	32	52.5
Total	**61**	**100.0**

Data shows that 21.3% of the teachers indicated that when floods occur learning stops, 23.0% of the teachers indicated learning was temporary halted, 1.6% of teachers indicated that they were unable to cover the syllabus in time while the same number of teachers indicated that students and teachers didn't come to school when there were floods hence the learning was affected. The reason why they did not come to school was because of flooded and damage roads. These findings are similar to the study carried out in Cambodia (UNISDR, 2008) which indicated that floods affected school for three months leading to their closure. This affected learning and syllabus coverage was affected too. The findings also concur with the same study that both teachers and students did not attend school due to flooded and damaged roads which made schools inaccessible.

The DEO was asked to indicate whether there were arrangements for different location for learning when classrooms were flooded. He indicated that candidates were relocated to other schools but the rest of the students stayed at home.

When principals were asked to respond to the same item, they responded as Table 4.29

Table 4.29 Principals' Response on different location for Learning when Classrooms are Flooded

Locations for learning	**F**	**%**
Schools with location	1	14.3
No different location	6	85.7
Total	**7**	**100.0**

Data shows that majority (85.7%) of principals indicated that there were no arrangements for a different location for learning when classrooms are flooded. This implied that the schools were not prepared for floods which affected learning. These results disagree to the study that was carried out in Cambodia where it showed that at least 10% of the students had alternative locations for school. This indicated to a certain degree schools in Cambodia are prepared towards floods.

The DEO indicated that there were times when some schools were closed when the area flooded due to inaccessibility. The DEO further added that there were schools in this district that were used as shelters by the community when there were floods. The few schools that were used as shelter suffered major loses as the community members destroyed furniture using them as firewood. In addition, the toilets filled up very fast meaning that learning cannot resume soon after floods due lacking of furniture and toilets. This concurs with the studycarried out by Hassanain (2006) families affected by floods take shelter in schools not affected by floods hence disrupting learning in these schools.

The principals were further asked to indicate whether classrooms were used as shelter by the community during floods. The data is presented in Table 4.30

Table 4.30 Principals'Response on the use of Classrooms as Shelter

Use of Classrooms	**F**	**%**
Classrooms used	1	14.3
Not used	6	85.7
Total	**7**	**100.0**

Majority (85.7%) of principals indicated thatclassrooms were not used as shelter by the community when floods occurred while 14.3% of principals said that they were used.

Table 4.31 shows teachers response on the same item.

Table 4.31 Teachers' Response on the use of Classrooms as Shelter.

	F	%
Used as shelter	17	27.9
Not used as shelter	44	72.1
Total	**61**	**100.0**

Majority (72.1%) of teachers indicated that their classrooms were not used as shelter by the community when floods occurred while 27.9%of the teachers said that they were used.

Asked whether teachers missed coming to school during floods, the principals responses are presented in Table 4.32

Table 4.32 Principals' Response on Teachers missing School during Floods

	F	%
Missed School	4	57.1
Did not miss	3	42.9
Total	**7**	**100.0**

Majority (57.1%) of the principals indicated that teachers missed school during floods while 42.9% of principals said that they did not miss school.

Principals further added that teachers missed school due to danger of crossing swollen rivers and impassable roads and the flooded home compounds. The data shows that learning was hampered during floods as a result of teachers' failure to come to school. When teachers were asked to indicate why they missed school, they responded as presented Table 4.33

Table 4.33 Teachers' Response on why Teachers missed School

Reason for missing School	**F**	**%**
Student are sent home due to floods	11	18.0
School close	4	6.6
Being unable to cross the flooded river	5	8.2
Students are displaced from their homes	3	4.9
Unfavorable working conditions	3	4.9
To avoid diseases outbreak	2	3.3
Inaccessibility of roads	3	4.9
Seeking medical attention	3	4.9
Community seeks refuge in school	3	4.9
They are always away from school compound	5	8.2
No Response	19	31.1
Total	**61**	**100.0**

Data shows that students were sent home when floods occurred and schools were closed. In addition, teachers were unable to cross the flooded rivers coming to school, students were displaced from their homes, the roads to school were inaccessible and community sought refuge in schools. As a result, teachers missed coming to school. The results are similar to a study carried out in Namibia where schools were flooded leading to teachers being out of school for several months (Shejavali, 2009). The findings also concur with a study that was carried out in Thailand which indicated that floods caused teachers to stay at home for several weeks after their schools were flooded (ThailandWorsed Flooding in Decades, 2011).

Training of principals and Teachers on Floods

Principals were asked on whether they had attended any training. The response is represented in Table 4.34

Table 4.34 Principals' Response on attending Training on Preparedness

Training	**F**	**%**
Trained	3	42.9
Not Trained	4	57.1
Total	**7**	**100.0**

Majority (57.1%) of principals had not attended training on flood preparedness while 42.9% of principals had attended.

When teachers were asked to respond to the same item, they responded as presented in Table 4.35

Table 4.35 Teachers' Response on attending Training on Preparedness

Training	F	%
Trained	8	13.1
Not Trained	53	86.9
Total	**61**	**100.0**

Majority (86.9%) of teachers had not attended training on flood preparedness while 13.1% of the teachers had attended. It is therefore important for all teachers to be trained in flood preparedness so that they in turn teach the students flood preparedness.

The DEO was asked whether the school conducted evacuation drills for students and teachers in preparation for floods. He said that the schools in the district did not conducted evacuation drills.

The principals also indicated that their schools did not conduct evacuation drills for students and teachers in preparation for floods and there was no specific teacher in charge of conducting the evacuation drills. These findings differ from a study carried out by 'School With Disaster Preparedness (2011) which indicated that schools should be conducting periodic evacuation drills. If evacuation drills are conducted periodically, then students will be prepared towards floods and loss of lives will be minimized.

When Principals were asked on the teaching of flood preparedness they responded as shown in Table 4.36

Table 4.36 Principals' Response on Teaching ofFlood Preparedness

Teaching of Flood preparedness	**F**	**%**
Agree	3	42.9
Strongly agree	3	42.9
Strongly disagree	1	14.3
Total	**7**	**100.0**

Data shows that 42.9% of the principals strongly agreed that flood preparedness should be taught to learners in the classroom. The same number of principal agreed with the statement.

