CHAPTER ONE: INTRODUCTION

1.1 Background

The definition of ‘environmental hazards and disasters’ is difficult. Previous definitions have been given of natural hazards, such as that by Burton and Kates (1964) who define them as “those elements of the physical environment harmful to man and caused by forces extraneous to him”. Traditionally, environmental hazards and disasters have been seen as ‘Acts of God’ (Smith, 2002). This perception has not been helpful because it suggests that humans have no part to play in creating these hazards and have even less hope of mitigating them.

Environmental hazards and disasters comprise serious elements worthy studying in Geography. This is because they occur in people’s natural and social environments. Hazards management decisions cannot be entirely based on objectives or statistical assessment of risks. The model of discussions making mostly widely employed in the hazards fields is centered on individual choice and relies on the concept of bounded rationality in conditions of risk and uncertainty. In short, an individual responds to a hazard only after a threat is perceived and that any subsequent action is based on a subjective assessment of a perceived range of alternatives.

Kates (1962) accepts that humans are largely rational in making relevant decisions and that they make choices from a range of alternatives. But Kates stressed that such choices are based on a combination of individual knowledge (so called ‘the prison of experience’) and that it is this experience which determines the perception of hazards. In other words, hazards victims and managers respond to environmental hazards and disasters in different ways according to their personal experiences and perceptions.
Environmental hazards and disasters mean different things to different people because each person holds a unique view of the environment. All individual perceptions are regarded as equally valid evaluations because each individual chooses his or her own response. Mostly, the perception of environmental hazards and disasters are dependent on individual intuition, personal awareness, personal experience, personality factors, individual action and so on.

‘Environmental hazards and disasters’ as a topic is found in the Geographical and Environmental studies of Zambian Geography Education at all levels. However, students and lecturers (teachers and pupils alike) tend to receive the given content in the syllabus without critically thinking about it and its appropriateness. Individual intuition, experiences and factors are not fully taken on board in relation to environmental hazards and disasters in Zambia Geography Education.

Against this background, this study looked at the perception of environmental hazards and disasters in Zambia’s college Geography Education. This study mainly focused on the lecturers and students of Geography. Their perceptions and reactions to environmental hazards and disasters as a topic in Geography was the core issue that this study investigated.

1.1 Statement of the problem

In the Zambian High school Geography syllabus and diploma college syllabus, environmental hazards and disasters are taught under environmental hazards. Ntalasha et al (2003) clearly cover the topic which reflects floods, drought, earth quakes and others. In college geography, the topic on hazards and disasters is taught under environmental studies. However, teacher educators and students teach or learn the suggested content in the syllabus without critical contemplation of the topic, that is, its worth and appropriateness. Yet, this topic is so important that exploiting it
fully could assist learners live in an informed way and consequently avoid certain hazards and disasters that may occur in their environments.

The problem investigated by this study was that lecturers and students took what they taught and learnt respectively for granted without critically thinking about the worthiness and appropriateness of the topic in their environment. Such perceivers may not be applying hazards and disasters to relevant aspects of their lives too. Against this background, this study sought to look at the perceptions of environmental hazards and disasters among lecturers and students of Geography in diploma colleges of Zambia. The perceptions and reactions were the core issue that this study investigated.

1.3 Aim

The main purpose of this research was to investigate perceptions of environmental hazards and disasters by students and lecturers in college Geography Education in Zambia.

1.4 Objectives

The objectives of this study were:

1. to find out environmental hazards and disasters which were common in Zambia.
2. to explore the views of college lecturers and students on environmental hazards and disasters in college geography education.
3. to assess elements that college lecturers and students felt should be included or excluded in the topic on ‘environmental hazards and disasters’.
1.5 Research questions

1. What environmental hazards and disasters are common in Zambia?

2. What are the perceptions of environmental hazards and disasters held by college lecturers and students in Geography Education?

3. What issues do college lecturers and students feel should be included in or excluded on the topic of environmental hazards and disasters?

1.6 Significance of study

This study provides insights into the provision of environmental hazards and disasters not only in Zambian college Geography but also in the high school Geography as it trickles down to basic levels. It establishes the importance of teaching the topic in the college Geography. The perceptions and reactions to be explored will have better placement of hazards and disasters as a topic in college geography education. This study has equally established the importance and application of environmental hazards and disasters not only in the classroom situation but also in solving environmental problems at individual level, regional level, national level and global level. The study on environmental hazards and disasters will also provide information to the Disaster Management and Mitigation Unit in the planning processes. The Ministry of Education can as well be provided with information needed for implementation of localized curricular in selected schools.
CHAPTER TWO: LOCATION AND DESCRIPTION OF STUDY AREA

The colleges sampled in this study are found in Livingstone (David Livingstone College of Education) and Kabwe (Kwame Nkrumah College of Education). A description of these towns where the colleges are located will be given. The purpose of this chapter is to describe the main features of the towns where the colleges are found as study areas with respect to context. By context, in this case, is meant a complex of factors of the environment in the study. Some responses could be influenced by what the respondents experience in their local environment (towns where colleges are located). It is hoped that the description of the study areas provided will account for the environmental hazards and disasters respondents suggested as being common in Zambia as reflected by the first objective.

2.1 Livingstone

2.1.2 Livingstone in General

Livingstone District has an area of 688.02 square kilometres and a population of about 127,134 (CSO, 2000). It has a population density of 150 persons per square kilometre and a population growth of 2.1 percent. About 66 percent of the population of the district lives below the poverty datum line. These people struggle at the margin of the formal economy.

According to Cohen (2004), Livingstone district is a cosmopolitan town with different ethnic groups co-existing. This diverse ethnicity includes the Toka Leya, Lozi and Tonga. There are also the Bemba, Ngoni, Tumbuka, Chewa, Luvale and Lunda speaking tribes. The majority of the population of Livingstone is concentrated in the urban townships rather than in the rural
areas. Urban employment, tourism, and informal trading are the main sources of livelihood for the people of Livingstone.

The district once flourished with manufacturing industries, tourism, agriculture and timber processing. Most of the manufacturing died down in the early 1990’s. Unemployment became rife although there has been some improvement in the recent past with the revamping of the tourism sector (CSO, 2002).

2.1.3 Climate

Livingstone has a continental climate. The annual rainfall averages approximately 600mm of which two-thirds fall in the three months December, January and February. Average rainfall from November to March is 780mm. But it is 700mm for October and April, being the onset and departure months for rainfall. The rainfall is more erratic and unevenly distributed. It is drought prone area and over 80% of the average rainfall is likely to be recorded in two years out of three (Bwalya and Naidoo, 2003).

2.1.4 Temperature

According to the Zambia Meteorological Department (ZMD 2004), temperatures in Livingstone vary considerately between the cool and hot seasons. They range from 0.0 degrees Celsius in the cool season (May to June) to 40.0 degrees Celsius in the hot season (September to October). Mean minimum temperatures do exceed 19 degrees Celsius in any month so nights are usually uncomfortable and very hot day time temperatures are so limited to a relatively short season. A feature of the climate is that maximum temperatures average over 25 degrees Celsius in June and July. Winter days are warm and pleasant even when the occurs at times. Temperatures are
fairly constant from December to March and then start decreasing in late April or May. Highest temperatures occur in October. The daily range of temperature is least during the cool season (ZMD, 2004).

2.1.5 Wind

Cohen (2004) also observed that the prevailing average wind direction in Livingstone throughout the year is easterly and average speeds are relatively light. Wind directions are, however, more variable during the rainy season when spells of Northwesterly winds occasionally occur. Average wind speeds are highest during the rainy season especially during thunderstorms when the strongest gusts are recorded. Sunshine average humidity varies from 33% in September and October, but falls to about 6% per day during the rainy season. There is a tendency for the weather to occur in spells, that is, a few cloudy days followed by the rainy days for the year as a whole; sunshine is recorded at 70% of the time between sunrise and sunset.

2.1.6 Humidity

Livingstone has one of the highest temperatures in the southern province during both the hot and cold season. The mean relative humidity’s lowest value is 77% in February. The climate in Livingstone is thus pleasant and ideally suited to a year round tourist industry. During the peak hot months, air conditioning is a significant benefit and more expensive accommodation usually incorporates such a facility (Bwalya and Naidoo, 2003).
2.1.7 Vegetation

Riley (1996) observes that Livingstone was heavily forested some 130 years ago, especially in the immediate vicinity of the Victoria Falls. It is believed the area was mantled with vegetation and this was depicted on one of the early paintings by the first Europeans to visit the falls. The situation at present is rather different. The vegetation is scanty and of a secondary type. The open nature of vegetation in the area is without doubt a result of wide spread cutting down of trees to pave way for development in the district. Bwalya and Naidoo (2003) also observed that forest depletion around Livingstone City caused shifting of wildlife because they could no longer thrive in thin vegetation. Most of the animals have left and sanctuary in the Victoria Falls national park in Zimbabwe. Generally, of all the areas around Livingstone it is only the north forest reserve that is moderately wooded. Predominant of wood in the district are Mukwa, Mukusi and Mungongo.

2.1.8 Hydrology

Kachingwe (2007) contends that Livingstone is situated in geological belt of Karoo lavas (basalt) with low permeable that is associated with joining. Th geology resulted in the formation of Victoria Falls. Livingstone lies on ground that is sli higher than the rivers of Maramba and Nasanzu on the one side, and a small stream (Dambwa) that runs at the foot of the Airport hill on the other. To the south of the district, several small streams to the Zambezi River, there is a rapid surface run – off, thus flooding is not been full utilized.
2.1.9 Geology

Kachingwe (2007) observes that Livingstone district is built on post – Karoo volcano rock known as Batoka basalt. The basalts are usually exposed along low lying and major rivers and streams and they form terraces, which are expression of different lava flow. Basalt is sandstone occupies hilltops and rugged portion of plateau zone. characteristics of basalt are fine grained highly quartz tic, highly solidified, reddish – brown in color and cemented by iron oxide. The plateau parts of the area are covered by thick pile of the Kalahari sands. These are unconsolidated wind blown sands associated with consolidated gravels to the base cement by chalcedony, iron oxide and in places lime. These sands are generally regarded as belonging to Kalahari systems of western Zambia.

2.1.9.1 Soil

According to Bwalya and Naidoo (2003) the soil of Livingstone area is characterized by the presence of various layers of sedimentary rocks (grave sands etc) the thickness of these layers depends on the geological changes that took place during the various geological periods. Characteristics of the soil are important for agriculture and building purpose. The basaltic layer occurs in layer at heights of 1:5-15m, above the river level. Above the pipe sandstone t are two layers of gravels and sand (conglomerates) with different characteristics. The first layer occurs at heights between 3m and 4.5m above river leve and rests on a basaltic layer. This conglomerate has the property of being compact and well cemented by the iron oxide. The second layer occurs at heights between 12m and 15m above the river level and is obscured by the alluvial deposits. These older layers are also found below the Maramba River (Bwalya and Naidoo, 2003).
2.2 Socio-economic profile

2.2.1 Water and sanitation

The source of water supply for Livingstone is the Zambezi river. The Southern Water and Sewerage company has three pumping station of different sizes at the same location. Raw water is pumped through two parallel and interconnected steel rising main pipelines to the treatment works in town, about 5.7 Km away. The City has two treatment streams operating parallel with flows distributed to each stream by a splitting tower. The distribution system is presently subdivided into two zones, the high level zone supplied from a water tower or by direct pumping and the gravity zone supplied from the ground reservoirs. The Livingstone Sewerage system is divided into four zones, each serviced by gravity sewers, which discharge the waste water to four pumping stations. The pumping station pumps the waster materials oxidation ponds, where the waste matter is treated through a natural process. In addition some individual houses have their own septic especially in high cost areas or pit latrines in Peri-urban areas (LCC, 2006).

The Livingstone City Council (2006) also explains that Southern Water and Sewerage Company exists to and endeavors to provide improved supply of drinking water and adequate sanitation services effectively, efficiently and sustainably to all urban and Peri-urban customers in Livingstone. In this regard, the following products and services are provided to the high, medium, low and Peri-urban areas:-
v Storage Portable water supplied to the premises of dwellings, commercial enterprises and institutions.

v Portable water supplied for collection by consumers at public stands.

v Provision of kiosks for Peri-urban areas.

v Sewage removed from customers premises by means of sewer pipes and treated elsewhere.

v Sewage removed from customers premises by means of tanker (to be introduced soon) and treated elsewhere.

v Localize sewage and partial treatment (on-site sanitation), (LCC, 2006).

2.3 KABWE

2.3.1 Introduction

2.3.2 Location

According to Kabwe Municipal Council (2004) Kabwe town is geographically centrally located in the country. It is located in the vicinity of 14.27° south and longitude 28.27° east. The present estimated population is 179,900 inhabitants. Kabwe is along the Great North Road some 140km north of the capital city of Zambia, Lusaka and about 55km from Kapiri-Mposhi in the north. Other than being an important mining town for many decades and an economic giant of the country in the past, it is the provincial headquarters for Central Province. It is also the headquarters for Zambia Railways. The rail line connects Zambia from south to the north. At Kapiri Mposhi, the rail line links with Tanzania Zambia Railways up to DaresSalaam in Tanzania. The southern rail line links Zambia up to South Africa. Kabwe was one of the most prosperous towns in Zambia at the time of the country’s independence in 1964 with a vibrant
economy backed by extraction and processing of Zinc and Lead. The economy was complimented with industrial activity that provided goods and services to the mines. Employment was at its highest and the booming industrial activities attracted immigrants from all parts of rural Zambia and neighboring countries namely Malawi, Zimbabwe, Botswana, Democratic Republic of Congo and Tanzania. Provision of social services was also at its best when the Council was adequately funded both locally and externally. 1994 was a turning point in Kabwe’s economic history as the mines were closed and forms of industrial activity that depended on it were either closed or privatized which job resulted in mass job losses. These job losses caused serious socio and economic shocks in the district.

2.3.3 Climate, geology, soils, drainage system and population

Kabwe has a cool and hot dry season with hot wet season. During the dry season, the temperatures range between 10°C and 21°C. Temperature rises steadily from 18.3°C in August to 21.8°C in September. The mean maximum temperature in October is around 23.8°C. The area receives convergence rainfall which is associated with the Democratic Republic of Congo Moist Air. The average rainfall received is 885.7 millimeters while the vegetation is mainly indigenous open woodlands (Meteorological department, 2005). The geology of Kabwe is made up of the kafanganese system and the Broken Hill series while the soils are clay to sandy loams a combination of the two variables largely influence the drainage system of the area. Synoptically, Kabwe is overlain by the fersiallitic and ferralitic classes of soils (ECZ, 2004). The area is drained by Chitakata and Mulungushi streams. Lusemfwa river is also one of the fluvial system (Topographic map, 1428A4).
2.3.4 Location within the agro-ecological region, altitude and language groups.

Generally, Kabwe is located in the agro-ecological region. The Ilas inhabit this region the most. Other people found around Kabwe include the kunda, Bemba, Lala and Bisas are among others (CSO, 2000).

2.3.5 Land use patterns

According to Bruce (1972), planned areas in Kabwe constitute the inner core areas around the Mine Area to the South, the central business district the centre and the industrial complex to the north. The zone is immediately flanked by high cost residential areas (Luangwa, Town Centre, Highridge, and Railways) before getting to more remotely set medium cost areas (Pollen, Lukanga, Buyantanshi) and low cost areas (Kasanda Mine Township, Bwacha, Chimanimani and Ngungu). Planned areas are hemmed in by an outer ring unplanned and often an-authorised settlements (Kamushanga, Abdul, Kakumbi, North East of town and Shamabanse, Kawama Wolotala and Zambani to the North West and Site and Service Schemes (Mukobeko, Katondo Natuseko) The development of an appropriate urban structure for the expansion of the town involves an examination of the factors affecting Development within the planning boundary:

? To the North east of the built-up area, the barracks, agriculture research station and military training area form a barrier to expansion and much of the latter is a dambo. Within the Municipal Boundary, there is an area between Chindwin Barracks and Natuseko, which although very flat, is not dambo;

\[\text{v} \]

Chankwakwa stream. Islands of dambo-free area exist, but access would be difficult
The Northern edge of the district is a planned commercial area but most of it which is not dambo is cultivated

To the North West of the urban area, west of Mukobeko road is a considerable area of dambo-free, flat land which could be extended if the forest was made available for urban development

This area contains large farms and smallholdings of which only a limited is cultivated. The airfield is in this area and would place limitations on development in its immediate vicinity. However, this area is separated from the rest of the municipal area by the north western corner of the mine land and part of it falls within the area most liable to atmospheric lead pollution and

-west and south of the town. The mine was once not keen on releasing more of this land to the Municipality for urban development. Some of the mine land has been squatted on. This area of land has now become available for urban development after the closure of major mining activities (KMC, 2004).

2.3.6 High Cost Housing Areas.

This category comprises old and new residential areas. These are Highridge, Luangwa Railways, Dallas, and the Town Centre. The new high cost residential areas are Nkrumah and Kalonga and these are sparsely developed. Nkrumah housing area for instance has 700 plots out of which only about 60 had been developed as at end of January 2005. Kalonga has 500 plots out of which only about 83 had been developed during the same period (KMC, 2004).
2.3.7 Medium and low Cost Housing Areas

According to the Kabwe Municipal Council (2004), this category experiences relatively higher pressure for development than high cost housing areas. Densification of development is through extension of dwelling houses to accommodate more households, development of infill plots and development of new sites. Squatter Settlements Unauthorized settlements have occupied about half of the land planned for residential development. Density of development varies in these areas. Whilst settlements such as Nakoli and Kaputula have a density of 10-15 housing per half hectare, others such as Makululu are sparsely developed with an average density of only about 2-3 housing units per hectare. Such a density of development for low income housing is not sustainable as the unit cost of providing services would be extremely high and unaffordable for the residents (KMC, 2004). Recognized informal settlements include Makululu, Kawama, Nakoli, Kaputula, Shamabanse and Katondo. Those not recognized include Makwati, Kakumbi, Kamushanga, Abdul, Wolotala, Waya and Kamakuti. The council has not recognized these areas because they do not meet the criteria set out for regularizing informal settlements. It is also feared that regularizing informal settlements would attract further settlers. Inadequate Infrastructure Development in the district is affected by inadequate infrastructure for service provision in general. For instance whilst there has been consistently high growth of settlement areas, there has not been matching growth in service provision in terms of water and sanitation, access roads, socio-economic services and drainage. The total land available for development in Kabwe is 1,372 ha according to the existing land development plan. The undeveloped residential land is split into the different housing categories (KMC, 2004).
Fig 1: A Map of Zambia showing sampled colleges of Education
CHAPTER THREE: LITERATURE REVIEW

3.1 Introduction

Hazard is an ever present, inescapable, part of life. Each day, we all face some degree of personal risk, whether it be to life and limb in a road accident, to our possessions from theft or carelessness or to our immediate surroundings from noise or other types of pollution. No one can live in a hazard totally free environment. Zero tolerance to risk is not easily attainable if not completely impossible (Covallo and Mumpower, 1985). Risk is sometimes taken as synonymous with hazard, but risk has the additional implication of the chance of a particular hazard actually occurring.

Hazard may be defined as ‘a potential threat to humans and their welfare’ and a risk as ‘the probability of hazard occurrence’ (Okrent, 1980). Burton and Kates (1964) define environmental hazards and disasters as “those elements of the physical environment harmful to man and caused by forces extraneous to him.” Traditionally, hazards have been seen as ‘Acts of God’. This perspective has not been helpful because it suggests that humans have no part to play in creating these hazards and have even less hope of mitigating them (Smith, 1992).

Smith (1992) defines hazards as, ‘a potential danger’, something that is potentially very dangerous. A disaster is a sudden, calamitous event bringing great damage, loss, distraction and devastation to life and property (Okrent, 1980). The damage caused by disasters is immeasurable and varies with the geographical location, climate and the type of the earth surface or degree of vulnerability. This influences the mental, socio-economic, political and cultural state of the affected area. Okrent (1980) defined disaster as “an event that causes serious loss, destruction, hardship, unhappiness or death.” Generally, disasters affect concerned areas
by completely disrupting the normal day to day life. Disaster can equally be termed as “a serious disruption of the functioning of society, causing widespread human, material or environmental losses which exceed the ability of the affected society to cope with its own resources.” A disaster can be unpredictable, fast, threatening, urgent and so on. Thus, in simple terms, we can define disaster as “a hazard causing heavy loss to property, life and livelihood” (Starr, 1979).

Generally, disasters are of two types, natural and man-made. Based on the devastation, they are further divided into major and minor. Examples of natural disasters include floods, cyclones, drought, earthquakes, cold waves, thunderstorm, heat waves, mudslides, storms and many more (Ericksen, 1988).

Many countries have introduced the study of environmental hazards in the school curriculum. Studies in geography and earth sciences reflect this argument. At most, many countries have put in their curriculum topics related to their scenario. Topics related to common environmental hazards in their country are enshrined in the syllabus. Therefore, levels of perception tend to differ from one country or region to the other. Zambia is of no exception.

3.2 Global perspective

From the global perspective, some countries have integrated teachings on risks and hazards into the national curriculum in colleges and schools. Environmental hazards and disasters are mainly taught in geography and biological sciences in countries. At the world conference on disasters reduction in Kobe, 2005, 168 governments pledged to reduce the impact of disasters on their citizens. The key document that came out of the Kobe agreement is the Hyogo Framework for Action (2005-2015). A core part of this framework is the use of
knowledge and education systems to build a culture of safety and resilience at all levels. This framework recommended integrating teaching on local hazards and risks into the college and school curriculum (Wisner, 2006).

The Hyogo Framework for Action (2005-2015) set recommendations to facilitate government dialogue with citizens and guide the creation or integration of national policy on disaster risk reduction. Some of the recommendations were as follows:

- Integrate teaching on local risk and hazards into the Curriculum.
- Set targets on teaching on disaster risk, defining ages to be taught.
- Incorporate teaching on local hazards into existing subjects, such as, earth science or geography.
- Provide adequate teacher training in the colleges.
- Involve teachers’ Unions to ensure widespread understanding and commitment from teachers (Wisner, 2006).

The Curriculum must incorporate teaching on local hazards and reducing risks. Teaching in the classroom about hazards in the local environment is an effective measure governments committed themselves to undertake.

Many countries already benefit from the wide variety of methods for teaching, about natural hazards, disaster preparedness and prevention (IFRC, 2005). However, at the time of Kobe WCDR, around 60% of countries responding to a United Nations information survey did not have any kind of disaster-related teaching in their Curriculum.
3.2.1 Hazards education in France

In 1998, Hurr carried out a research among the teachers, lecturers and students in colleges of education in France on the perception of environmental hazards and disasters and what they felt the ministry of higher education should concentrate on. The study revealed that a bias was towards the hazards and disasters prevalent in France. The teachers, students and lecturers were of the idea that the teaching on environmental hazards and disasters in French education should concentrate on heat waves, tornados, glacier flooding earthquakes. This was because they were prevalent in the French environment and learning about them would provide solutions to local problems (Hurr, 1998).

Moreover, in the 1990s, a national network of instructors was created by the Ministry of Environment in France to provide staff including teachers and other specialists in the area of hazards education. Staff was assigned to schools and colleges of education to foster a risk awareness culture in the education sector (OECD, 2004).

In 1995, a crisis management tool for school and college principals, known as the SESAM plan (School Emergency Standardized Answer in case of Major accident,) was developed by a working party of emergency specialists in collaboration with the Ministry of Higher Education. In 1998, the French institute of instructors in major hazards was established to facilitate implementation of SESAM with two principal objectives:

- To introduce risk awareness into civic culture through education and training for students, staff and the educational community.
- To help schools and colleges develop a strategy to ensure the safety of students and staff in the event of a major emergency (OECD, 2004).
In 2002, the main elements of the SESAM plan were incorporated into the colleges and schools curriculum, especially in geographical studies. This included specific risks to which the country may be exposed (e.g. natural or technological hazards, conflict, and fire). It contains procedures for evacuation to a shelter and containment of an emergency.

A number of strategies are currently used to facilitate the national implementation of SESAM plan. These include:

- Training of teachers and school district administrators in safety education.
- Establishment of a working party for the purpose of identifying risks, resource staff, school access and so on.
- Civic education, raising risk awareness and individual and community behavior and responsibilities as important part of the education process.
- Dissemination, informing about the plans in a standardized format by tools to parents, supervisors and emergency services.
- Evaluation

The SESAM in France is an effective education and training instrument for students, staff and others. It has been adopted in schools, especially in environmental sciences and geography.

### 3.2.2 Australia and hazards education

Nicholson (2007) conducted a research in Australia’s education sector on the environmental hazards and disasters and how the education sector could be fully involved. The study revealed that most educationists, that is; teachers, lecturers other stakeholders were of the idea that hazards commonly reported in Australia should be concentrated upon in the education sector. This was with the perception that these environmental hazards and disasters taught could provide
answers to common environmental problems. The teachers and lecturers suggested that concentration should be on disasters like avalanches, tszards, cyclones, floods, tsunamis, volcanic eruptions, wildfires and bush fires, storms and heat waves (Nicholson, 2007).

Australia has equally made strides in integrating education in the national colleges and schools curriculum. It is taught in geography and earth sciences. In terms of teaching about hazards and disasters in geography and social studies classrooms, the spectrum of attitudes towards disasters is derived from Handmer (1994), who provides a clear dimension, one more related to sustainability in human societies.

In Australian hazards education, there is a belief that geography education has a wider responsibility in assisting students develop their understanding of both the physical human created systems that may in certain circumstances lead to disasters (Lidstone,1994).

Just as geographers have been in the forefront in our emerging understanding of why disasters occur, so geographical education in Australian schools provides the most appropriate medium for creating a citizenship able to come to terms with living in dynamic social and physical Environments. Geography as a field is fundamentally concerned with the spatial distribution of phenomena on the surface of the earth. However, the spatial distributions of many of the factors that influence lives are not imposed by nature but are created by human population through its social structures. For this reason, the foremost aim of geographical education may be seen as developing citizens ready, willing and able to work towards ensuring the sustainability of societies through their contribution to spatial organisation.
3.2.3 Perception of hazards and disasters in Cuban education

IFRC (2005) notes that, despite the deterioration of teaching conditions, Cuba has strong history of reducing risk. In many ways, it is exemplary in the way it has used the education system to reduce the impact of disasters. The national geography Curriculum covers disaster preparedness and response to environmental hazards and disasters related to what is common and prevalent in Cuba (Wisner, 2006). In the Cuban schools and colleges, environmental hazards and disasters common in that country are concentrated upon. These include storms, hurricanes, tsunamis, tornados, fires, floods and typhoons. A study carried out by Wisner (2006) revealed that the teachers and students in Cuba are of the idea that schools and colleges should more about the environmental hazards and disasters that affect Cuba. This is meant to solve the problems of the immediate environment. The Cuba Red Cross produces teaching materials, and the safety messages that students in colleges and pupils in schools learn are reinforced by what their parents hear in training courses and drills in the workplace (Wisner, 2006). The teachers and lecturers together with the ministry of education put it that the main teaching period on hazards and disasters in Cuba to colleges and schools was May, before the beginning of the storm season.

During disasters (hurricanes, for example), National Media play a key role in publishing the potential threat, working closely with a world-class Meteorological Institute. Cubans call this ‘information phase’. Local authorities and neighborhood communities then check on the most vulnerable areas and evacuate people. Schools and other public buildings are designated shelters and provided with food, water and so on. Due to education on Environmental hazards and disasters, the students, pupils and communities understand what is being told to them by the authorities and weather scientists (IFRC, 2005).
3.2.4 Latin America and Asia on natural hazards and disasters’ education

In Latin America, natural hazards are part of the Curriculum in Argentina, Cuba, Ecuador, Nicaragua, Peru, Venezuela, El Salvador and Panama, using diverse teaching methods, such as, child-to-child teaching, work camps, risk mapping and work camps.

In Asia, big steps have been made in India where disaster and hazards education is part of the year eight and nine Curriculum and over one thousand teachers have been trained in the use of the new Curriculum. Teacher training colleges are also taught about environmental hazards and disasters through geography. In China, a text book on natural hazards, including a focus on China, “Is on every Middle-school Student’s desk” (Wisner, 2006).