When teachers were asked to responded to the same question on whether flood preparedness should be taught to learners in the classroom, they responded as presented in Table 4.37

Table 4.37 Teachers' Response on Teaching ofFlood Preparedness

Response	F	%
Agree	23	37.7
Strongly agree	27	44.3
Disagree	3	4.9
Strongly disagree	8	13.1
Total	**61**	**100.0**

Data shows that 82.0% of the teachers agreed that flood preparedness should be taught to learners in the classroom. Data therefore indicated that both principals and teachers were of the opinion that teaching of flood preparedness was necessary. According to the Hyogo framework For Action (2005-2015) disasters can substantially be reduced if people are well informed through education. This concurs with the study carried out by UNESCO (2007) which states that disasters can be mitigated by application of knowledge and education.The principals were also asked to indicate learning areas that needed to be covered in the teaching of flood preparedness in the classrooms. They responded as presented in Table 4.38

Table 4.38 Principals' Response on the Learning Areas that Covered the Teaching of Flood Preparedness in the Classrooms

Learning	F	%
Life orientation	4	57.1
Natural Sciences (Biology, Chemistry, Geography)	3	42.9
Total	**7**	**100.0**

Majority (57.1%) of the principals indicated that flood preparedness can be taught under Life Orientation while 42.9% of the principals indicated that it can be taught under Natural Sciences (Biology, Chemistry, Geography).

Table 4.39 Teachers'Response on the Learning areas that covered the Teaching of Flood Preparedness in the Classrooms

	F	%
Social Sciences (English, Kiswahili, History)	5	8.2
Life orientation	34	55.7
Natural Sciences (Biology, Chemistry, Geography)	22	36.1
Total	**61**	**100.0**

Majority (55.7%) of the teachers indicated that teaching of flood preparedness can be taught under Life Orientation in the classrooms, 36.1% of the teachers indicated that it can be covered under Natural Sciences (Biology, Chemistry,

Geography) while 8.2% of teachers indicated that it can be covered in Social Sciences (English, Kiswahili, History).

The principals added that they were aware of the Safety Standards Manual for Schools and the manual had been of assistance in flood preparedness in their schools.

When asked on whether they were aware of the Safety Standard Manual for Schools teachers responded as shown in Table 4.40

Table 4.40 Teachers Response on whether they were aware of the Safety Standards Manual for Schools

	F	**%**
Yes	9	14.8
No	52	85.2
Total	**61**	**100.0**

Findings show that majority (85.2%) of the teachers were not aware of the Safety Standards Manual for Schools while 14.8% of the teachers were aware. There is therefore need for principals to take the lead in ensuring that teachers were not only aware of the Safety Manual but that, they made use of it in preparing students towards floods. Principals can also organize internal seminars where teachers will discuss the contents of the manual equipping them with more information on flood preparedness.

Asked whether there were warning systems towards floods, the principals responded as indicated in Table 4.41

Table 4.41 Principals Response on whether there were Warning Systems towards Floods

Availability of warning systems	**F**	**%**
Available	5	71.4
Not available	2	28.6
Total	**7**	**100.0**

Majority (71.4%) of the principals indicated that there were warning systems towards floods while 28.6% of the principals said that there was no warning. Asked to indicate the kind of warning they were given, they responded as shown Table 4.42.

Table 4.42 Principals'Response on the kind of Warning they were given

Kind of warning system	F	%
Through media	3	42.9
Local radio station, announcement by chiefs	1	14.3
Meteorological weather forecasting	1	14.3
River water level monitoring device at Rwamba bridge	1	14.3
No Response	1	14.3
Total	**7**	**100.0**

Data shows that warning was given through the media as indicated by 42.9% of the principals, 14.3%of the principal indicated that it was done by local radio station and announcement by chiefs, 14.3% the principals that warning was through meteorological weather forecasting and the same number of principals indicated that there was a river water level monitoring device at Rwamba bridge. As the level of water rises, the device measures theheight. This device then sends signals to the Meteorological department in Nairobi and in turn the department gave warning through the media. The schools are then warned and can take the necessary measures in good time.

The DEO revealed that the meteorological department gave warning to schools before floods occur in their district. He also indicated that he was aware of Safety Standards Manual for Schools in Kenya from the Ministry of Education.

The principals were also asked whether their schools had any plans for floods. They responded as shown in Table 4.43

Table 4.43 Principals' Response on whether their School had any Plans for Floods

Plans for floods	**F**	**%**
Schools with plans	3	42.9
Schools without	4	57.1
Total	**7**	**100.0**

Data revealed that majority (57.1%) of the principals indicated that their school had no plans for floods while 42.9% of the principal said that their school had plans.

Asked the plansthat schools had for floods in their school, the teachers responded as presented in Table 4.44

Table 4.44 Teachers response on the plans they had for floods in their school

Type of plans	F	%
Alerting students to be keen and prepared	15	24.6
Building houses with raised foundation	2	3.3
Early evacuation	1	1.6
No Plans	43	70.5
Total	**61**	**100.0**

Data revealed that majority (70.5%) of the teachers indicated that they had no plans for floods in their school, 24.6% of the teachers alerted students to be keen and prepared, 3.3% of the teachers built houses with raised foundation while 1.6% of the teachers indicated that there was early evacuation of students in their school before floods.

4.5 Flood Preparedness for Students

To establish the way in which students prepared for floods in public Secondary Schools, the respondents were asked to respond to items that sought to investigate the same. Data is presented in the following section. The DEO and the principals were asked whether floods disaster preparedness was taught in the schools. Their responses indicated that it was not taught to learners in schools.

Asked whether students were taught flood preparedness, teachers responded as indicated in Table 4.45

Table 4.45 Teachers' Response on whether Learners were Taught Flood Preparedness

Teaching of floods	**F**	**%**
Taught	8	13.1
Not taught	53	86.9
Total	**61**	**100.0**

Table 4.45 shows that majority (86.9%) of the teachers indicated that learners were not taught flood preparedness while 13.1% of the teachers said that they were taught.

The learners were asked whether they had ever been taught how to prepare for floods, majority (58.3%) of the learners said they had never been taught how to prepare for floods. The results differ with what the World Campaign on Disaster Reduction (2006-2007) that recommends that DRR should be taught in schools.

Asked whether they knew what to do during a flood emergency at school, students responded as presented on Table 4.46

Table 4.46 Students response on whether they knew what to do during a flood emergency at school

Aware of what to do	F	%
Those aware	129	42.0
Not aware	178	58.0
Total	**307**	**100.0**

Majority (58.0%) of the students indicated that they were not aware of what to do during a flood emergency at school while 42.0% of the students said that they knew what to do. They further added that they relocate to neighbouring schools, put their belongings on upper beds where water cannot reach and destroy them and avoid wading through flooded areas. Some students said that they were required to gather at the assembly point in order to get instructions on the action to take. Data further shows that students were supposed to go home immediately, not to panic and were to safeguard their properties; switch off all electric circuits and keep learning materials at high level like the roof of the buildings; some students indicated that they were involved in the construction of dykes and sand bags to prevent floods.

Asked whether there were evacuation drills conducted the principals responded as shown in Table 4.47

Table 4.47 Principals' Response on whether there were Evacuation Drills on Floods Conducted for Students in the School

Evacuation drills	**F**	**%**
Drills done	1	14.3
No done	6	85.7
Total	**7**	**100.0**

Majority (85.7%) of the principals indicated that there were no evacuation drills on floods conducted for students in schools while 14.3% of the principals said that there were evacuation drills. Principals further indicated that learners were taught timely response to instructions and measures to take to prevent water borne diseases; while other students were taught on how to respond to floods in school.

Teachers were asked the life skills that were taught in school and they responded as shown in Table 4.48.

Table 4.48 Teachers'Response in the Life Skills Taught in the School

Life skills	**F**	**%**
Swimming	12	19.7
Measures on how to prevent water borne diseases	4	6.6
How to repair damaged dykes	1	1.6
Screaming	2	3.3
No Response	42	68.9
Total	**61**	**100.0**

Majority (68.9%) of the teachers indicated that there were no Life skills taught in the school, 19.7% of the teachers indicated that students were taught how to swim, 6.6% of the teachers indicated that students were taught measures to prevent water borne diseases while 1.6% of the teachers said that learners in their school were taught how to repair the damaged dykes.

Majority (57.1%) of the principals indicated that their students were not aware when they floods would occur. They further added that in case of floods, the students were supposed to keep their property on upper beds, assemble in front of administration block and wait for instructions.

When students were asked whether they performed the emergency drills in preparation for floods in their school, they responded as presented Table 4.49

Table 4.49 Students'Response on whether they Performed Emergency Drills in Preparation for Floods

Emergency drills	**Yes**		**No**	
	F	**%**	**F**	**%**
Evacuation drills	22	7.2	285	92.8
Rescue drills	104	33.9	203	66.1
First Aid drills	56	18.2	251	81.8

Majority (92.8%) of the students did not perform the emergency drills in preparation for floods; majority (66.1%) of the principals indicated that there were no rescue drills conducted in schools, while 81.8% of the students indicated that they did not perform first aid drills in their schools. The finding differ with a study carried out by School With Disaster Preparedness (2011) which stated that in order for schools to be well prepared towards floods, there is need to conduct periodic evacuation drills.

Majority (76.5%) of the students indicated that they were not taught life skills in preparation to floods while 23.5% of the students said that they were taught how to move to safe places where there were no floods; how to build dykes and sand bags, not to walk while lifting their legs on floods and how to swim; and also the effects of floods to sanitation.

Asked on whether students missed school when there were floods, the principals responded as shown in Table 4.50.

Table4.50 Principals'Response on whether Students Missed School When there were Floods

	F	**%**
Missed school	6	85.7
Did not miss school	1	14.3
Total	**7**	**100.0**

Majority (85.7%) of principals said that their students missed school when there were floods as homes were flooded and roads destroyed. Some students relocate while others were left to take care of their belonging in the camp; and others migrated to higher grounds.

The principals were asked duration that students stayed away from school during floods to which they responded as shown in table 4.51

Table 4.51Principals' Response on Duration that Students stayed away from School during Floods

Duration	F	%
1-2 weeks	4	57.1
3 - 4 weeks	2	28.6
No Response	1	14.3
Total	**7**	**100.0**

Majority (57.1%) of the principals indicated that their students stayed away from school during floods for between 1 and 2 weeks while 28.6% of principals indicated that they stayed away for between 3 and 4 weeks.

The teachers were asked the duration that students stayed away from school during floods to which they responded as Table 4.52 shows.

Table 4.52 Teachers' Response on duration that Students stayed away from School during Floods

Duration	F	%
1-2 weeks	25	41.0
3 - 4 weeks	17	27.9
5 - 6 weeks	8	13.1
No Response	11	18.0
Total	**61**	**100.0**

Data shows that 41.0% of the teachers indicated that their students stayed away from school during floods for between 1 and 2 weeks while 27.9% of the teachers indicated for between 3 and 4 weeks. Findings from students group discussion revealed that students missed school during floods as routes were inaccessible and building are submerged; books were damaged, some classrooms flooded and teachers absent. There was fear of the unknown from both teachers and students while in other cases parents relocated to higher grounds.The results are similar to a study carried out in Pakistan where children were not able to access school due to floods. (Flood Damaged Schools Lead to Education Worries, 2010). When children miss school, learning is disrupted and some may drop out in the process.

When principals were asked whether floods led to students dropping out of school, majority (57.1%) of principals agreed with the statement.

The principals were asked to give the measures that schools had taken to ensure that students do not drop out of school which they responded as shown in Table 4.53.

Table 4.53Measures that the School had taken to ensure that Students do not drop out due to Floods

Measures Taken	F	%
Currently none due to lack of boarding facilities	1	14.3
Be lenient on fee payment and retaining them in school	1	14.3
Bringing some of the displaced students to stay in boarding facilities	1	14.3
No Response	4	57.1
Total	**7**	**100.0**

Data show that 14.3% of the principals were lenient on fee payment and retained students in school for as long as possible; the same number of principalsallowed some of the displaced students to stay in boarding facilities.

Principals further added that the students transferred to other schools as a result of floods to avoid interruption in their studies. These findings are similar to a study carried by International Finance Corporation(2009) which stated that when education is disrupted, students may drop out or the rate of absenteeism may rise. The results also concur with the study carried out in Cambodia by UNISDR (2008) which indicated that students drop out of

school when there are floods due to financial problems and other difficulties caused by floods.

When students were asked whether there were specific evacuation routes identified they responded as shown in Table 4.54

Table 4.54Specific Evacuation routes identified for Students to use when there were Floods

Evacuation routes	**F**	**%**
Identified routes	81	26.4
No routes	226	73.6
Total	**307**	**100.0**

Data shows that majority 73.6% of the students indicated that there were no specific evacuation routes identified for students to use when there were floods while 26.4% of the students indicated that there were identified evacuation routes.

Teachers were asked whether there were specific evacuation routes for student, they responded as shown in Table 4.55

Table 4.55 Teachers' Response on whether there were specific Evacuation routes identified for Students to use when Floods occurred

Evacuation routes	F	%
With route	11	18.0
No route	50	82.0
Total	**61**	**100.0**

Majority (82.0%) of the teachers indicated that there were no specific evacuation routes identified for students to use when floods occurred.

Students were asked what interfered with access to school and their response is shown in Table 4.56

Table 4.56 Students Responses on what Interfered With Access To School When Floods Occurred

Interfering factors	F	%
Flooded roads	170	55.4
Damaged roads	125	40.7
No Response	12	3.9
Total	**307**	**100.0**

Majority (55.4%) of the students indicated that flooded roads interfered with access to school when floods occurred while 40.7% of the students indicated that damaged roads interfered. The results are similar to those carried out in Cambodia which indicated that flooded and damaged roads made school inaccessible.