The methodology and quality of teaching about local risks and hazards vary greatly from country to country. However, foundations exist for sharing teaching practice and adapting Curricula so that schools and colleges become a conduit of knowledge, linking the teaching of natural sciences with practical action. Governments in these Asian and Latin American countries set themselves certain targets in that they must:

- Incorporate teaching on hazards into existing subjects, such as Earth Science or Geography. Community vulnerability assessment tools can be used to develop teaching methods.
- Provide adequate teacher training.
- Involve teachers’ unions to ensure widespread understanding and commitment from teachers.
3.2.5 Perception of hazards and disasters in Nepal’s education sector (action aid disaster risk reduction in Nepal)

In Nepal, the earthquakes have had devastating effects. Against this background, most people in Nepal associate hazards and disasters with Earthquakes (Tremor, 2002). This is their perception. Therefore, the education sector in collaboration with university lecturers, teachers and other stakeholders involved in curriculum planning have prioritized the teaching of environmental hazards and disasters in the colleges of education and schools. In this case, concentration in the teaching is on earthquakes and the devastating effects. Other environmental hazards and disasters highly pronounced in Nepal’s education are hurricanes, typhoons, floods and tornados (Clinton, 2006).

A Nepalese Non Governmental Organisation called the National Society for Earthquake Technology (NSET) has set up an innovative programme of school refitting and promotion of school building standards, proving cost and technical viability should be no obstacle for wider government programmes.

The availability of local materials dictates the construction process. Technical expertise is lacking and the use of modern construction material is also limited to urban areas. Schools and other public buildings are, therefore, not earthquake resistant. In this context, NSET built on the fact that school construction takes place in a traditional manner and focus on activities on craftsmen training in schools and colleges. The project’s key success has been to demonstrate that local Masons transfer knowledge and safety messages within the surrounding community, leading to the replication of Earthquake resilient construction (Tremor, 2002). NSET works hand
in hand with the schools and colleges in the area of hazards and disasters education in Nepal in the area of Earthquake resilience and other related hazards and disasters.

In Nepal, research shows that simple, inexpensive changes in building practice would save lives in disasters. But the technical knowhow early reaches It was recommended, therefore, that governments should disseminate public safety messages, and bridge the gap between scientific knowledge and practical reality by incorporating disaster education in the colleges and schools Curriculum (Clinton, 2006).

3.2.6 Bangladesh’s ‘good’ practice

As part of a national disaster preparedness programme, Action Aid selected schools and colleges of education in Bangladesh that were visited through an assessment ed on factors of physical setting, teaching content and the willingness of School Management. The focus was on building individual school capacity to draw up hazard maps, assess vulnerability and increase awareness and ability of students, teachers and staff to know how to react in the event of a disaster strike. Perception on environmental hazards and disasters in Bangladesh education among teachers and students was also pursued (Hurr, 1998). The programme activities included:

V Orientation workshop with teachers and students on disaster preparedness in schools and at home.

V Training in first Aid for staff and students.

V School safety ‘champions’ identified (class captain, etc).

V Development of school materials to illustrate evacuation plans and map local hazards. This included posters, games, and books. All materials were developed with the input of students, teachers and parents.
All the selected schools and colleges developed a full safety contingency, plan detailing
the roles and responsibilities of teachers, School Management Committees, guardians
and students.

3.2.6.1 Perception of environmental hazards and disasters in Bangladesh colleges and
schools

In Bangladesh, primary schools and colleges of education curriculum have teaching on
Environmental hazards and disasters. A study carried out by Wisner (2006) revealed that most
of the college lecturers and teachers in schools have perception that only those environmental
hazards and disasters frequent in Bangladesh should be highly taught in colleges and schools. In
this case, tropical cyclones, floods, hurricanes and typhoons were suggested as topics of great
importance to the study of hazards in Bangladesh schools and colleges. The bias, however, is on
the cyclones because they are so frequent in Bangladesh. They look at causes of Cyclones, their
impact on the local area and measures that can be taken to prepare future events and mitigate
damage. This is taught in geography and social studies.

The programme has produced a Modular teaching pack ‘Durjyog Shochetonatay Shishura’
translated as ‘Disaster and the Child: understanding Cyclones (Wisner, 2006).

Bangladesh regularly uses schools and colleges as institutions of floods and disasters education.
Schools and colleges are used as safe places during flooding and Cyclones. Teachers play an
important role in information dissemination within the community largely through their pupils.
Public Health Campaigns have successfully used schools networks to disseminate messages and
prevent the spread of diseases (Wisner, 2006).
Bangladesh is also an illustration of where empty promises can compromise disaster risk reduction efforts. Since the inclusion made by the Ministry of Education in 1997 on the integration of disaster preparedness into the education system, Action Aid has tracked the reality on the ground. Disaster related topics are incorporated in the colleges and school Curriculum. Teachers and students are to be fully trained in disaster preparedness.

3.3 THE AFRICAN PERSPECTIVE

2.3.1 Disaster risk reduction in Malawi

In Malawi, the Action Aid’s disaster risk reduction through school’s project galvanises the Central government to promote risk reduction in the school Curriculum. The Malawi Initiative is part of a pioneering multi-country Project in which 15,000 children, their parents and 56 schools and colleges of education in high risk areas will take part.

The purpose of this project is to demonstrate how schools and colleges of education can be made safer so that they can act as centres of awareness and action on local hazards and risk reduction. While reducing the vulnerability of the targeted Committees themselves, the experience gained on the project is used to help institutionalise disaster education in the Education System (Wisner, 2006).

3.3.2 Nigeria and hazards education

In Nigeria, the National Emergency Management Agency (NEMA) has joined the stakeholders in the education Sector to evolve a comprehensive Policy towards making disaster risk education part of the primary, secondary and colleges Curriculum in order to save lives and insure the future.
NEMA states that children who are taught about natural hazard risks play an important role in saving lives and protecting members of the community at a time of disaster. Making disaster risk education part of National School Curriculum will foster awareness and better understanding about the immediate environment in which children and their parents live and work (NEMA, 2007).

3.4 The Zambian perspective

The Ministry of Education (MoE), through the Curriculum Development Centre (CDC) introduced Environmental hazards as a topic to be learned in the High School Geography and Diploma colleges of Zambia. However, it is learnt under the topic on environmental issues. CDC (2000) set the following objectives to be achieved by the end of the topic:

- Define “natural environmental hazard”.
- Locate on the world map areas prone to natural environmental hazards.
- Describe natural environmental hazards.
- Discuss the effects of natural environmental hazards on people and the environment.
- Identify human environmental hazards.
- Discuss the causes of human hazards.
- Analyse measures humans have adopted to minimize the effects of environmental hazards.
- Suggest ways and means of preventing hazards from industrial waste (CDC, 2000).

Ntalasha et al (2003) equally outlines topics on environmental hazards. These include topics such as earthquakes, volcanic eruptions, blizzards, tropical cyclones, tornadoes, drought, floods, land
slides, avalanches and so on, emanating from the High School Geography syllabus. These are taught at high school level under the topic, “Environmental Hazards”.
CHAPTER FOUR: METHODOLOGY

This chapter presents the methodology which the study used to carry out the research. It is divided into the following subsections: the first section describes the design, pilot study, population, sample and sampling procedures and the research instruments. The last section comprises data collection methods analysis of data and limitations of the study.

4.1 Research design

This study was mainly qualitative. However, some bit of quantitative analysis was used in the presentation of the findings. Frequencies and percentages were used to show responses to certain variables. The study used survey research design. A research design can be thought of as the structure of the research and could be defined as the scheme outline used to generate answers to research problems, (Orodho, 2003). It situates the researchers in the empirical world by connecting them to specific sites, persons, institutions and bodies of relevant interpretive material and documents. It further lays down conditions for the collection and analysis of data. According to Orodho (2003), a survey is a reliable method of collecting information interviewing or administering a questionnaire to a sample of individuals. It is used to collect information about people’s attitudes, opinions, habits, or any of the variety of education or social issues (Orodho and kombo, 2002). This makes a survey reliable when doing a study based in perceptions because people’s attitudes and opinions are collected.

In any study, a single or combination of the designs could be used. A descriptive design has an advantage of not collecting facts but can also result in the formulation of principles and solutions to significant problems (Kombo and Tromp, 2006). In fact, Best (2006) observed that the descriptive survey method enables a researcher to obtain the opinion of the representative sample
of the target population so as to be able to infer the perception of the entire population. In finding out perceptions of environmental hazards in geography amongst college students and lecturers, a descriptive survey was a suitable research design.

4.2 The Pilot Study

A pilot study was carried out at Makeni College of Education with similar characteristics to the group on which the final instruments would be used to collect data from. After answering the questionnaires, the same participants were engaged in a focused group discussion.

The pilot study was undertaken to ensure that items included in the questionnaire were well understood and interpreted by the respondents and to establish the most reliable and suitable way to administer the study instruments to ensure maximum return. On the basis of the responses from the pilot study, the items in the questionnaire were found to be clear and easily understood by the respondents.

4.3 Target Population

The target population of the study consisted of 110 students in diploma teacher training colleges doing Geography. Geography lecturers were equally of importance in this research. All the geography lecturers were targeted. They were all twelve in number. Only education diploma colleges affiliated to the University of Zambia were targeted because they are a true reflection of the education system in Zambia and they are frequently monitored by the university lecturers, unlike private Colleges that lack monitoring. In this case, Nkwame Nkrumah college of Education in Kabwe and David Livingstone College of Education in Livingstone were targeted.
4.4 Study sample

Table 1: Students Sampled in Colleges

The table below shows the student study sample from the two colleges of education. The students sample was to provide diverse and representative information to this study.

<table>
<thead>
<tr>
<th>College</th>
<th>Total number of students</th>
<th>Sample by gender</th>
<th>Total sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Males</td>
<td>females</td>
</tr>
<tr>
<td>David Livingstone</td>
<td>95</td>
<td>22</td>
<td>23</td>
</tr>
<tr>
<td>Kwame Nkrumah</td>
<td>115</td>
<td>23</td>
<td>22</td>
</tr>
</tbody>
</table>

Source: field data, (2010)

A sample is a small proportion of the selected population for observation and analysis. By observing the characteristics of a sample which is diverse, representative, accessible and knowledgeable in a study area, findings can be generalized. In principle, the larger the sample, the more representative it is likely to be and more generalized the results of the findings will be to the target population (Kombo and Tromp, 2006).

Mason and Lind (1990) argue that for a sample to be representative, it has to be 10% or more of its population. In this study, the samples represented more than 10%. In this regard, the sample of this study was representative because it comprised 110 respondents from the two diploma colleges of education that is; David Livingstone College of Education and Kwame Nkruma College of Education. This was out of the possible 210 respondents. Gender representation was followed, meaning 55 ladies and 55 gentlemen. Because Geography lecturers are very few in
most cases, this study targeted all of them. The lecturers were 12 in all. This made a total of 122 respondents. The research was mainly qualitative in nature.

4.4.1 Gender of Respondents

In this study, there was need to consider gender as a way of getting balanced and diverse views from both males and females since environmental hazards and disasters affect both genders. The perception from both gender groups provided a full and reliable representation to the findings of the study. If only one sex was consulted, it would not be reliable. This was supported by Tromp (2006) who suggested that study samples to do with perceptions should consider both genders in order to have full, balanced and diverse views on a particular study. The table below shows the gender of the respondents by sex.

Table 2: Respondents by Sex

<table>
<thead>
<tr>
<th>Type of respondent</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td>55</td>
<td>55</td>
<td>110</td>
</tr>
<tr>
<td>Lecturers</td>
<td>12</td>
<td>0</td>
<td>12</td>
</tr>
</tbody>
</table>

Source: field data, (2010)

As shown by table 2 above, the respondents comprised 55 male students and 55 female students, totaling to 110. There were only 12 lecturers, all male. The researcher did not find any female lecturer in the colleges at the time of research.

4.5 Sampling and Sampling procedures.

Sampling procedure refers to the part of the study that indicates how respondents were selected to be part of the sample. Samples are not selected haphazardly but are chosen systematically.
Purposive sampling and simple random sampling were used in this study. According to Kombo and Tromp (2006), purposive sampling targets only the people believed to be reliable for the study. It is equally applicable in qualitative studies. The preference was biased towards the colleges of education affiliated to the University of Zambia. These are Kwame Nkrumah College of Education (Kabwe) and David Livingstone College of Education (Livingstone). In these colleges, students studying geography were targeted. Likewise, lecturers of geography were purposively sampled.

In selecting the students, classes were stratified into first years, second years and third years so that each intake was represented in the sample. Then, they were selected using simple random sampling. When that was done, the students were stratified into classes and gentlemen followed by simple random sampling to get the actual participants. This was so to ensure that there was an equal representation of all intakes and students by gender. Purposive sampling of lecturers of geography was applied since they possessed vast information in the study of environmental hazards and disasters. In all, the sample consisted of 110 students and 12 lecturers, making 122 respondents.

4.6 Research instruments

In order to solicit for views from student and lecturers, questionnaires, interviews and focus group discussions were used.
4.6.1 Questionnaires

The use of questionnaires was arrived at because it helps create a rapport between the researcher and the respondents, by explaining the purpose of the study. In addition, the availability of many respondents at a time made it possible for the researcher to collect data within a short period, get a high response rate and also reducing the financial expenses. In fact, the use of questionnaires was chosen since studies by Bowling (1999) revealed that as an instrument for data collection, questionnaires used in a survey increased the external validity of the study done in natural settings.

4.6.2 Semi-structured interview guide

A semi-structured interview schedule was utilized to collect data from the lecturers.

4.6.3 Focused group discussion guide

The other instrument that was used in data collection the focus group discussion guide. The focused group discussions clarify and shade more light on issues raised and not clarified in the questionnaire. Focus group discussions with the students were used in data collection meant to clarify and shade more light on the issues raised and not clarified in the questionnaires. This instrument was particularly utilized because according to Cohen, Manion and Morrison, (2007) it was economical on time, focused on particular issues, yield insights that would not otherwise be available in a straightforward interview, produced large amounts of data in a short period of time and was useful to triangulate with more traditional forms of interviewing, questionnaire and observation.
4.7 Primary sources of data

Questionnaires were administered to lecturers and students in colleges where Geography is taught (diploma colleges). Questionnaires are reliable data collecting instruments when collecting data over a large sample. They equally save time, especially that time may be a limiting factor in this research. An interview schedule was equally administered to lecturers. Questionnaires were distributed to lecturers and students of Geography in selected colleges. This provided the primary sources of data.