When principals were asked to indicatewhether there were alternative playing grounds for the students to use when fields were flooded, majority (85.7%) of the principals indicated that there were none. When the principals were asked to indicate whether the students participated in building dykes they responded as shown in Table 4.57

Table 4.57 Principal Response on whether the Students Participated in building Dykes and Sandbags to prevent Floods

Students participation	**F**	**%**
Those who participated	4	57.1
Those who did not	3	42.9
Total	**7**	**100.0**

Majority (57.1%) of the principals indicated that students participated in building dykes and sandbags to prevent floods. Data further indicated that

majority (42.9%) of the principal indicated that there was no identified high ground where students could be evacuated to during floods.

The DEO indicated that the Ministry of Education should set aside emergency funds for schools affected by floods in the district and consider training of teachers and students on Emergency management. He further added that dykes should be reinforced to ensure that learning is not disrupted in future.

The teachers were asked whether exams have ever been disrupted and they responded as shown in Table 4.58

Table 4.58 Teachers response on whether exams have ever been disrupted by floods

Disruption of exams	**F**	**%**
Disrupted	14	23.0
Not disrupted	47	77.0
Total	**61**	**100.0**

Majority (77.0%) of the teachers indicated that exams have never been disrupted by floods while 23.0% of teachers indicated that they had been disrupted in some schools.

When principals were asked to respond to the same item, majority (57.1%) of principals indicated that exams had never been disrupted. Data further shows that the school which had been disrupted by floods had taken measures such as

relocating to higher grounds, examination center being transferred to schools where there are no floods and setting exams period before the rains.

Majority (85.7%) of principals and majority 83.6% of teachers indicated that their students were not taught first aid on floods.

4.6 Challenges

To determine the challenges that faced principals, teachers and students in disaster preparedness in public Secondary Schools, the respondents were asked to indicate the same. Data is presented in the following section:

When principals were asked the challenges faced when the school was affected by floods they responded as shown in Table 4.59

Table 4.59 Principals' Response on the Challenges they faced when the School was affected by Floods

Challenges	F	%
Poor levy payment	1	14.3
Getting safe place to relocate and reassembling students from home takes long time	1	14.3
Failure to pay fees on time and high drop- out rate	1	14.3
Stoppage of learning and teaching programme	1	14.3
Shortage of drinking water and overflowing latrines	1	14.3
No Response	2	28.6
Total	**7**	**100.0**

Data shows that 14.3% of the principals had challenges of poor levy payment, getting safe places to relocate to, and reassembling students since many migrate to higher ground. There was also stoppage of learning and teaching programme and shortage of drinking water because it was already contaminated. When teachers were asked to indicate their challenges, they said that there was no clean safe drinking water, interruption of electricity and transport problem since roads were impassable. They further added that books were damaged and that it was hard to trace routes back home since the ground

was flooded. Other challenges were, the school community breaking and stealing from teachers houses, skyrocketing prices for commodities and accommodation, outbreak of water borne diseases, transfers of students to other school and unable to cover the syllabus. They also said that they had challenges of reorganizing teaching and learning tools, low turnout by students hence difficult to conduct lessons. Findings from group discussion with students indicated that syllabus was not covered in time hence poor performance. They further pointed out that there was disruption of learning from the community whichordered students to be released from school immediately leading to closure of school hence both teachers and students did not go to school which affected coverage of the syllabus. This indicated that floods in the schools affected learning.

When the principals were asked to indicate the challenges faced by teachers when schools were flooded they responded as shown in Table 4.60

Table 4.60 Principals response on the challenges faced by teachers when the school is affected by floods

Challenges	F	%
Damaged roads	1	14.3
Destruction of property	1	14.3
Psychological effect	1	14.3
Breaking in by thieves	1	14.3
Difficulties in reaching school	1	14.3
No Response	2	28.6
Total	**7**	**100.0**

Data shows that 14.3% of the principals indicated that teachers had challenges of poor road network to the main road from their homes and their property being destroyed. In addition teachers and students were affected psychologically and their homes were being broken into by thieves who took advantage of the situation.

When principals were asked the challenges faced by students during floods their responses were as presented in Table 4.61

Table 4.61 Principals' Response on the Challenges faced by Students when the School is affected by Floods

Challenges	F	%
Absenteeism, water borne disease and books destroyed by water	1	14.3
Some students do not get their parents at home and property are destroyed	1	14.3
Failure to raise fees and people being displaced from their areas	1	14.3
Stoppage and disruption of learning programme, fees related problems and high drop out	2	28.6
No response	2	28.6
Total	**7**	**100.0**

Data shows that students had challenges such as absenteeism, attack by water borne diseases, destruction of books by water, relocation of the parents to higher grounds, property being destroyed, failure to raise fees, disruption of learning programmes, and high drop-out rates.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the study, conclusions and recommendations. The chapter further presents the suggestions for further research.

5.2 Summary

The purpose of this study was to establish the effects of flood disaster preparedness on learningin public Secondary Schools in Bunyala district, Busia County.Four research objectives were formulated to guide the study. Research objective one sought to establish the preparedness of principals and teachers towards flood disasters in public Secondary schools in Bunyala district. Research objective two aimed at determining how disaster preparedness of students towards floods affects learning in public Secondary Schools in Bunyala district. Research objective three sought to examine how the mitigation measures put in place to respond to flood disaster affects learning in public Secondary Schools in Bunyala district while research objective four aimed at examining the challenges faced by principals, teachers and students in disaster preparedness in public Secondary schools in Bunyala district.The researcher useddescriptive survey design to find out the extent to which schools are prepared towards flood disaster and mitigating measures

taken to reduce floods. The sample comprised of 7 principals, 76 teachers, 328 students and 1 DEO. Data were collected by use of questionnaires, interviews and focus group discussion. Data were analysed by use of qualitative and quantitative techniques.

According to the findings the district is frequently affected by floods. This was collected from both the principal and the teachers hence there is need to prepare both principals and teachers on flood preparedness. The majority (57.1%) of the principals indicated that floods were the main disaster that frequently affected their schools. The DEO concurred that flood was the most common type of disaster. The floods were as a result of heavy rains and breaking of river banks. Majority (71.4%) of the principals indicated that their schools hadbeen affected by floods which occurred annually.

On findings on the measures taken by schools before floods occurred, majority (85.7%) of the principals indicated that there was warning given either through the radio or weather forecasting. This gives the school time to evacuate to safe places. However, majority (71.4%) of the principal indicated that there was neither temporary removal of students nor temporary removal of property hence leading to destruction of property and displacement of students.

According to the findings,62.3% of the teachers had not taken any measures to prevent damage of text books and documents in future. Majority (85.7%) of the principals indicated that there were no arrangements for a different location for learning when classrooms are flooded. This implied that the schools were not prepared for floods which affected learning.