4.8 Secondary sources of data

These included the review of literature from University of Zambia (UNZA) library, the Curriculum Development Centre (CDC), Teacher Education Department (TED), published and unpublished literature. Thesis, dissertations and other books related to environmental hazards and disasters education were consulted or reviewed. Magazines, geography syllabus for colleges and high schools were equally used. Materials from symposiums, international network (internet) and government document policies were consulted.

4.9 Data collection and analysis

Data collection was done by the researcher in the months of October and November, 2010. The questionnaires were distributed to the respondents, in this case geography students and lecturers in the selected colleges. This was with the permission from the college principles and the geography section heads. The students and lecturers were given time to complete answering the questionnaires. Interviews were equally carried out with lecturers. Focus group discussions were conducted with students to get the full insight of the issues that could not be fully exploited by the questionnaires. Data was analyzed manually. Data analysis was mainly qualitative. The
analysis of data varied from simple descriptive to more elaborate reduction. However, data involving numbers was presented using tables.

4.9.1 Limitations of the study

✓ The research faced financial constraints related to transport costs during data collection process, lodging and purchase of materials to be used during the research process.

✓ Some respondents showed some apathy when filling in the questionnaires or other data collection instruments. This brought about delays in the collection of certain questionnaires.

✓ Another limitation of the study was the little data that was available on the African and Zambian situation. As a result, most of the literature reviewed came from studies outside.
CHAPTER FIVE: PRESENTATION OF FINDINGS

This chapter presents the findings of the study. The presentation is divided into two parts. The first part presents the findings and reactions from the students and the second part presents the lecturers’ input and reactions. The presentations are in table form, showing frequencies and percentages.

5.1 Choice of geography as teaching subject

This study sought to find out why students chose geography as a teaching subject. This would be helpful in assessing the attachment students had towards the subject. Their responses were to provide a background to the study of their perceptions on hazards and disasters as a topic in college geography. This was supported by John (1997) who explains that perception is a result of interplays between past experiences and background of the respondents. The results are presented in table 3 below.

Table 3: Choice of Geography as teaching subject

<table>
<thead>
<tr>
<th>Reasons for choosing Geography as teaching subject</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is interesting</td>
<td>26</td>
<td>23.6%</td>
</tr>
<tr>
<td>It makes us understand the world around us</td>
<td>30</td>
<td>27.2%</td>
</tr>
<tr>
<td>It is applicable in society</td>
<td>18</td>
<td>16.36%</td>
</tr>
<tr>
<td>It is easy to understand</td>
<td>15</td>
<td>13.6%</td>
</tr>
<tr>
<td>It is only option at hand</td>
<td>21</td>
<td>19.1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>110</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

The response rate to the question was 100% and the failure rate was 00%. Of the respondents, 30 students and the highest frequency, (27.2%) chose geography as a teaching subject because it made them understand the world. As tabulated above, 13.6% of the respondents chose geography because it was easier to understand. Moreover, 16.36% said that it was applicable in society.

5.1.2 Teaching methods of geography

There are several approaches used to teach geography which assist to stimulate and involve the learners in issues to do with environmental hazards and disasters. The teaching of geography requires lecturers and teachers not to teach within the constraints of the traditional school but to provide instructions in settings beyond the traditional confines of formal classroom. Since geography education emphasises the acquisition of skills in identifying, investigating and solving environmental issues, this study sought to ask students what teaching methods were preferred in the teaching and learning of the topic on ‘environmental hazards and disasters in college geography. Table 4 below presents the methods preferred by students in the teaching of geography in general and ‘environmental hazards and disasters’ in particular. The choice of this variable was aimed at finding out what the students themselves as learners wanted the approach to be when looking at environmental hazards and disasters in college geography. This would in turn provide a reliable approach to the lecturers and in the full exploitation of the topic on environmental hazards and disasters.
Table 4: Methods preferred by students in Geography teaching

<table>
<thead>
<tr>
<th>The preferred method</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher giving notes and then explaining</td>
<td>16</td>
<td>14.5%</td>
</tr>
<tr>
<td>Discussion</td>
<td>20</td>
<td>18.2%</td>
</tr>
<tr>
<td>Problem solving/discovery method</td>
<td>14</td>
<td>12.7%</td>
</tr>
<tr>
<td>Field work</td>
<td>34</td>
<td>31%</td>
</tr>
<tr>
<td>Picture method</td>
<td>04</td>
<td>3.6%</td>
</tr>
<tr>
<td>Role play</td>
<td>10</td>
<td>9.1%</td>
</tr>
<tr>
<td>Lecture</td>
<td>12</td>
<td>10.9%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>110</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>


In terms of the teaching methods preferred, the highest frequency was towards the use of field work in the teaching of environmental hazards and disasters in geography. This amounted to 31%. This was followed by discussion method with 18.2%. The use of pictures received the least response (3.6%) and role play received only 9.1% of the responses. The lecture method had 10.9% of the responses and problem solving had 12.7%.

5.1.3 Continuous assessment to add to examination results

The study sought to determine the views of respondents about continuous assessment as being part of the examination results at college level. This variable designed to assess the seriousness
students attached to the learning of environmental hazards and disasters in geography and was to consequently help in getting deep insights of the students’ perceptions. The responses are tabulated on the table 5 below.

Table 5: The need for continuous assessment to be part of the examination

<table>
<thead>
<tr>
<th>Students views</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported</td>
<td>77</td>
<td>70</td>
</tr>
<tr>
<td>Did not support</td>
<td>33</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>110</td>
<td>100</td>
</tr>
</tbody>
</table>


The majority of the students (70%) favoured the use of continuous assessment in the teaching of geography. On the contrary, 33% of the students opposed the use of continuous assessment in the teaching of geography in colleges.

5.1.4 Environmental hazards and disasters common to Zambia

The study asked students on environmental hazards and disasters they felt were common in Zambia. This actually reflected the first objective of this study. This variable was arrived at with the view to finding out the perception of students on environmental hazards and disasters common to Zambia. This would finally be used in the selection of what would be learnt in the Zambian scenario concerning hazards and disasters in college geography. The responses are shown in table 6 below.
Table 6: Student’s responses on environmental hazards and disasters common in Zambia

<table>
<thead>
<tr>
<th>Environmental hazards and disasters common in Zambia</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floods</td>
<td>35</td>
<td>31.8</td>
</tr>
<tr>
<td>Drought</td>
<td>17</td>
<td>15.4</td>
</tr>
<tr>
<td>Pollution</td>
<td>22</td>
<td>20</td>
</tr>
<tr>
<td>Deforestation</td>
<td>10</td>
<td>9.1</td>
</tr>
<tr>
<td>Soil degradation and contamination</td>
<td>7</td>
<td>6.4</td>
</tr>
<tr>
<td>Climate change</td>
<td>5</td>
<td>4.5</td>
</tr>
<tr>
<td>Wildlife depletion</td>
<td>6</td>
<td>5.4</td>
</tr>
<tr>
<td>Land dereliction</td>
<td>2</td>
<td>1.8</td>
</tr>
<tr>
<td>Inadequate sanitation</td>
<td>4</td>
<td>3.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>110</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>


As the table above shows, the highest response on environmental hazards and disasters common to Zambia was on floods with 31.8%, followed by pollution with 20% and drought with 15.4%. Others include deforestation with 9.1% response, soil pollution and contamination with 6.4%, wildlife depletion with 5.4%, climate change with 4.5%, inadequate sanitation with 3.6% and land dereliction with 1.8%.
5.1.5 Importance of learning environmental hazards and disasters in college geography

This study found out from students on the importance of learning environmental hazards and disasters in college geography. Students’ insights were investigated as a way of finding out their feelings or perceptions on teaching of environmental hazards and disasters in college geography. This was to help lecturers and others involved in planning to arrive at variables that would highlight the importance of teaching environmental hazards and disasters in college geography. The results are presented in table 7 below.

Table 7: Importance of learning environmental hazards and disasters in Geography

<table>
<thead>
<tr>
<th>Importance of learning environmental hazards and disasters in Geography</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>For easy mitigation of disasters that may happen in society</td>
<td>27</td>
<td>24.6</td>
</tr>
<tr>
<td>To equip learners with the skills and knowledge on disasters response strategies</td>
<td>34</td>
<td>30.9</td>
</tr>
<tr>
<td>To equip learners with knowledge on recovery in case of disaster strike.</td>
<td>23</td>
<td>20.9</td>
</tr>
<tr>
<td>To be aware of the risks in the environment</td>
<td>26</td>
<td>23.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>110</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>


Most students (30.9%) felt the topic of hazards and disasters in college geography helped equip learners with knowledge and skills necessary to understand the response strategies. The respondents amounting to 24.6% were of the view that hazards and disasters education helped in mitigation of disasters. Moreover, 22.9% of the respondents felt that environmental hazards and
disasters in college geography make learners understand issues related to recovery in disaster strikes while 23.6% of the respondents felt the topic would help them to be aware of the risks in the environment.

5.1.6 Elements to be excluded from the topic of ‘environmental hazards and disasters' in college geography

Students were asked about what they felt should be excluded from the topic on ‘environmental hazards and disasters’ in college geography. This was to determine what they perceived suitable or meaningful to learn on environmental hazards and disasters in college geography. Their perceptions on what should be excluded provided one of the core issues that this study investigated. The responses were as shown on table 8 below.

Table 8: hat should be excluded from the topic on environmental hazards and disasters in College Geography

<table>
<thead>
<tr>
<th>What should be excluded</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avalanches</td>
<td>21</td>
<td>19.1%</td>
</tr>
<tr>
<td>Earthquakes</td>
<td>10</td>
<td>9.1%</td>
</tr>
<tr>
<td>Hurricanes</td>
<td>18</td>
<td>16.4%</td>
</tr>
<tr>
<td>Land slides</td>
<td>13</td>
<td>11.8%</td>
</tr>
<tr>
<td>Tornadoes</td>
<td>37</td>
<td>33.6%</td>
</tr>
<tr>
<td>Tsunamis</td>
<td>11</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>110</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

The majority of the respondents (33.6%) felt tornadoes should not be taught in the topic of environmental hazards and disasters in Zambian geography. This was followed by 19.1% of the students who felt avalanches should not be taught in Zambian geography. Other respondents suggested the exclusion of hurricanes (16.4%), landslides (11.8%) and others as show on table 8 above.

5.1.7 Elements to be included to the topic of ‘environmental hazards and disasters’ in college geography

The students were asked on what they felt could be included to the topic of ‘environmental hazards and disasters’ in college geography. This was one of the core issues that this study investigated. This variable would help in investigating elements that students felt were cardinal in the topic of environmental hazards and disasters in college geography. Their perception would help in the full exhaustion of the topic on environmental hazards and disasters in college geography. The responses are presented on table 9 below.

Table 9: What to include to the topic on ‘environmental hazards and disasters’ in College Geography

<table>
<thead>
<tr>
<th>What to include</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mitigation measures on Disasters</td>
<td>24</td>
<td>21.8%</td>
</tr>
<tr>
<td>Early warning systems to disaster strike</td>
<td>05</td>
<td>4.5%</td>
</tr>
<tr>
<td>Stakeholder involvement</td>
<td>46</td>
<td>41.8%</td>
</tr>
<tr>
<td>Climate change</td>
<td>35</td>
<td>31.8%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>110</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

As shown in table 9 above, 46 (41.8%) students were of the view that the topic on hazards and disasters should include ‘other stakeholders’ apart from the teachers and learners or students. Moreover, 31.8% of the respondents felt climate change should be highly emphasized when teaching hazards and disasters in the Zambian geography. Others felt that there must be great stress on mitigation measures (21.8%) and early warning systems to disaster strike (4.5%).

5.1.8 Reasons for including the suggested elements in the topic of hazards and disasters

This study went further to find out the reasons for including the suggested elements to the topic of ‘environmental hazards and disasters’ in college geography as shown in table 9 above. This was meant to have a deep insight of students’ reasons for including the suggested elements to the study of environmental hazards and disasters in college geography. This study would then use the variable in the full analysis of students’ perceptions of environmental hazards and disasters in college geography. The responses are presented as shown on table 10 below.

Table 10: Students’ reasons for including the suggested topics

<table>
<thead>
<tr>
<th>Reasons for adding the suggested topics</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>To fully exploit the topic</td>
<td>21</td>
<td>19.1%</td>
</tr>
<tr>
<td>To involve all citizens</td>
<td>53</td>
<td>48.2%</td>
</tr>
<tr>
<td>To find lasting solutions to disaster problems</td>
<td>36</td>
<td>32.7%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>110</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>


As shown on table 10 above, 48.2% of the respondents felt involving other stakeholders in the teaching of hazards and disasters in geography will eventually involve all the citizens. Moreover, 32.7% of the respondents felt that the topics to be added as shown in table 9 above will help in
finding the lasting solutions to disaster problems. Other respondents (19.1%) felt that elements to be added would exhaust the topic on the disasters in college geography fully.

5.1.9 Adequacy in the coverage of the topic on environmental hazards and disasters in college geography

The study found out from students on whether the topic on ‘environmental hazards and disasters’ was adequately covered in college geography. The students were required to give their own feelings on the adequacy of the topic as it was taught then. Their perceptions would provide a back bone to the analysis and full exploitation of this study. The results are presented on table 11 below.

<table>
<thead>
<tr>
<th>Students views</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported</td>
<td>36</td>
<td>32.7</td>
</tr>
<tr>
<td>Did not support</td>
<td>74</td>
<td>67.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>110</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>


The majority of the respondents (67.3%) were of the view that the current college geography syllabus did not adequately cover the topic on environmental hazards and disasters. On the contrary, 32.7% of the students felt the coverage of the topic was enough.
5.2 Geography teaching in colleges and examinations

The study inquired from students as to whether geography teaching in colleges was mainly examination oriented. This variable would help in finding out the seriousness attached to the learning of ‘environmental hazards and disasters’ in college geography. The variable would assist in finding out whether students learn ‘hazards and disasters in geography’ to merely pass examinations and not seriously thinking about the worthiness and appropriateness of the topic to their environment. This would provide a full insight into this study. The findings are presented in table 12 below.

Table 12: Whether Geography teaching in colleges was mainly examination oriented

<table>
<thead>
<tr>
<th>Students views</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported</td>
<td>77</td>
<td>70</td>
</tr>
<tr>
<td>Did not support</td>
<td>33</td>
<td>30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>110</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>


As clearly shown in the above table, the majority of the respondents (70%) were of the view that geography teaching in colleges was mainly examination oriented. The students just wanted to pass their examinations and go for work and earn money. On the contrary, 30% of the students had a different view.
5.2.1 Stakeholders in the teaching of hazards and disasters in college geography

The students were asked on the stakeholders they felt could be involved in the teaching of hazards and disasters in college geography. This variable would assist in collecting students’ perceptions on stakeholder involvement (apart from the lecturers and Ministry of Education) in the full coverage of the topic on ‘environmental hazards and disasters’ in college geography. This was vital for this study because it would help in finding out what learners thought about involving other people apart from the teachers. This would help in bridging the gap between geography and the society. The results are presented in table 13 below.

**Table 13: Stakeholders to be involved in the teaching of hazards and disasters in Geography**

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civic sector</td>
<td>13</td>
<td>11.8</td>
</tr>
<tr>
<td>Public sector</td>
<td>24</td>
<td>21.8</td>
</tr>
<tr>
<td>International organizations</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>Private sector</td>
<td>16</td>
<td>14.5</td>
</tr>
<tr>
<td>Government</td>
<td>29</td>
<td>26.3</td>
</tr>
<tr>
<td>Parents</td>
<td>19</td>
<td>17.3</td>
</tr>
<tr>
<td>Total</td>
<td><strong>110</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>


The respondents suggested the involvement of different stakeholders in the full coverage of hazards and disasters in college geography as shown on the above table. The government
(25.4%) and the public sector (20.1%) recorded the highest frequency of the responses. Other stake holders revealed in this study include the private sector (13.6%), parents (15.4%), the church (6.4%) and international organizations (8.2%)

5.2.2 Practical approaches that could used to teach communities about environmental hazards and disasters through geography

The study sought to find out from students on the practical approaches or methods they felt could be used to educate communities on environmental hazards and disasters through geography. This variable provided practical approaches to this study, especially that most environmental problems need practical solutions. The students’ perception would be very cardinal in the tabulation of practical approaches to this study. This would also break the gap between geography and the society. The responses are presented in table 14 below.

Table 14: Practical approaches/ methods that should be used to educate communities on hazards and disasters through geography

<table>
<thead>
<tr>
<th>Practical approach/ method.</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drills and simulations</td>
<td>6</td>
<td>5.4</td>
</tr>
<tr>
<td>Distribution of education material</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>Information websites</td>
<td>3</td>
<td>2.7</td>
</tr>
<tr>
<td>Disaster parks and museums</td>
<td>9</td>
<td>8.2</td>
</tr>
<tr>
<td>Public awareness campaigns and events</td>
<td>48</td>
<td>43.6</td>
</tr>
<tr>
<td>Field work</td>
<td>33</td>
<td>30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>110</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Public awareness campaigns and events received the highest response (43.6%) and field work got (30%). Other practical approaches suggested by the respondents included drills and simulations (5.4%), distribution of education material (10%) and disaster parks and museums (8.2%).

5.2.3 Importance of the practical approaches in teaching the communities on hazards and disasters

The students were asked concerning the importance of the practical approaches to be used in educating communities about hazards and disaster through geography as shown by table 14. This provided a follow up to this study. The results are presented in table 15 below.

Table 15: Importance of the suggested approaches

<table>
<thead>
<tr>
<th>Importance</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhance practicality</td>
<td>20</td>
<td>18.2</td>
</tr>
<tr>
<td>Easy to approach certain disasters</td>
<td>31</td>
<td>28.2</td>
</tr>
<tr>
<td>Provide relevant information on hazards and disasters</td>
<td>59</td>
<td>53.6</td>
</tr>
<tr>
<td>Total</td>
<td>110</td>
<td>100</td>
</tr>
</tbody>
</table>


Out of the 110 respondents, 59 of them (53.6%) were of the idea that the suggested practical activities would provide relevant information on hazards and disasters. Moreover, 28.2% said the practical activities would make it easy to approach certain disasters. Furthermore, 18.2% of the respondents said that the suggested practical activities would enhance practicality in disaster issues.
5.3 Length of time that lecturers had taught geography in colleges

This study also sought to investigate the period that lecturers had been teaching geography in colleges. This was done to assess lecturers’ experience in the teaching of environmental hazards and disasters at college level. This, in turn, was to assist evaluate whether or not their teaching had an impact on attempts to raise awareness to environmental hazards and disasters. The results are tabulated in table 16 below.

**Table 16: Length of time which lecturers had taught in the colleges**

<table>
<thead>
<tr>
<th>Period in years</th>
<th>Respondents</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>16.7</td>
</tr>
<tr>
<td>2-3</td>
<td>2</td>
<td>16.7</td>
</tr>
<tr>
<td>4-6</td>
<td>3</td>
<td>25.0</td>
</tr>
<tr>
<td>7 and above</td>
<td>5</td>
<td>41.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>


As the above table is shows, of the 12 lecturers sampled, 16.7% of them were found to have taught geography in colleges for one year, 16.7% taught geography in colleges for two to three years, 25% had taught geography for four to six years and 41.7% had taught for more than seven years. From these results, most of the lecturers had taught geography in colleges for more than a year. Therefore, they were expected to have fully interacted with the geography taught at college level and then be conversant with the topic on environmental hazards and disasters.
5.3.1 Environmental hazards and disasters common to Zambia

This study sought to find out from the lecturers on environmental hazards and disasters common to Zambia. This was a core issue that this study investigated as reflected by objective one. This variable would assist in getting comparative analysis what was taught then in college geography and what lecturers suggested. The responses on the environmental hazards and disasters common to Zambia are tabulated in table 17 below.

**Table 17: Environmental hazards and disasters common in Zambia**

<table>
<thead>
<tr>
<th>Environmental hazards and disasters in Zambia</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate change</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Deforestation</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Drought</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Fires</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Floods</td>
<td>3</td>
<td>25.0</td>
</tr>
<tr>
<td>Industrial accidents</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Pollution</td>
<td>2</td>
<td>16.8</td>
</tr>
<tr>
<td>Solid waste</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Wild life depletion</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>


As the above table shows, floods appear to have had an overwhelming response from the lecturers as an environmental hazard and disaster common to Zambia (25%). Drought had 8.3% response and others as shown on the table above.
5.3.2 Should ‘environmental hazards and disasters’ be taught in college geography?

This study sought to find out from the lecturers whether it was important to teach environmental hazards and disasters in college geography. Their responses were to provide the validity and appropriateness of the topic not only in college geography teaching, but to the society at large. The results of the findings are tabulated in 18 below.

Table 18: Views on whether or not ‘environmental hazards and disasters’ should be taught in College Geography

<table>
<thead>
<tr>
<th>Lecturers views</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported</td>
<td>12</td>
<td>100</td>
</tr>
<tr>
<td>Did not support</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>


As stipulated above, all the respondents (100%) agreed that it was important to teach environmental hazards and disasters in college geography.

5.3.3 Importance of teaching environmental hazards and disasters in college geography

This study sought to find out from the lecturers why environmental hazards and disasters should be taught in college geography. Their response was to provide the validity and appropriacy of the topic not only in college geography teaching, but to the society at large. The results of the findings are tabulated in 19 below.
Table 19: Reasons why environmental hazards and disasters should be taught in college geography

<table>
<thead>
<tr>
<th>Reasons for teaching hazards and disasters</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>To equip learners with mitigation measures</td>
<td>5</td>
<td>41.7</td>
</tr>
<tr>
<td>To equip learners with preparedness</td>
<td>3</td>
<td>25.0</td>
</tr>
<tr>
<td>To equip learners with knowledge on response</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>To help learners with knowledge on rehabilitation</td>
<td>3</td>
<td>25.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>


As the above table shows, 41.7% of the respondents felt teaching hazards and disasters in geography equips learners with mitigation measures, 25% of the respondents felt that learners could be equipped with preparedness, 25% felt teaching hazards and disasters in college geography equips learners with knowledge on preparedness and 8.3% felt that environmental hazards and disasters education in college geography helps equip learners with knowledge on rehabilitation.

5.3.4 Elements to be excluded from the topic on environmental hazards and disasters in college geography

This study sought to find out from lecturers about what they felt could be excluded from the topic on environmental hazards and disasters in college geography. Their responses would provide a guide in full coverage of this study because their perception would be presented. This would also provide appropriate elements to be learnt as perceived by the teachers themselves. The results of their responses are tabulated in table 20 below.
Table 20: Elements to be excluded from the topic of environmental hazards and disasters in college geography

<table>
<thead>
<tr>
<th>What should be removed from the syllabus</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tsunamis</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Hurricanes</td>
<td>6</td>
<td>50.0</td>
</tr>
<tr>
<td>Landslides</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Tornados</td>
<td>2</td>
<td>16.7</td>
</tr>
<tr>
<td>Earthquakes</td>
<td>2</td>
<td>16.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>


According to the above table, 50% of the respondents felt that geography in colleges should not teach about hurricanes, 16.7% of the respondents felt syllabus should not teach about tornados and earthquakes, 8.3% suggested that tsunamis and landslides should not be concentrated upon in college geography.

5.3.5 Elements to be included in the topic of environmental hazards and disasters in college geography

This study further tried to find out from the lecturers about the elements they felt should be included in the topic on environmental hazards and disasters in college geography. Their input was to provide perception of what they really felt could be taught in colleges and this was to provide a guide to what was necessary to learn in our environment. The results of the findings are shown in table 21 below.
Table 21: Views on what should be included in the topic on environmental hazards and disasters in college geography

<table>
<thead>
<tr>
<th>What should be included</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mitigation measures to disasters</td>
<td>4</td>
<td>33.4</td>
</tr>
<tr>
<td>Stakeholder involvement</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Wildlife depletion</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Stakeholders</td>
<td>2</td>
<td>16.7</td>
</tr>
<tr>
<td>Fire</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Industrial accidents</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Preparedness</td>
<td>2</td>
<td>16.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>


As can be seen from the above table, 4 (33.4%) of the respondents suggested that the geography content under the topic on hazards and disasters in college geography should include mitigation measures to disasters, 16.7% suggested the inclusion of other stakeholders in the content apart from concentrating on lecturers and students only, more so, 16.7% still suggested the inclusion of preparedness strategies in the topic on hazards and disasters in college geography. Others suggested the inclusion of fires, industrial accidents and wildlife depletion in the topic on environmental hazards and disasters in college geography.

5.3.6 Teaching methods preferred by lecturers

There are several methods used to teach geography which assist stimulate and involve learners in environmental issues. This study sought to find out the teaching methods preferred by lecturers
in teaching environmental hazards and disasters in college geography. Their responses would assist in coming up with ways of teaching the topic effectively. The results are shown in table 22 below.

**Table 22: The teaching methods preferred by college lecturers**

<table>
<thead>
<tr>
<th>Teaching methods</th>
<th>Frequency</th>
<th>Percent(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field work</td>
<td>5</td>
<td>41.7</td>
</tr>
<tr>
<td>Simulations and drills</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Question and discovery</td>
<td>2</td>
<td>16.7</td>
</tr>
<tr>
<td>Discussions</td>
<td>3</td>
<td>25</td>
</tr>
<tr>
<td>Lecture</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>


As indicated in the above table, 41.7% of the respondents preferred the use of field work in the teaching of environmental hazards and disasters in college geography, followed by discussion method with 25% response. Question and discovery had 16.7% response and 8.3% for notes and explanations and 8.3% for simulation and drills.

**5.3.6 Coverage of the topic on environmental hazards and disasters in college geography syllabus**

This study sought to find out from lecturers whether the syllabus fully covered the topic on environmental hazards and disasters in college geography. The responses are shown in table 23 below.
Table 23: Views on whether or not the current syllabus exhausts the topic on environmental hazards and disasters adequately

<table>
<thead>
<tr>
<th>Lecturers views</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported</td>
<td>5</td>
<td>41.6</td>
</tr>
<tr>
<td>Did not support</td>
<td>7</td>
<td>58.4</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>100</td>
</tr>
</tbody>
</table>


On whether the current geography in colleges covers the topic on environmental hazards and disasters adequately, 41.6% of the respondents agreed and 58.4% disagreed as indicated on the above Table 22 above.

5.3.7 Geography teaching and examinations

This study inquired from lecturers whether geography teaching in colleges mainly for passing examinations and just a routine. This would assist in assessing the seriousness that lecturers and students attached to the learning of environmental hazards and disasters in college geography. The results are tabulated as shown in table 24 below.

Table 24: Views on whether or not Geography teaching is mainly examination oriented.

<table>
<thead>
<tr>
<th>Lecturers views</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported</td>
<td>5</td>
<td>41.6</td>
</tr>
<tr>
<td>Did not support</td>
<td>7</td>
<td>58.4</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>100</td>
</tr>
</tbody>
</table>

As the above table indicates, 41.6% of the respondents agreed that examinations in colleges are mainly for passing purposes. 58.4% disagreed with the assertion.

5.3.8 Stakeholder involvement in teaching of environmental hazards and disasters in college geography

The study inquired from the lecturers about the stakeholders they felt could be involved in the full coverage of the topic on environmental hazards and disasters in college geography. This was meant to find ways of creating communication between geography teaching in colleges and the society. The results are presented below on table 25.

Table 25: Stake holders to be involved in the teaching of environmental hazards and disasters

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public sector</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Private sector</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Civil sector</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>International organizations</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>The government</td>
<td>3</td>
<td>25</td>
</tr>
<tr>
<td>The community</td>
<td>3</td>
<td>25</td>
</tr>
<tr>
<td>Parents</td>
<td>2</td>
<td>17</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

As can be seen from the above table, 25% of the respondents felt that the government is the major stakeholder that should be involved in the full coverage of the hazards and disasters in college geography education. Moreover, 25% of the respondents suggested community involvement in the hazards education in college geography and 17% of the respondents suggested parents’ involvement as stakeholders in college geography education. Other stakeholders suggested include the private sector (8.3%), the civil sector with 8.3%, international organizations with 8.3% and the public sector with 8.3%.
CHAPTER SIX: DISCUSSION OF THE FINDINGS

Findings in this study are comprehensively discussed in this chapter, following the three objectives namely; to find out environmental hazards and disasters which are common in Zambia, to explore the views of lecturers and students on environmental hazards and disasters in college geography education and to assess elements lecturers and students felt should be included in or excluded from the topic of ‘environmental hazards and disasters’.