The DEO indicated that there were times when some schools were closed when the area flooded. This was because classrooms were flooded, roads to school damaged, dormitories flooded while some schools were in accessible. The DEO further added that there were schools in this district that were used as shelters by the community when there were floods and this lead to disruption of learning. Findings further established the following; that during floods, students were sent home, teachers were unable to cross the flooded river, students were displaced from their homes, there were unfavorable working conditions for teachers, impassable roads and community seeking refuge in schools.This interrupted learning.

Findings on the training of principals and teachers on floods revealed that majority (57.1%) of the principals and majority (86.9%) of the teachers had not attended training on flood preparedness. The DEO also indicated that the schools in the district did not conducted evacuation drills. The data implied that there was no training for disaster preparedness for teachers and students

which implied that wherever there were floods many students were affected. Majority(82.0%) of the teachers agreed that flood preparedness should be taught to learners in the classroom. It was also revealed that majority 52(85.2%) of teachers were not aware of the Safety Standards Manual for Schools.

The second research objective sought to determine howdisaster preparedness of students towards floods affects learning.The findingsrevealed that majority (86.9%) of the teachers indicated that learners were not taught flood preparedness. Majority (58.0%) of the students indicated that they were not aware of what to do during a flood emergency at school. Majority (85.7%) of principals indicated that there were no evacuation drills on floods conducted for students in schools. Majority (68.9%) of the teachers indicated that there were no Life skills taught in the schoolwhile majority(57.1%) of principals indicated that their students were not aware when the floods would occur. Majority (92.8%) of students did not perform emergency drills in preparation for floods; majority (66.1%) of principals indicated that there were no rescue drills conducted in schools. The above findings confirm the fact that schools in this district are not prepared for floods.

The findings further revealed by a majority (76.5%) of students that they were not taught life skills in preparation to floods while 23.5% of students said that

they were taught how to move to safe places where there were no floods. They also indicated that they were taught how to build dykes and sand bags, not to walk while lifting their legs on floods and how to swim.

The study findings indicated that majority(85.7%) of the principals said that their students missed school when there were floods as homes were flooded and roads destroyed while others were impassable hence learning temporarily stopped. Some students relocated to higher or grounds while others were left to take care of their belongings in the camp instead of going to school.Majority (57.1%) of principals indicated that their students stayed away from school during floods for between 1 and 2 weeks while 28.6% of the principals indicated that they stayed way for between 3 and 4 weeks. As a result some dropped out while others transferred to other schools. During such times students would miss learning.

Majority (73.6%) of students and majority (82.0%) of the teachers indicated that there were no specific evacuation routes identified for students to use when there were floods. However, majority (57.1%) of the principals indicated that students participated in building dykes and sandbags to prevent floods. This preparedness of students meant that they would remain in school when there were floods. Data further indicated that majority (71.4%) of the principal

said that there was no identified high ground where students could be evacuated to during floods.

Findings on the challenges that faced principals, teachers and students in disaster preparedness in public Secondary Schools revealed that, there was poor levy payment, no safe places to relocate to; and reassembling students from home took long since many migrate to higher ground. There was also stoppage of learning and teaching programme and shortage of drinking water because it was already contaminated. The Latrines were overflowing during floods. There was lack of clean safe drinking water, interruption of electricity all which interfered with learning.

5.3 Conclusions

The study concluded that principals, teachers and students wereunprepared towards flooddisasters that frequently affected their schools. The most frequent disaster in the region is floods and hence principals, teachers and students needed training on disaster preparedness. The study concluded that there were no measures taken before floods occurred.There was neither temporary removal of students nor of property hence leading to extensive destruction. On the other hand, the study noted that there were no arrangements for alternative learning location when classrooms are flooded. The research further concluded that floods have an effect on learning because

students are usually sent home when floods occuras a result of the closure of their schools and the inability of their teachers being unable to cross the flooded river. Another negative impact include thestudents and teachersdisplacement from their homes,inaccessible roads and in some cases local community tend to seek refuge in the school premises thus causing disruption in learning.

The study also concluded that principals, teachers and students had not received any training on flood preparedness althoughthey were of the opinion that the prerequisite training is necessary. It was also revealed thatmajority of teachers were not aware of the Safety Standards Manual for Schools which outlines the various disasters that affect schools. It is therefore necessary for all teachers to usethe manual since it gives them ideas on how to prepare for disasters.The research also concluded that learners were not taught flood preparedness sincestudents were not aware of what to do during a flood emergency at their schools because evacuation drills on floods are done.

Findings on the challenges that faced principals, teachers and students in disaster preparedness in public Secondary Schools revealed: 1) that there was poor levy payment, 2) difficult in locating safe high ground, 3) difficult in assembling students who had already sought refuge in safer grounds away from school, 4) stoppage of learning and teaching programmes and 5) shortage of drinking water because it was already contaminated.

5.4 Recommendations

The following were the recommendations for the study

i. There is need to prepare and train the principals and teachers on disaster preparedness
ii. Students need to be taught flood preparedness
iii. Disaster preparedness should be integrated in the curriculum in schools.
iv. The MOE should ensure that all teachers use the Safety Standard Manual in order to gather knowledge on disasters.
v. To examine how the mitigation measures put in place to respond to flood disaster affects learning in public Secondary Schools in Bunyala district.
vi. The MOE should come up with a lasting solution on floods in schools in order for learning to go on without disruption.

5.5 Suggestions for further research

Taking the limitations and delimitations of the study, the following areas were suggested for further study:

I. A study on the influence of disaster training of principals and teachers in curbing disasters in public secondary schools in Kenya

II. The influence of early warnings on disaster mitigation in public secondary schools

III. Principals and teachers perceptions on integration of disaster preparedness in curriculum.

IV. The study can be replicated in other areas that are affected by floods in the country.

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APPENDICES

APPENDIXA: INTRODUCTORY LETTER

Monica NdukuKimei
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Department of Educational Administration and Planning-
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Nairobi.

Dear Sir/Madam,

RE**: A RESEARCH QUESTIONNAIRE ON EFFECTS OF FLOOD DISASTER PREPAREDNESS ON LEARNING IN PUBLIC SECONDARY SCHOOLS IN BUNYALA DISTRICT, BUSIA COUNTY.**

I am a student at the University of Nairobi currently pursuing a Master of Education degree. I am in the process of carrying out a research on effects of flood disaster preparedness on learning in public secondary schools. Your assistance in responding honestly to all the items in the questionnaire will likely produce information on the current situation of disaster preparedness in public secondary schools.

Your response will be treated as confidential and therefore, do not write your name on the questionnaire. Please complete all the items in the questionnaire. Your honest contribution will be highly appreciated. Thank you for you

co-operation.

Yours faithfully

MONICA N KIMEI

APPENDIX B

Principal's Questionnaire

This questionnaire has four parts. You are required to answer all questions as per the given instructions. Your personal information is not required.

Part A: Demographic data

1. Indicate your choice by marking the appropriate block with X

What is your gender Male ( ) Female ( ).

2. How long have you taught in this school? Below 1 Year ( ) 2-5 years ( )

6-10 year ( ) 11- 15 years ( ) 16 years and above

Part B: Flood preparedness of Principals.

3 a. Are there any disasters that frequently affect this school? Yes ( ) No ( )

b. If yes which ones?_____ _____

4. a. Are floods among the disasters you have listed above? Yes ( ) No ( )

b. If yes which type of floods affect the school?_____

_____

5. a. Are you aware of the causes of floods? Yes ( ) No ( )

b. If yes list two causes _____

6. a. Has this school ever been affected by floods? Yes ( ) No ( )

b. If yes how often do floods affect this region? _____

7. a. When was the last time the school was affected by floods? _____

b). Which of the following preparedness measures does the school take before floods occur? (Tick as many).

Early warning ( ) Temporary removal of students ( ) Temporary removal of property ( )

8. a. When floods occur is there any damage caused to the physical facilities? Yes ( ) No ( )

b. If yes which facilities are most affected? (Tick as many as possible) Classrooms ( )

Text books ( ) Toilets ( ) Furniture ( ) Equipment ( ) Play grounds ( )

9. a. Are text books and documents stored in a safe place to protect them from floods? Yes ( ) No ( )

b. If yes state where they are stored._____

10. a. Have text books and documents been destroyed by floods in the past? Yes ( ) No ( )

b. If yes what measures has the school taken to prevent damage in future_____

11. a. When floods occur are classrooms flooded? Yes ( ) No ( )

b. If yes how does this affect learning?_____

12. a. Are there arrangements for a different location for learning when classrooms are flooded? Yes ( ) No ( )

13. Does the school close due to floods? Yes ( ) No ( )

14. When floods occur, are classrooms used as shelter by the community? Yes ( ) No ( )

15. a. Do teachers miss coming to school during floods?

Yes ( ) No ( )

b) If yes why do they miss school?

_____

16. Have you ever attended training on flood preparedness?

Yes ( ) No ( )

17 . a. Does the school conduct evacuation drills for students and teachers in preparation for floods?

Yes ( ) No ( )

b. If yes, is there a specific teacher in charge of conducting the evacuation drills? Yes ( ) No ( )18. Do you agree that flood preparedness should be taught to learners in the classroom?

Agree ( ) strongly agree ( ) Disagree ( ) strongly disagree ( )

19 . Which learning areas do you think can cover the teaching of flood preparedness in the Classrooms? Social Sciences (English, Kiswahili, History) ( ) Life orientation ( )

Natural Sciences (Biology, Chemistry, Geography) ( ) Other ( )

20 . a. Are you aware of the Safety Standards Manual for Schools?

Yes ( ) No ( )

b. If yes has the manual been of any assistance in flood preparedness in the school?

Yes ( ) No ( )

21 .a) Are there any warning systems towards floods? Yes ( ) No ( )

b) If yes Which ones?_____

_____

22 . a) Does the meteorological department give warning to school before floods?Yes ( ) No ( )

b) If yes how is the warning given?_____

23.a) Does this school have any plans for floods? Yes ( ) No ( )

b) If yes what plans does the school have towards floods?_____

24. a) Are teachers trained on flood preparedness? Yes ( ) No ( )

b) If yes give one area they are trained in_____

Part C: Flood Preparedness for Students

25. Are learners taught flood preparedness? Yes ( ) No ( )

26 . Are there evacuation drills on floods conducted for students in this school? Yes ( ) No ( )

27. a) Are students taught life skills in preparedness to floods? Yes ( ) No ( )

b) If yes which life skills are they taught? _____

28. a) Do students know what to do when floods occur? Yes ( ) No ( )

b) If yes state what they are supposed to do in case of floods_____

29. a. Do students miss school when there are floods? Yes ( ) No ( )

b. If yes why do they miss school? _____

c. How long do the students stay away from school during floods? 1-2 weeks ( ) 3-4 weeks ( ) 5-6 weeks ( )

30. a. Have floods led to students dropping out of school? Yes ( ) No ( )

b. If yes what measure has the school taken to ensure that students do not drop out due to floods? _____

31. a. Have students from this school ever transferred to other schools as a result of floods? Yes ( ) No ( )

b. If yes why do they transfer? _____

32. a. When playing grounds are flooded, are there alternative playing grounds for the students?

b. If yes where are they located?_____

33. Do students participate in building dykes and sandbags to prevent floods? Yes ( ) No ( )

34. Are there specific evacuation routes identified for students to use when floods occur? _____

Yes ( ) No ( )

35. Is there an identified high ground where students can evacuate to during floods? Yes ( ) No ( )

36. a) Have exams ever been disrupted by floods? Yes ( ) No ( )

b) If yes what measures has the school taken to ensure that exams are not disrupted by floods in future?

37. Are students taught first aid on floods? Yes ( ) No ( )

Part D: Challenges

38. What challenges do you face when the school is affected by floods?_____

39. What challenges face teachers when the school is affected by floods?_____

40. What challenges face students when the school is affected by floods?

Appendix C

Teacher's Questionnaire

This questionnaire has four parts. You are required to answer all questions as per the given instructions. Your personal information is not required.

Part A: Demographic data

Indicate your choice by marking the appropriate block with X

1. What is your gender Male ( ) Female ( ).

2. How long have you taught in this school? Below 1 Year ( ) 2-5 years ( )

6-10 year ( ) 11- 15 years ( ) 16 years and above

Part B: Flood preparedness of Teachers.

3 a. Are there any disasters that frequently affect this school?

Yes ( ) No ( )

b. If yes which ones?_____ _____

4. a. Are floods one of these disasters? Yes ( ) No ( )

b. If yes which type of floods affect the school?_____
_____

5. a. Are you aware of the causes of floods? Yes ( ) No ( )

b. If yes list two causes _____
_____

_____

6. a. Has your school ever been affected by floods? Yes ( ) No ( )

b. If yes how often do floods affect this region?
_____

7. a. When was the last time the school was affected by floods?
_____

b). Which of the following preparedness measures does the school take before floods occur? (Tick as many).

i) Early warning ( ) Temporary removal of students ( ) Temporary removal of property ( )

8. a. When floods occur is there any damage caused to the physical facilities? Yes ( ) No ( )

b. If yes which facilities are most affected? (Tick as many as possible) Classrooms ( )

Text books ( ) Toilets ( ) Furniture ( ) Equipment ( ) Play grounds ( )

9. a. Are text books and documents stored in a safe place to protect them from floods? Yes ( ) No ( )

b. If yes state where they are stored._____

10. a. Have text books and documents been destroyed by floods in the past? Yes ( ) No ( )

b. If yes what measures has the school taken to prevent damage in future?_____

_____
_____

11. a. When floods occur are classrooms flooded?
Yes ( ) No ( )

b. If yes how does this affect learning?_____

_____
_____

12. a. Are there arrangements for a different location for learning when classrooms are flooded? Yes ( ) No ( )

13. Does the school close due to floods? Yes ( ) No ( )

14. When floods occur are classrooms used as shelter by the community?

Yes ( ) No ( )

15. a. Do you miss school during floods? Yes ( ) No ( )

b) If yes why do you miss school?