6.1 Environmental hazards and disasters common in Zambia

The first objective of the study sought to find out environmental hazards and disasters which were common in Zambia. This section discusses the environmental hazards and disasters which were deemed by respondents to be common in Zambia.

This study revealed that the environmental hazards and disasters common in Zambia should be given much needed attention in geography if the needs of our immediate society were to be answered. There was need for the college geography syllabus to address environmental hazards and disasters from the Zambia context if it is to be meaningful. This would assist the Ministry of Education and the Disaster Management and Mitigation Unit (DMMU) in the planning, taking into account the environmental hazards and disasters common in Zambia. The respondents, therefore, suggested the following environmental hazards and disasters as common in Zambia and should therefore be highly pronounced if college geography was to be meaningful to Zambia:

**Floods**: A flood is a great overflow of water on to a place that usually dry. The problem of floods has come out as highly pronounced by the respondents (31.8%). This high response can
be attributed to the fact that floods have had devastating effects on people’s lives in Zambia. They observed that floods have hit Zambia not only in the recent past but also in times back, causing devastating effects. These range from loss of property to loss of human life and species. Zambia’s capital, Lusaka has in the recent past been a victim of flash floods. Many compounds have been affected by the problem of floods. The information on floods could help the Disaster Management and Mitigation Unit under the vice president’s office in the planning process. It could be of help in preparation, mitigation and recovery processes during and after floods in many parts of Zambia. The study on floods could as well be a reference in drawing of localized curricular for schools affected by floods in Zambia. This is supported by Namafe et al (2010) in a research report submitted to the University of Zambia (UNZA). However, interestingly, other respondents suggested that floods should be looked at in the positive aspect. They suggested that floods could be of benefit in one or the other. Therefore, geography in colleges should teach about floods with the view to answering questions in the Zambian context.

Deforestation: This was also brought forth as 9.1% of the respondents suggested that deforestation should be fully emphasized in environmental hazards and disasters in college geography. This is because deforestation is a contemporary environmental issue affecting Zambia. According to Bwalya and Naidoo (1996), more than 60% of the land in Zambia is forest. The estimated forest area is 44.6 million hectares. This forest resource is dwindling due to bush fires and clearing of vegetation for the purpose of settlements, agriculture, wood fuel and timber. Deforestation is greatest in peri-urban areas of major cities like Lusaka where there is high demand for charcoal and land for settlement. ECZ (2001) cites population growth, changes in population distribution, economic pressures, and efforts to alleviate poverty and ensure food
security as the major issues challenging the future of Zambia’s forestry sector. Against this background, respondents felt that the study on environmental hazards and disasters in college geography should take deforestation seriously. This is because deforestation is one of the major environmental problems that our country Zambia is facing currently. If deforestation is fully taught in geography, there is a likelihood of providing solutions for our immediate environment through student advocacy and environmental education. Information on deforestation could also be of help to the Ministry of Tourism and Natural Resources in the planning and advocacy though the Forest Department. As the saying goes, ‘education breaks the silence’, environmental education about deforestation will equip citizens with the much needed measures to combat the problems associated with deforestation.

**Environmental Pollution:** Karpagam (1999: 83) defines environmental pollution as” the unfavourable alteration of our surroundings, wholly or largely as a by product of man’s actions, through direct or indirect effects of changes in energy patterns, radiation levels, chemical and physical constitution and abundance of organisms.” Hillary (1984) states that environmental problems are really social problems… They begin with man as the cause and end with man as a victim. Likewise, environmental pollution is a major problem that (20%) of the respondents felt should be highly pronounced in college geography if the immediate needs of our environment are to be answered. The overwhelming response of 20% is evident enough that the respondents had great attachment to the idea that environmental pollution be taught in college geography. The information on environmental pollution could help bodies like the Environmental Council of Zambia (ECZ) in the planning and setting of priorities in the Zambian environment. The Ministry of Education could as well use this information to implement the Zambia Nation Policy on Education on matters related to environmental education. The respondents also noted that, in
Zambia, environmental pollution takes many forms. The respondents suggested air pollution, water pollution, noise pollution, solid waste pollution, visual pollution and so on.

**Air pollution:** In Zambia, the respondents noted that the problem of air pollution is largely concentrated in the cities which have the largest number of industries and vehicular traffic. However, the respondents noted that air pollution is greatest on the Copperbelt where a variety of air pollutants such as sulphur dioxide are pumped into the atmosphere from smelters, concentrators and acid plants. Feeney (2003) explains that Zambia cannot afford systematic health surveys because of the ailing economy. The respondents noted other sources of air pollution in Zambia as including industrial activity, power generation, automobiles, and agriculture, domestic and open burning of wastes and vegetative matter. The respondents also noted that dust coming from reclamation of slag dumps and quarrying also contributes to air pollution. Respondents were of the idea that air pollution should be seriously taught in college geography so as to provide response measures related to air pollution in Zambia as an environmental hazard. Moreover, the Ministry of Education could as well benefit from this information as it plans for environmental education.

**Water pollution:** Water pollution is yet another form of pollution that respondents felt should be fully taught in Zambian college geography if education is to provide solutions to our immediate environment. The study revealed that the problem of water pollution in Zambia was greatest in Lusaka and the copper belt where industries and mines discharge effluents into the water bodies. Heavy metals such as lead and other industrial chemicals were mentioned by the respondents as being emptied into the Kafue River, the life line of both the Copper belt and Lusaka, making it one of the most polluted rivers in Zambia. They also noted that water from the river had to be treated at a cost before it could be used for domestic or industrial purposes. The respondents
noted that Eutrophication of the rivers has also resulted in the flourishing of the Kafue weed, a menace to water transport, fishing and the flow of water. The respondents also noted other forms of water pollution in Zambia as discharges of agro-chemicals and spillage of oils into the environment. This study on water pollution could assist local authorities, water and Sewerage Companies and other stakeholders in taking precautions that could reduce the problems of water pollution in Zambia. The study revealed that all these factors of water pollution should be emphasized in college geography in Zambia if it is to be meaningful.

**Noise pollution:** The respondents felt that this form of pollution should be taught in geography in the Zambia colleges. This is because noise pollution is one of the direct drivers of ecosystem change in Zambia and a potential hazard. The study revealed that noise pollution was an increasing concern in Zambia’s major towns. The respondents noted that the major sources of noise are automobiles, heavy air craft, trains and the people themselves. The respondents also noted that blaring music, brawls and commotion are common in high density residential areas. Noise pollution can lead to all forms of stress and tension. The respondents felt that noise pollution should be taught in Zambian college geography so as to provide response measures to this environmental problem and potential environmental hazard.

**Solid waste pollution:** The students (6.4%) felt that college geography in Zambia should cover solid waste pollution because it is one of the environmental problems or hazards facing Zambia. The respondents noted that solid waste in Zambia consists of the discards of house holds, dead animals, industrial and agricultural wastes like debris from construction sites, automobiles furniture and so on. According to the respondents, solid waste in Zambia included garbage, rubbish, ashes, hospital refuse sewage treatment process sludge, mining wastes, industrial waste and agriculture waste among others. All these forms of solid wastes should be covered in
Zambian College geography under the topic of environmental hazards and disasters with the view to providing lasting solutions to our immediate environment. The information on solid waste pollution could be important to local authorities responsible for solid waste management in Zambia, for example, the Lusaka City Council.

**Visual pollution:** Some respondents felt that visual pollution should be in Zambian college geography as environmental problem in Zambia. They felt that this kind of pollution is more pronounced in cities of Zambia where people adorn in flashy, intense and brilliant colours of fashion. Moreover, city landscapes are cluttered by advertising billboards, business signs, over head power lines, telephone towers, utility poles, over grown grass, litter, heaps of rotting garbage and so on. Some respondents noted that the Zambian college geography syllabus should cover visual pollution as an environmental problem and potential hazard in Zambia.

**Drought:** The students (15.4%) felt that the geography in colleges should cover the topic drought as an environmental problem in Zambia. It is a major environmental hazard affecting many areas in Zambia. Simply defined, a drought is a period of little or no rain. It is when insufficient rainfall is received than what is normal. The study revealed that drought must be taught in the geography syllabus. It must include mitigation measures such as the growing of drought resistant crops, sinking of bore holes, irrigation in general and some environmental education. The information on drought could assist the farming communities in taking precautions related to drought. The farmers and areas affected could be encouraged to use irrigation, drought resistant crops and others measures that can be used to combat the problem of drought. The respondents felt that impacts of drought must be part of the topic on environmental hazards and disasters in college geography syllabus.
**Wildlife depletion**: The study revealed that the topic on environmental hazards and disasters in college geography syllabus should cover wildlife depletion in the Zambian context. As shown by table 6, (5.4%) of the respondents were of this idea. As an environmental problem and a potential hazard, the respondents felt that wildlife depletion must be given attention so that pro encountered are solved accordingly. This study revealed that depletion of wildlife in Zambia is a serious problem that is caused by illegal hunting, over exploitation and destruction of habitats. Various species of birds and animals are either becoming few or are disappearing altogether. Some respondents suggested that poaching and other illegal hunting activities should be approached in the college geography under the topic of environmental hazards and disasters.

**Overfishing** is yet another issue that the study revealed should be covered in the current college geography syllabus under wildlife depletion. According to Community Market for Conservation (COMACO), it is very difficult to put a halt to over fishing in Zambia’s lakes and rivers because fishing is a source of income for many house holds, especially those living near the lakes and rivers. Fish is also a source of proteins in the diet of Zambians. The respondents felt that the college geography under the topic of environmental hazards and disasters should cover the unauthorized fishing methods such as fish poisoning, destructive fishing gear and dynamite that contribute to disastrous depletion of fish species in rivers and lakes. This information on wild life depletion could be of help to the Ministry of Tourism other stakeholders in the management of wildlife. All these aspects if well covered in geography will help reduce the dangers of disastrous wildlife depletion in Zambia.
6.2 The views of lecturers and students on environmental hazards and disasters in college geography

The second objective of this study endeavored to explore the views of lecturers and students on environmental hazards and disasters in college geography education. This section explores the views of lecturers and students on environmental hazards and disasters in college geography. It will look at the importance of teaching environmental hazards and disasters in geography, teaching approaches/methods preferred, the practical approaches suggested in educating the communities on hazards and stakeholder involvement.

6.2.1 Importance of teaching ‘environmental hazards and disasters’ in college geography

The study revealed that the teaching of environmental hazards and disasters in college geography could equip learners with knowledge on mitigation measures about disasters. As presented by table 7, (24.6%) of the respondents were of the idea that the teaching of environmental hazards and disasters would equip learners with knowledge on disasters mitigation measures. Mitigation efforts attempts to prevent hazards from developing into disasters altogether, or to reduce the effects of disasters when they occur (Alexander, 2002). The respondents noted that if the environmental hazards and disasters were fully covered in college geography in Zambia, the student teachers could be equipped with the knowledge on how to mitigate the development of disasters. Alexander (2002) also notes that teaching hazards and disasters in schools and colleges help equip students with necessary mitigation measures that can be of importance in communities.

This study also found that it was important to teach environmental hazards and disasters in college geography in order to equip the student teachers with knowledge on ‘preparedness’ with
regards to disaster issues in Zambia. As can be seen on table 7, (25%) of the respondents felt that the teachers could be fully equipped with preparatory measures on disasters if the topic on environmental hazards and disasters is fully covered in college geography in Zambia. This information could prove helpful to the Disaster Management Unit in the Vice President’s office and the Zambian communities at large. Walker (1991) looks at ‘preparedness’ as a continuous cycle of planning, organizing, training, equipping, exercising, evaluation and improvement activities to ensure effective coordination and the employment of capabilities to prevent, protect against, respond to, recover from, and mitigate the effects of natural disasters and other man made disasters. Environmental hazards and disasters education in college geography helps equip student teachers with common preparedness measures which include the involvement of other trained volunteers such as Community Response Teams and the Red Cross Society of Zambia.

The study found that the teaching of environmental hazards and disasters in college geography would equip learners or student teachers with response strategies to disaster strike. The students can be equipped with knowledge on the search and rescue and focus on the basic humanitarian needs of the affected population. The student teachers would have knowledge on all the response strategies if the topic on disasters is fully taught and well covered in college geography.

The study revealed that teaching of environmental hazards and disasters in college geography education would equip the learners with the knowledge of recovery strategies. Walker (1991) explained the need of the recovery stage in disaster management as restoring the affected areas to the previous state. The study found that student teachers could get the knowledge on the recovery actions that involve rebuilding of destroyed property, re-employment, and the repair of essential infrastructure. This will finally trickle down to the pupils in the high schools and then to the whole Zambian community (Wisner, 2004).
6.2.2 The teaching approaches/methods preferred in the teaching of environmental hazards and disasters in the college geography

OECD (2009) emphasises that Environmental hazards and disasters information should be provided in a non technical, personalized and consistent manner. Despite the inherent uncertainties that exist in the understanding and prediction of natural hazards, people need clear, consistent and persistent messages to internalize basic information and move towards action (OECD, 2009). A consensus teaching approach is crucial to effective risk education. Research suggests that the use of probabilistic and practicals should be highly pronounced. The methodologies should aim at reducing the emotional impact of the threat posed by natural hazards. While negative images of disaster destruction can be overwhelming, positive, empowering and accurate visuals can reinforce proactive behaviour. Information on approaches or methods would assist the Ministry of Education in the planning process. The Curriculum Development Centre (CDC) and other stake holders involved in planning could benefit from the suggested approaches. The lecturers and students suggested the following methods/approaches in the teaching of environmental hazards and disasters in the colleges:

Field work took the centre stage in the responses with 34% of the respondents acknowledging its value in the teaching of environmental hazards and disasters in college geography. The respondents were of the view that field work would allow learners relate what they learn to the happenings in the real world. They also felt that field work would provide an opportunity to carry out practicals in relation to what was learnt in classrooms.

Group discussions were also suggested as a reliable approach in the teaching of environmental hazards and disasters in college geography. The study that discussions would provide
answers to topical issues at hand. This is because consensus is usually reached at the end of the discussion and this provides answers to the environmental problems at hand.