_____

16. Have you ever attended training on flood preparedness?
Yes ( ) No ( )

17. a. Does the school conduct evacuation drills for students in preparation for floods? Yes ( ) No ( )

b. If yes is there a specific teacher in charge of conducting the evacuation drills?

Yes ( ) No ( )

18. Do you agree that flood preparedness should be taught to learners in the classroom?

Agree ( ) strongly agree ( ) Disagree ( ) strongly disagree ( )

19 . Which learning areas do you think can cover the teaching of flood preparedness in the

Classrooms? Social Sciences (English, Kiswahili, History) ( ) Life orientation ( )

Natural Sciences (Biology, Chemistry, Geography) ( ) Other ( )

20 . a. Are you aware of the Safety Standards Manual for Schools? Yes ( ) No ( )

b. If yes has the manual been of any assistance in flood preparedness in the school?

Yes ( ) No ( )

21 .a) Are there any warning systems towards floods?
Yes ( ) No ( )

b) If yes Which ones?_____
_____

22 . a) Does the meteorological department give warning to this school before floods occur?

Yes ( ) No ( )

b) If yes how is the warning
given?_____

23.a) Does this school have any plans for floods? Yes ( ) No ( )

b) If yes what plans does the school have towards floods?_____

_____

24. a) Are you trained on flood preparedness? Yes ( ) No ( )

b) If yes give one area you are trained in_____

Part C: Flood Preparedness for Students

25. Are learners taught flood preparedness? Yes ( ) No ( )

26 . Are there evacuation drills on floods conducted for students in this school? Yes ( ) No ( )

27. a) Are students taught life skills in preparedness to floods? Yes ( ) No ( )

b) If yes which life skills are they taught? _____

_____

28. a) Do students know what to do when floods occur? Yes ( ) No ( )

b) If yes state what they are supposed to do in case of floods_____

_____

_____

29. a. Do students miss school when there are floods? Yes ( ) No ( )

b. If yes why do they miss school?

_____

_____

__

c. How long do the students stay away from school during floods? 1-2 weeks ( )

3-4 weeks ( ) 5-6 weeks ( )

30. a. Have floods led to students dropping out of school? Yes ( ) No ( )

b. If yes what measure has the school taken to ensure that students do not drop out due to

floods?

_____
_

31. a. Have students from this school ever transferred to other schools as a result of floods?

Yes ( ) No ( )

b. If yes why do they transfer?

_____

32. a. When playing grounds are flooded, are there alternative playing grounds for the students?

b. If yes where are they located?_____

33. Do students participate in building dykes and sandbags to prevent floods? Yes ( ) No ( )

34. Are there specific evacuation routes identified for students to use when floods occur?

Yes ( ) No ( )

35. Is there an identified high ground where students can evacuate to during floods?

Yes ( ) No ( )

36. a) Have exams ever been disrupted by floods? Yes ( ) No ( )

b) If yes what measures has the school taken to ensure that exams are not disrupted by

floods in future?

37. Are students taught first aid on floods? Yes ( ) No ( )

Part D: Challenges

38. What challenges do you face when the school is affected by floods?_____

39. What challenges face students when the school is affected by floods?_____

Appendix D:

Student questionnaire

This questionnaire has three parts. You are required to answer all questions as per the instructions given. Your personal information is not required.

Part A: Demographic data

(Indicate your choice by marking the appropriate block with X).

What is your gender? Male ( ) Female ( )

Indicate what form you are. Form 1 ( ) Form 2 ( ) Form 3( ) Form 4 ( )

Under which age group do you fall? Below 12 years. ( )

12-14 years ( ) 15-17 years ( ) 18 years & above ( )

Part B: flood disaster education questions.

4.a) Is this school affected by floods? Yes ( ) No ( )

b. If yes how frequent is the school affected by floods?_____

c. When was the last time the school was affected by floods?

_____

5.a)Have you learned how to prepare for floods? Yes ( ) No ( )

b) If yes, where did you learn how to prepare for floods?

School ( ) Home ( ) Hospital ( ) Other (specify) ( )

Part C: students flood disaster preparedness.

6.Have you ever been taught how to prepare for floods?

Yes ( ) No ( )

7.Indicate the subjects in which you have been taught how to prepare for floods.

Social sciences(English, Kiswahili, History) ( )

Natural sciences (Biology, Chemistry, Physics, Geography) ( )

Life orientation ( ) Other (Specify) ( )

9 a) Do you know what to do during a flood emergency at school?

Yes ( ) No ( )

b.If yes, state what you are meant to do in case of flood emergency in school?

_____

10. Do you ever perform the following emergency drills in preparation for floods in your school?

Evacuation drills ( ) Rescue drills ( ) First Aid drills ( )

Other (specify) ( )

11. a) Are you taught life skills in preparation to floods? Yes ( ) No ( )

b) If yes which skills have you been taught?

_____

12. Are there any specific evacuation routes identified for students to use when there are floods? Yes ( ) No ( )

13. Have exams ever been interrupted by floods? Yes ( ) No ( )

14. Which of the following interfere with access to school when floods occur?

i) Flooded roads ( ) ii) Damaged roads ( )

15. Which of the following interfere with learning when floods occur? (Tick as many as

possible) i) Flooded classrooms ( ) ii) Flooded toilets ( )

iii) Flooded playing grounds ( ) iv) Classrooms being used as shelter by community members ( ) v) None of the above ( )

16. Are your text books and exercise books destroyed by floods ?

17. Have you ever participated in building dykes and sand bags to prevent floods?

Yes ( ) No ( )

Appendix E

Interview Guidelines for The District Education Officer

1. What types of disasters occur in Budalangi division?
2. Have schools in this district ever been affected by floods?
3. If yes how often are schools affected by floods?
4. Which schools are most affected by floods in the district?
5. Which physical facilities are most affected in schools?
6. When classrooms are flooded, are there arrangements for different location for learning?
7. Are schools closed when this area floods?
8. Are schools in this district used as shelters by the community when there are floods?
9. Does the meteorological department give warning to schools before floods occur in this district?
10. Are you aware of Safety Standards Manual for Schools in Kenya from the Ministry of Education?
11. Is flood disaster preparedness taught to learners in schools?
12. Have you ever attended a training or workshop on flood disaster preparedness?

13. Are there emergency drills conducted in schools in this district?

14. Is disaster preparedness taught in schools in this district?

15. Have exams ever been disrupted by floods?

16. If yes what steps has the Ministry of education taken to ensure that exams are not disrupted in future?

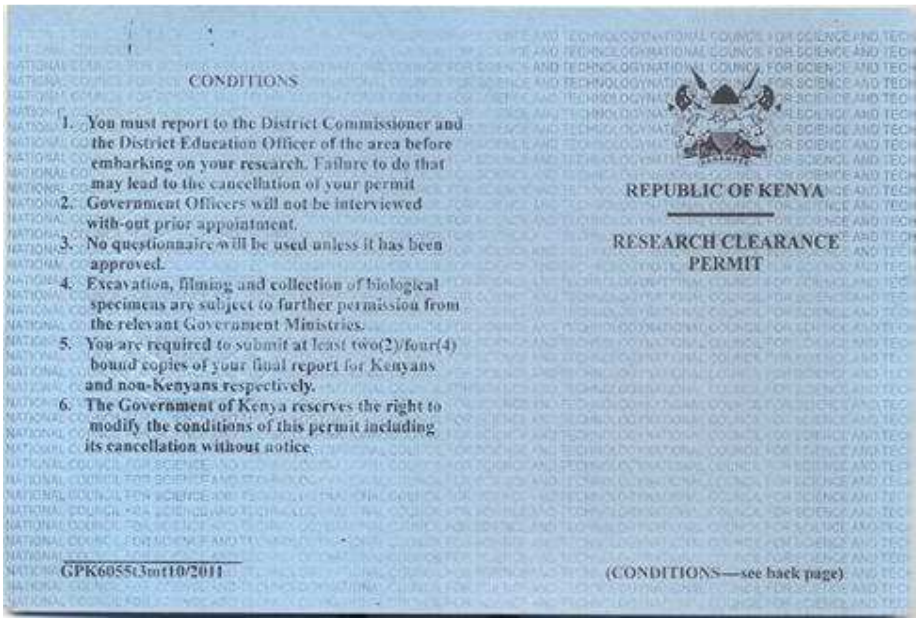
Appendix F

Focus Group Discussion Guidelines For Students.

1. Are there any disasters that affect your school?
2. If yes which ones?
3. Is floods one of these disasters?
4. If yes has this school ever been affected by floods?
5. Which physical facilities ate affected most by floods?
6. Are you taught how to prepare for floods in school?
7. What would you do in case of a flood emergency at school?
8. Do you perform emergency drills in case of floods in school?
9. Do you perform emergency drills at school in preparation to floods?
10. Do you participate in building dykes and sand bags to prevent floods in school?
11. In case of floods occurring in your school, do you know the routes to evacuate to safe grounds?
12. Do you miss coming to school as a result of flood occurrence?
13. If yes why do you miss school?
14. Is learning affected when there are floods?

15. If yes how is learning affected?

16. Does your family migrate to other parts of the district when there are floods?



CONDITIONS

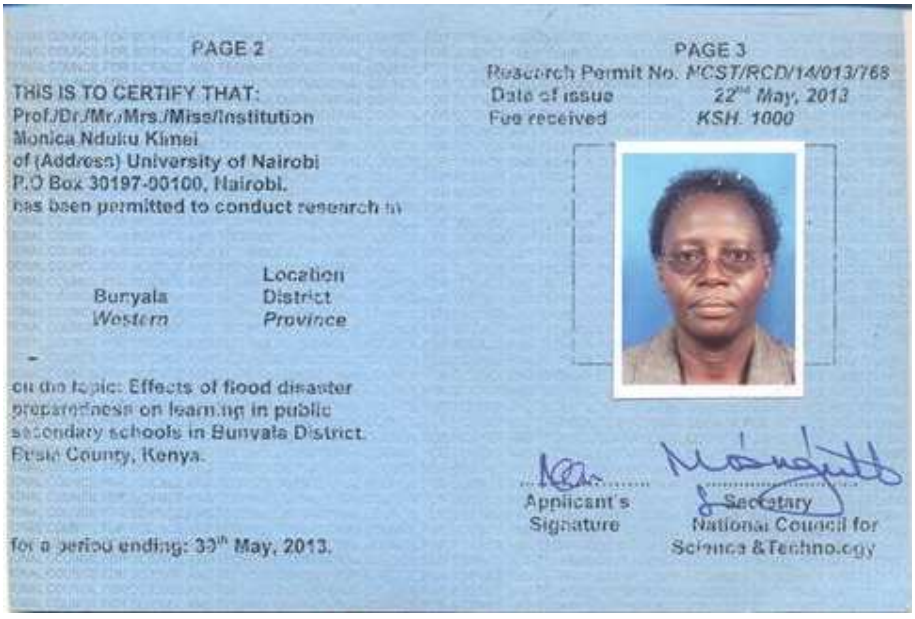
1. You must report to the District Commissioner and the District Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit
2. Government Officers will not be interviewed with-out prior appointment.
3. No questionnaire will be used 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)/four(4) bound copies of your final report for Kenyans and non-Kenyans respectively.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice.

GPK6055(3m)10/2011

REPUBLIC OF KENYA

RESEARCH CLEARANCE PERMIT

(CONDITIONS—see back page)



PAGE 2

THIS IS TO CERTIFY THAT:
Prof./Dr./Mr./Mrs./Miss/Institution
Monica Nduku Kimei
of (Address) University of Nairobi
P.O Box 30197-00100, Nairobi.
has been permitted to conduct research in

Bunyala Location
Western Province

on the topic: Effects of flood disaster preparedness on learning in public secondary schools in Bunyala District, Busia County, Kenya.

for a period ending: 30th May, 2013.

PAGE 3

Research Permit No. NCST/RCD/14/013/768
Date of issue 22nd May, 2013
Fee received KSH. 1000

Applicant's Signature

Secretary
National Council for Science & Technology

REPUBLIC OF KENYA

NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

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Website: www.ncst.go.ke

Our Ref: **NCST/RCD/14/013/768**

Date: **22nd May 2013**

Monica Nduku Kimei
University of Nairobi
P.O Box 30197-00100
Nairobi.

RE: RESEARCH AUTHORIZATION

Following your application dated **10th May, 2013** for authority to carry out research on ***"Effects of flood disaster preparedness on learning in public secondary schools in Bunyala District, Busia County, Kenya."*** I am pleased to inform you that you have been authorized to undertake research in **Bunyala District** for a period ending **30th May, 2013.**

You are advised to report to **the District Commissioner and District Education Officer, Bunyala District** 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. M. K. RUGUTT, PhD, HSC.
DEPUTY COUNCIL SECRETARY

Copy to:
The District Commissioner
The District Education Officer
Bunyala District

"The National Council for Science and Technology is Committed to the Promotion of Science and Technology for National Development".