Problem solving or Discovery was also suggested as an effective approach in the teaching of the topic on environmental hazards and disasters in college geography. The respondents felt that learners should be fully involved in problem solving in order to put what they learnt into practice and reality.

Simulation was equally suggested as an effective method or approach in dealing with hazards education in college geography. The respondents suggested that the production of an imitation of a hazardous event would provoke learners into problem solving as they are brainstormed with the activity at hand.

The other approach suggested was ‘Question and Answer’. The study revealed that through this approach, many problems could have solutions as every problem is tabled.

Other approaches suggested included role play and the lecture method.

**6.2.3 Practical approaches suggested in the dissemination of hazards education to the public**

The respondents suggested the following practical approaches of hazards education to the public;

**Public awareness campaigns and events:** As shown by table 14, (43.6%) of the respondents suggested that the most systematic public education efforts are often built around widespread campaigns. The respondents noted that the chief features of these campaigns are a series of messages and materials that are distributed through a wide variety of print, radio, television and internet outlets, as well as sometimes through performing and cultural arts. The study found out
that sustained and repeated campaigns reminds the public of natural hazard risks and risk reduction. This will provide full exploitation of the topic on environmental hazards and disasters in college geography so that it does not only end in the classroom with the teacher and learners.

**Distribution of public education materials:** Some respondents (10%) suggested that the distribution of printed materials outlining major hazards, appropriate responses, and strategies for reducing risks could be effective in hazards education to the public. They also felt that mass mailings could raise awareness about hazards and would be valuable references for the public as noted by OECD, (2009). This would fully involve the communities in disaster risk awareness taught in college geography.

**Simulation and drills:** As can be seen from table 14, (5.4%) of the respondents suggested that mock evacuations and drills can be an engaging method raising risk awareness across a wide cross section of the population. Public inclusion in simulations and drills can also stimulate people to consider their own risk and preparedness as noted by OECD, (2009). This will help bridge the gap between geography and the community in Zambia.

**Information websites:** A small fraction of the respondents (2.7%) were of the view that risk awareness, preparedness and risk reduction information should be made available on governmental websites. This would provide readily available information on hazards education and would assist in the full coverage of the amount of work dealt with in college geography under hazards education.

**Disaster Parks and Museums:** As shown by table 14, (8.2%) of the respondents were of the idea that locations of past disasters and sites of visible geophysical hazards could be effectively
used as risk awareness tools. This could be a reliable practical approach in the full coverage of
the topic of environmental hazards and disasters in college geography.

6.2.4 Stakeholder involvement in the teaching of environmental hazards and disasters in
college geography

Gerber (2003) states that the schools or colleges and the society do not constitute disconnected
entities but rather they are closely interrelated. To ignore this link would be to put the system at
risk and introduce crises which often shake up the responsible protagonists from their lethargy or
indifference.

It may well be applied to geographers what an epistemologist stated during an interview, about
the role of intellectuals:” […] they have to] keep up the intellectual quality of their undertakings;
come in contact with social and political groups in order to be of service with their thinking, and
finally, to reach the media so as to fill the spaces which public opinion is made up of” (Follari,
2001).

In relation with the fore going background, the study revealed that the teaching of geography
(environmental hazards and disasters) at college level should involve the interaction between
‘intellectuals’ (teachers) and the other stakeholders if it is to be meaningful. The schools,
colleges, universities and the society at large should not constitute disconnected entities but
rather they are closely interrelated. As Gerber (2003) put it, to ignore this link would be to put
the system at risk. If the teaching of environmental hazards and disasters in college geography is
to be responsive to the needs of Zambians, other stakeholders should be involved. There should
be adequate communication system within the Zambian community as Fien (1985) had put it.
The role of stakeholders

The lecturers and students were of the view that long term strategic planning and cross sectional collaboration are fundamental components of successful educational programmes related to environmental hazards and disasters in college geography. The respondents felt that many stakeholders had a role to play and have responsibilities in the full exploitation of the topic in environmental hazards disasters in college geography. In this respect, the parallel and collaborative actions of international organizations, government bodies, parents, corporate leaders, educational institutions and other stakeholders could be encouraged if the teaching of environmental hazards and disasters in college geography was to be responsive to the needs of the Zambians.

The public sector: The study revealed that the public sector, at all levels (local, national) should play a notable role. The public sector’s roles and responsibilities largely depend on the scope and level of hazards and vulnerabilities, existing initiatives and the available resources. The respondents felt that the public sector should take a leading role in public awareness campaigns, information websites and the distribution of educational materials related to environmental hazards and disaster education. Respondents noted that special attention should be devoted to the opportunity to incorporate risk awareness and reduction strategies into college curricula and other higher level educational programmes.

The private sector: The respondents acknowledged the role of the private sector in the full coverage of environmental hazards and disasters education at college level. The study found out that private sector initiatives could play an important role in the full exploitation of environmental hazards and disasters education at college level in Zambia; for instance, the
research, advocacy and public education efforts. Leadership by example could also be provided by corporations through the adoption education programmes and risk reduction measures.

**The civic sector:** The study revealed that independent civic organizations and public civic partnership should be involved in the full coverage of the topic on environmental hazards and disasters in college geography. These help in addressing natural hazard awareness and disaster risk reduction at community level and this complements the work done by the teacher in the classroom. The study revealed that partnership with the civic sector should be supported and enhanced as part of a holistic, top-down and bottom-up integration strategy if the topic on environmental hazards and disasters was to be fully dealt with.

**International organizations:** The study revealed that international organizations could help focus the attention of the government and policy makers on the importance of natural hazards awareness and disaster risk reduction education programmes. Lecturers and students felt that international organizations had a key role with regard to long term planning as they are decoupled from the short term political mandates decision makers. This study found that the involvement of international organizations would go a long way in the full exploitation of environmental hazards and disasters as a topic at college level.

**The government:** The lecturers and students felt that the government plays the greatest role in the provision of education for any nation. In fact, provision of education to citizens is one of the strong functions of the government. The government is the custodian of the human rights of all individuals, including the right to education. Its Concern, therefore, will be with how well the national education policy and practice promote equality, equity, efficiency, partnership, pluralism, transparency and accountability (MOE, 1996). The government trains the teaching
staff, builds colleges and schools, draws syllabus and curriculum; provide policy guidance among other things. The study revealed that the government was actually the initiator of almost everything. The government provided study materials needed in the study of environmental hazards and disasters in college geography through the Ministry of Education (MOE) and the Curriculum Development Centre (CDC). There should be much support in the teaching of geography (hazards and disasters) through monitoring and evaluations (formative and summative evaluation). The study revealed that monitoring and evaluation would provide continuity and serious attention with regards to the teaching of the topic on hazards and disasters in Zambia college geography.

**Community participation:** The lecturers and students were of the view that broad community engagement in dissemination of information on environmental hazards and disasters is vital not only in the civic sector where it is currently most prevalent, but also in the private, public and educational sector efforts. The respondents were of the idea that communities should be invited to participate throughout the process of programme development and message dissemination. This would make communities full participants in risk awareness and risk reduction education and this would contribute to the full coverage of the topic on environmental hazards and disasters in colleges.

The lecturers and students revealed that community members could be involved in the risk reduction education along side technical experts if the topic on environmental hazards and disasters was to be well covered. Technical experts often need assistance in communicating risk messages in the ways that take into account factors that are important to the targeted individuals and communities. The use of the local language, for example could be important in the dissemination of disaster risk education to the local communities.
The respondents were of the view that direct community participation in the development of hazard and risk reduction materials would lead to high quality of the targeted products. The creation of local materials could promote deeper questioning of, and engagement in, the material. It could also create a more thorough understanding, longer retention and implementation.

**Parents’ involvement in the teaching of environmental hazards and disasters**

Harako, (1997) argues that ‘there is need to have education against the disruption of the public space’ that is, education whose effort is to link school community-based education and attempt to develop a greater of locally relevant knowledge which may not only inform long life learning adults, but also encouraging students to see their school learning as directly relevant to a better life. Literature has also shown that “if parents are well behaved, then the children must be better behaved; meaning that children learn more from their parents and emulate their parents either good or bad in life,”(Mitaba and Muwowo, 2002:2).

**6.3 Elements that lecturers and students felt should be included or excluded in the topic of ‘environmental hazards and disasters’**.

The third objective endeavored to assess the elements that lecturers and students felt should be included in or excluded from the topic of ‘environmental hazards and disasters’. This will be the focus of the discussion in this section.

**6.3.1 Elements to be excluded from the topic on ‘environmental hazard and disasters’ in college geography**

The study revealed that some elements that are being taught in the current syllabus at college geography were alien to the Zambian community. They do not really happen in the Zambian
environment. Topics such as hurricanes, avalanches, tornadoes and tsunamis were not very relevant to the Zambian situation. The students and lecturers in colleges were of the idea that concentration should be on the environmental hazards and disasters common in Zambia if the syllabus was to be responsive to the needs of our local environment. If they were to be taught, it should be with less emphasis. Much attention should be given to the environmental hazards and disasters that were common in Zambia so that problems in our immediate environment were answered.

6.3.2 Reasons for excluding the suggested elements from the topic on ‘environmental hazards and disasters’

Taba (1962) notes that the curriculum or syllabus should identify local needs of learners, parents, teachers and the community if it has to be responsive to the needs of the society. Moreover, the Ministry of Education (MoE) in Zambia had a vision which stated as, ”To enable and provide an education system that will meet the needs of Zambia and its people” (MOE, 1996 12). This study found that only the topics related to the needs of the Zambian environment should be seriously looked at in the topic of environmental hazards and disasters in college geography. The study equally revealed that the topics alien to the Zambian environment should not be emphasized much in the Zambian college geography. The study of hurricanes and tornadoes, in college geography, for example, should not be given much emphasis. This was because such topics were not common in the Zambian environment. Only the environmental hazards and disasters common to the Zambian environment should be highly emphasized in the college geography syllabus. These include topics such as floods, drought, deforestation, wildlife depletion, environmental pollution, industrial accidents, fires and so on. The respondents felt that

80
those topics could be fully taught if geography and education in general was to be responsive to the needs of the Zambian society.

6.3.3 Elements to be included to the topic on ‘environmental hazards and disasters’

The study found that current geography syllabus at college level lacked a lot more topics that were so important to the Zambian environment. The study revealed that topics related to the Zambian scenario and possibly that of the sub region should be fully covered in college geography. The lecturers and students suggested that the following elements should be added to the topic of environmental hazards and disasters in college geography:

Mitigation measures: The study revealed that mitigation measures should be added to the topic on environmental hazards and disasters in college geography. The student teachers should be taught about the mitigation strategies if the current geography syllabus in colleges was to be responsive to the needs of the Zambian environment. The students should have knowledge on mitigation, that is, preventing disasters or to reduce the effects of disasters when they occur. The syllabus should see beyond mere teaching. It should answer the current problems that the Zambian environment is facing in terms of disaster management. The information on mitigation would also be of help to the Disaster Management and Mitigation Unit (DMMU) of the vice president’s office.

Preparedness: The study found that the current geography at college level should include preparedness strategies. This would equip the student teachers with the continuous cycle of planning, organizing, training, equipping, and exercising, evaluation and improvement activities to ensure effective coordination and the enhancement of capabilities to prevent, protect against, respond to, recover from, and mitigate the effects of natural disasters and man-made disasters.
The learners would be with the much needed planning skills needed at both community and national level in terms of emergency management.

**Wildlife depletion:** The lecturers and students were of the view that wild life depletion should be included in the current geography syllabus at college level in the topic on environmental hazards and disasters. This is because of the fact that wildlife depletion is a current environmental problem and environmental hazard in Zambia that needs serious attention. There was need to look at the problems currently facing wildlife in Zambia. The respondents noted the problems facing wildlife as over-exploitation, destruction of habitats, drainage, agriculture and urban expansion, and the fragmentation of habitat into parcels too small for wildlife population to use. The study revealed that issues like poaching and over fishing could be given much attention in college geography syllabus because they were potential hazards.

**Fires:** The study revealed that fires should be added to the current college geography. This is because fires are equally man-made disasters in Zambia that need much attention. The study revealed that much property was lost through fires and mostly people lacking risk reduction education were likely to fail to ‘recover’ from such a loss. The respondents noted that bush fires occur in Zambia especially in the hot season. They are renowned for causing extensive damage to vegetation, especially if they came when the grass and litter was very dry. Fires in Zambia can be caused naturally (for example, by thunder strike) or by human beings (for example, fires started by smokers, people looking for rodents, people hunting and those clearing fields), (ECZ, 2000). The study revealed that all this knowledge on fires should be added to the current geography in colleges if the syllabus was to answer questions on the hazards and disasters in Zambia.
**Stakeholder involvement:** This study found that stakeholder involvement should be added to college geography in the topic of environmental hazards and disasters. The respondents felt that study on environmental hazards and disasters should not only end with the lecturer and the students but should go beyond, thereby involving the community and other stakeholders if it was to be meaningful to Zambian society. The study revealed that stakeholders like the private sector, public sector, the government, church leaders, international organizations, the parents and the entire community should be involved in disaster risk education. Therefore, geography in colleges, under the topic ‘environmental hazards and disasters’ should involve other stakeholders apart from teachers and students. The stakeholders would provide a variety and full coverage of the topic. This would also provide a link between geography and the Zambian community.

**Industrial Accidents:** The study revealed that the topic on hazards and disasters in college geography should include industrial accidents. This is because industrial accidents are man-made disasters common in Zambia. There are so many accidents happening in our industries in Zambia today. The respondents felt that the topic on environmental hazards and disasters in colleges should include something on industrial accidents.
CHAPTER SEVEN: SUMMARY, CONCLUSION AND RECOMMENDATIONS

The chapter covers the summary of the study, conclusions that were drawn from the study, recommendations and suggestions for further research.

7.1 Summary.

The study looked at the ‘Perception of environmental hazards and disasters in Zambia’s college geography education’. Three objectives guided the study; namely, ‘to find out the environmental hazards and disasters which are common in Zambia’, ‘to explore the views of lecturers and students on environmental hazards and disasters in college geography education’ and ‘to assess the elements that lecturers and students feel should be included or excluded in the topic on environmental hazards and disasters’. Descriptive and survey research designs were employed to collect data from the two colleges of education that is; David Livingstone College of Education in Livingstone and Kwame Nkrumah College of Education in Kabwe. There were 122 respondents; 110 students and 12 lecturers.

The study revealed that the topic on ‘environmental hazards and disasters’ in college geography should mainly concentrate on those hazards and disasters which are common in Zambia. These include floods, pollution, drought, deforestation, wildlife depletion, fires, industrial accidents and so on. This is with the idea that concentrating on hazards and disasters common to Zambia will make geography meaningful and responsive to the needs of our local environment. The answers to the needs of Zambian local environment could be provided. The respondents also felt that it was important to learn about hazards and disasters in college geography in Zambia in order to equip learners with knowledge on mitigation measures, preparedness, response and recovery strategies to disaster strike and not only for mere passing of examinations.
The study also revealed that certain approaches or methods were preferred by respondents in the content delivery on hazards and disasters in college geography. These approaches or methods include field work, discussion, simulation and drills others. The study also revealed that certain stake holders should be involved in the full exploitation of the topic on hazards and disasters in college geography. These include the public sector, private sector, the government, the community and the parents.

Moreover, this study revealed that some topics currently being taught under environmental hazards and disasters in college geography in Zambia are alien our local environment. The study revealed that topics such as avalanches, tornados, hurricanes among others are not very relevant to the Zambian situation. The respondents felt that such topics should not be concentrated upon if the topic on environmental hazards and disasters in college geography is to be responsive to the needs of the Zambian environment. Instead, the respondents suggested that the content on hazards and disasters in college geography should include issues on mitigation measures, preparedness, fires, industrial accidents and epidemics. This is because the suggested topics are happen in the Zambian local environment.

7.2 Conclusion.

The study revealed that only the environmental hazards and disasters common to Zambia should be taught in college geography education if it has to responsive to the needs of the local environment. Concentration should be on floods, pollution, drought, wildlife depletion, fires, industrial accidents and so on. Teaching of the suggested issues would provide answers to the problems faced in our local environment.
The study revealed that teaching environmental hazards and disasters would equip learners with knowledge on mitigation, preparedness, response and recovery strategies to disaster strike. Moreover, certain stakeholders were suggested to assist in the full exploitation of the topic on hazards and disasters in college geography. This was with the thinking that colleges and the society at large should not constitute disconnected entities but rather, closely interrelated. To ignore the link would be to put the system at risk and introduce crises which often shake up the responsive protagonists from their lethargy or indifference. The stakeholders suggested by the respondents included civil society organizations, public sector, the government, the parents and the community at large. From this, it is concluded that there is need to involve stakeholders in the processes of teaching so as to provide a link between formal education and the society at large. The society and colleges of education should not constitute separate entities but rather closely interrelated. This stresses the idea of partnership in education guided by the principle that communities have the basic right to provide education at all levels. This is supported by MOE (1996) which stressed that the Ministry of Education will encourage and facilitate full participation of communities in educational provision.

Moreover, the study revealed that some topics taught under environmental hazards and disasters in college geography were alien to the Zambian environment. Topics like hurricanes, tornados, avalanches and so on did not depict a true Zambian environment and should not be given high priority. Instead, the topic on hazards in college geography should concentrate on topics such as floods, pollution, deforestation, drought, fires and industrial accidents because they happen in the Zambian environment. The study also revealed that issues to do with mitigation preparedness, response and recovery strategies should be taken care of in college geography under the topic of environmental hazards and disasters. In this regard, the conclusion to be drawn from such
findings is that the education system in Zambia should provide solutions to the local environment. In this case, the study on environmental hazards and disasters in college geography should provide answers to disasters that take place in the Zambian environment if education is to be meaningful.

Furthermore, the respondents felt certain approaches a methods should be employed when teaching the topic on hazards and disasters in college geography. The respondents suggested approaches like field work, discussions, simulation and drills and all those approaches of a practical nature. These findings lead to the conclusion that practical approaches are preferred in the education provision in Zambia. Practical methods provide practical solutions to problems encountered in the Zambian environment. This brings about meaningful learning, unlike just learning theories with less practice.

7.3 Recommendations.

The study revealed that although the topic on ‘environmental hazards and disasters’ was taught in Zambian college geography, many elements still needed much attention and evaluation if the topic was to be meaningful to the needs of the Zambian environment and not for examination purposes only. The topic did not actually stand on its own in college geography but taught as a sub topic under ‘environmental issues’.

Based on the findings of the study, the following are recommended:-

1. The study revealed that some of the topics taught in college geography were alien to the Zambian environment. These included topics like hurricanes, tornados, cyclones and so on. Arising from such a finding, it is recommended that the topic on environmental hazards and disasters in college geography should concentrate on those aspects common
to the Zambian environment if it is to be responsive to the needs of our local environment.

2. The study found that the approaches or methods used in the teaching of the topic on environmental hazards and disasters in colleges were not practical. Based on these findings, practical approaches and methods should be employed in learning about hazards and disasters in Zambia’s college geography education. This is because problems in the Zambian environment like floods need practical solutions.

3. The study also revealed that it was not enough to only involve lecturers and students in the teaching of environmental hazards and disasters. It is recommended that other stakeholders should be involved at certain stages of teaching and learning of environmental hazards and disasters in college geography. This will bridge the existing gap between geography and the Zambian community. Stakeholders could include civil society organizations, the government, public sector, the parents and the community among others.

4. The study revealed that the topic on hazards and disasters was not adequately covered in college geography. It is recommended therefore that the geography content on the topic of hazards and disasters in college geography should be revised on regular basis in order to include the current or contemporary issues if it is to be meaningful.

5. The study found that the topic on ‘Environmental hazards and disasters’ was not taught separately in college geography. It was taught as a sub topic under ‘environmental issues’. It is recommended that hazards and disasters could be taught as a separate body of knowledge or subject in Zambia as ‘environmental hazards and disasters education’ or
‘Disaster Risk Reduction Education’ as some countries like Bangladesh, Australia and Malaysia do among others.

7.4 Suggestions for further research.

The study focused on the perceptions of environmental hazards and disasters in Zambian college geography education. This study ought to be seen as a preliminary encounter in this area. There is need for further research which could focus on issues such as:

- The role of geography education in disaster management.
- A longitudinal study on the role of environmental education in disaster management.
REFERENCES


Chicago press, USA


Handmer, J.W (1994). *Education for Disaster Reduction*. Canberra, Australia


http://www.prevention consortium.org 20/12/2003


Topographic Map of Kabwe, 1428A4. Surveyor General, Lusaka

Tremor, K. (2002). *Hazards and Disasters Education*. Canberra, Australia


Wisner, B (2006),’’Let our Children Teach Us! A Review of Education and Knowledge in Disaster Risk Reduction”, Action aid, Australia

World conference on Disaster Reduction (2005). *Measuring vulnerability to Hazards*. Kobe, Japan

APPENDICES

APPENDIX A: QUESTIONNAIRE FOR GEOGRAPHY STUDENTS.

Dear Respondent,

You have been randomly selected as one of the respondents to this study whose primary aim is to investigate the perception of environmental hazards and disasters in college geography education in Zambia. Your views, experiences and suggestions as a student of geography and trainee teacher will provide relevant information for the effective learning and teaching of geography, especially in exploiting the topic on environmental hazards and disasters in particular.

To ensure confidentiality, anonymity of the respondent is assured and all responses shall be solely for academic and research purposes only and shall be treated with the strictest confidence they deserve.

INSTRUCTIONS

1. Questions with multiple choice responses please tick [v] against your choice.

2. For open ended questions, write in the spaces provided to you. If more space is required, use the blank spaces at the back of each page.

3. You are required to be as objective as possible when answering. Kindly answer without influence from other persons.

Name of college---------------------------------------------------------------

1. Gender of respondent (a) male   (b) female

2. (a)Year of study-------------------------------------------------------
   (b) Age-------------------------------------------------------------
3. Why did you choose to be trained in Geography as a teaching subject? 

4. What environmental hazards and disasters are common in Zambia?

5. (i) Is it important to teach environmental hazards and disasters in Geography?
   (a) Yes      (b) No
   (ii) Give a reason/s for your answer.

6. What do you suggest should be removed from the content provided in the syllabus under the topic environmental hazards?

7. Give a reason/s for your answer in question 9 above?

8. What do you suggest should be added to the study of environmental hazards and disasters in Geography?

9. Give a reason/s for your answer in question 10 above?

10. (i) In your opinion, does the current Geography curriculum/syllabus at college level cover the topic ‘environmental hazards’ adequately?
(a) Yes     (b) No

(ii) Give a reason/s for your answer in the above question.

________________________________________________________________________________________________________________________________________________

________________________________________________________________________________________________________________________________________________

11. (i) In your view, do you agree that Geography teaching in colleges is mainly examination oriented?

________________________________________________________________________________________________________________________________________________

________________________________________________________________________________________________________________________________________________

(ii) Give a reason/s for your answer in the above question.________________________________________________________________________________________________________________________________________________

________________________________________________________________________________________________________________________________________________

12. (i) In your view, should parents and the community at large be actively involved in teaching issues related to environmental hazards?

(a) Yes     (b) No

(ii) Give a reason/s for your answer in the above question.

________________________________________________________________________________________________________________________________________________

________________________________________________________________________________________________________________________________________________

13. (i) As a Geography student or trainee teacher, what practical activities do you suggest should be disseminated into the community to educate people on environmental hazards through Geography Education?
(ii) Briefly explain the importance of the suggested activities in the above question.

14. In your view, which stake holders should be involved in sensitizing the public in environmental hazards in Zambia apart from teachers?

THANK YOU VERY MUCH FOR YOUR COOPERATION.
APPENDIX B: QUESTIONNAIRE FOR GEOGRAPHY LECTURERS

Dear Respondent,

You have been purposively selected as one of the respondents to this study whose primary purpose is to investigate the perception of environmental hazards and disasters in college Geography Education. Your views, experiences and difficulties (if any) during the teaching of Geography at college level will provide relevant information for effective teaching and learning of Geography, especially the evaluation of the topic on environmental hazards in particular.

To ensure confidentiality, anonymity of the respondent is assured and all responses shall solely be for academic and research purposes only and shall be treated with the strictest confidence they deserve.

INSTRUCTIONS

1. For objective questions, please tick [v] against your appropriate choice.

2. For open ended questions, write in the spaces provided.

3. You are requested to be as objective as possible when answering. Kindly answer without influence from any person.

1. Respondent’s position in the college_________________________ ______________________

2. Name of college_________________________________________________________________________

3. Gender   (a) Male   (b) Female

4. For how long have you been teaching Geography?

_____________________________________________________________________________________

5. What environmental hazards and disasters are common in Zambia?

_____________________________________________________________________________________

99
6. (i) Is it important to teach environmental hazards in Geography?

(a) Yes  (No)

(ii) Give a reason for your answer in the above question.

7. (i) What do you suggest should be removed from the content provided in the syllabus under the topic environmental hazards and disasters?

(ii) Give a reason/s for your answer in the above question.

8. (i) What should be added to the content under the topic environmental hazards and disasters?

(ii) Give a reason/s for your answer in the above question.

9. (i) What type of teaching method/s do you suggest should be used in the teaching of environmental hazards and disasters?

(ii) Give a reason/s for using preferred method/s in the above question.
10. (i) In your view, does the current Geography curriculum/syllabus at college level exploit the topic environmental hazards disasters adequately?
   (a) Yes  (b) No
   (ii) Give a reason for your answer

11. (i) In your view, do you agree that Geography teaching in colleges is mainly examination oriented?
   (a) Yes  (b) No
   (ii) Give a reason/s for your answer in the above question.

12. (i) In your view, should parents and the community at large be actively involved in teaching issues related to environmental hazards?
   (a) Yes  (b) No
   (ii) Give a reason/s for your answer in the above question.

13. In your view, which stake holders should be involved in the teaching of environmental hazards?

14. In the spaces provides below, give a summarized critique of the topic environmental hazards as it is taught in the Zambian context.
THANK YOU FOR YOUR COOPERATION.
APPENDIX C: INTERVIEW SCHEDULE FOR GEOGRAPHY LECTURERS

1. Name of colleges______________________________________________

2. Position in college ____________________________________________

3. Gender       (a) Male       (b) Female

4. For how long have you being teaching Geography?
   __________________________________________________________________

5. What environmental hazards and disasters do you feel are common in Zambia?
   __________________________________________________________________
   __________________________________________________________________
   __________________________________________________________________

6.(i) Is it important to teach environmental hazards in Geography?
   __________________________________________________________________

(ii) Give a reason for your answer in the above question.
   __________________________________________________________________
   __________________________________________________________________
   __________________________________________________________________

7.(i) What do you suggest should be removed from the topic ‘environmental hazards and disasters’ as it is taught in college geography?
   __________________________________________________________________
   __________________________________________________________________
   __________________________________________________________________
   __________________________________________________________________

(ii) Give a reason/s for your answer in the above question.
8. (i) What should be added to the content under the topic environmental hazards and disasters?

(ii) Give a reason/s for your answer in the above question.

9. (i) What type of teaching method/s do you suggest should be used in the teaching of environmental hazards?

(ii) Give a reason/s for using preferred method/s in the above question.

10. (i) Does the current Geography curriculum/syllabus at college level exploit the topic environmental hazards adequately?

(ii) Give a reason for your answer.
11. (i) Is Geography teaching in colleges is mainly examination oriented?  

(ii) Give a reason/s for your answer in the above question.

12. (i) In your view, should parents and the community at large be actively involved in teaching issues related to environmental hazards?

(ii) Give a reason/s for your answer in the above question.

13. In your view, which stakeholders should be involved in the full exploitation of environmental hazards and disasters as a topic in college geography?

14. What is your general overview of the topic ‘environmental hazards’ as it is taught in the Zambian context?

Thank you for your cooperation.
APPENDIX D: FOCUSED GROUP DISCUSSION GUIDE

1. Is it important to teach environmental hazards and disasters in geography?

2. What environmental hazards and disasters are common in Zambia?

3. What elements should be removed from the current content provided under the topic of ‘environmental hazards and disasters’ in college geography? Give reasons for your answer.

4. What should be included under the topic of ‘environmental hazards and disasters’ in college geography? Give reasons for your answer.

5. What practical activities should be disseminated into the community/society to educate people on environmental hazards and disasters through geography education?

6. Which stakeholders should be involved in sensitizing the public about environmental hazards apart from the teachers?