The disaster risk reduction educational programme for primary schools in the City of Tshwane: A critical analysis

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ABSTRACT

The last three decades have seen an increase in the severity and impact which disasters have had on society. This has necessitated a radical shift in thinking pertaining to the prevention and mitigation of the impact of hazards, in order to create more resilient communities and change the focus from managing disaster to reduce disaster risk. Developing more efficient disaster reduction strategies will not only save a substantial amount of money but save many lives as well.

Over the last two decades, a number of international conventions and conferences have taken place that have served as catalysts in shifting the emphasis from disaster management to disaster risk reduction. In seeking new ways to implement new disaster risk reduction strategies it has become increasingly apparent that children have a vital role to play within disaster risk reduction strategies. Children are excellent conduits of disaster risk information and can therefore create significant disaster risk awareness within their communities. It is therefore imperative that disaster risk reduction strategies should include the promotion of disaster risk awareness aimed at children.

To this end, a number of disaster risk reduction educational materials have been developed and implemented in countries around the world. However there seems to be a general lack of evidence showing the effectiveness of these interventions and whether they have contributed to the overall enhancement of community resilience and ultimately to disaster risk reduction. To be effective, disaster risk reduction school educational programmes must result in greater disaster resilience in communities.

This research aimed at critically analysing the disaster risk reduction educational programme for primary schools in the City of Tshwane in order to determine its effectiveness as a tool for disaster risk reduction. In addition, this research sought to draw a comparison in terms of disaster risk awareness, preparedness, mitigation and response knowledge amongst learners in the schools which implemented this programme against those schools which have not as yet implemented the programme. The South African disaster risk reduction legislative requirements was scrutinised in order to ascertain legislative requirements in terms of governing disaster risk management in South Africa.

After conducting a literature review and conducting focus groups and semi-structured interviews it was concluded that there is evidence that the school guide pack intervention instilled confidence in the learners about their knowledge of disaster risk reduction. In addition learners who had been taught from the school guide pack had a good understanding that they should specifically be aware

of risks and hazards. The song was a feature in the school guide pack which received a very favourable response from all the learners. Learners who had been taught from the school guide pack had the knowledge that to be prepared they need to tell the community how to be safe, to tell their friends to be aware of risks and hazards and to know the emergency number. Learners in schools where the school guide pack was implemented all knew their local emergency number.

Three unexpected finding also came to the fore, namely evidence emerged that School B struggled with the implementation of the school guide pack. Secondly learners in School C displayed a good understanding of disaster risk reduction, despite the fact that School C had not implemented the school guide pack. Finally, learners from School D exhibited strong, underlying emotions when participating in the focus group. Lastly, a number of recommendations were made as to components and aspects which should be considered when developing disaster risk reduction educational material in order for it to be an effective method of disaster risk reduction and mitigation.

It was concluded that when implemented in isolation from additional disaster risk reduction activities, the City of Tshwane's Metropolitan Municipality primary schools programme, was not a sufficient tool for reducing disaster risk in the City of Tshwane. However if the disaster risk reduction primary school programme was combined with a well planned, Metropolitan wide, disaster risk reduction campaign which incorporated all spheres of the community, there is a much greater likelihood that disaster risk reduction would be achieved.

SAMEVATTING

Die laaste drie dekades is gekenmerk deur ’n verhoging in die impak wat rampe op die samelewing het. Die verhoogde impak het ’n radikale kopskuif teweeg gebring in die denke rondom die voorkoming en mitigasie van gevare. Die doel is ook om meer weerstandbiedende gemeenskappe te skep en om die fokus te verskuif van die bestuur van rampe na ramprisiko afname. Die ontwikkeling van meer effektiewe rampvermindering- strategieë sal tot gevolg hê dat beide finansiële- en lewensverliese as gevolg van rampe aansienlik verminder word.

Gedurende die laaste twee dekades het ’n groot aantal internasionale konvensies en konferensies plaasgevind wat as katalisator gedien het om die klem te verskuif vanaf rampbestuur na ramprisiko-vermindering. In die soeke na nuwe metodes om ramprisiko-vermindering te implementeer, het dit duidelik geword dat kinders ‘n belangrikke rol speel rakende ramprisiko-vermindering strategieë. Kinders is uitstekende fokus punte vir ramprisiko inligting en kan daarom baie bydra tot ’n gemeenskap se ramprisiko bewustheid. Dit is dus noodsaaklik dat ramprisiko-vermindering strategieë gerig op kinders ingesluit word in die bevordering van ramprisiko bewustheid.

Om aan die uitkoms te voldoen is daar ’n groot hoeveelheid opvoedingsmateriaal wat fokus op ramprisiko-vermindering in verskeie lande ontwerp. Ten spyte hiervan is daar ’n algemene gebrek aan bewyse dat die intervensies wel effektief is en of hulle bygedra het tot die algemene verbetering van gemeenskapsweerstand asook ramprisiko-vermindering. Om effektief geklassifiseer te word, is dit noodsaaklik dat ramprisiko-vermindering opvoedingsprogramme bydra tot die gemeenskap se algehele weerstand.

Die navorsing is ’n kritiese analise van die ramprisiko-vermindering opvoedingsprogramme wat tans bedryf word in laerskole in die omgewing van die stad Tshwane.. Die doel hiermee is om vas te stel of dit wel ’n effektiewe metode is om ramprisiko-vermindering te bevorder. Verder is die studie ook ten doel om ’n vergelyking te maak in terme van ramprisiko-bewustheid, voorbereidheid, mitigasie en reaksiekennis van leerders in skole wat alreeds die ramprisiko opvoedingsprogram geïmplementeer het, vergeleke met leerders in skole wat nog nie die program geïmplementeer het nie. Die Suid-Afrikaanse wetgewende vereistes word ook bestudeer om vas te stel wat benodig word in terme van wetgewing wat Suid-Afrikaanse rampbestuur reguleer.

Na ‘n oorsig van die literatuur asook semi-gestruktureerde onderhoude in fokusgroepe uitgevoer is, is daar tot die gevolgtrekking gekom dat die skoolgidspakket wat as intervensie gedien het wel die leerders se selfvertroue oor hul kennis van ramprisiko-vermindering verhoog het. Verder het

leerders wat onderrig ontvang het vanuit die skoolgidspakket bewys dat hulle ‘n goeie begrip toon in hulle bewustheid oor risiko en gevare. Die lied, wat deelgemaak het van die skoolgidspakket, is deur leerders hoog op prys gestel. Die leerders wat vanuit die skoolgidspakket onderrig is, het ook getoon dat hulle oor die nodige kennis beskik om voorbereid te wees deur hulle gemeenskap in te lig oor hoe om veilig te wees, deur hulle vriende in te lig om bewus te wees van risiko’s en gevare en om die noodnommers te ken. Alle leerders in skole waar die skoolgidspakket onderrig is het al hulle plaaslike noodnommers geken.

Drie onverwagse bevindinge het na vore gekom: Skool B het gesukkel met die implementering van die skoolgidspakket, leerders in Skool C het ’n goeie begrip van ramprisiko-vermindering getoon ten spyte van die feit dat hulle skool nie die skoolonderrigpakket implementeer het nie en Skool D se leerders het baie sterk onderliggende emosies getoon gedurende fokusgroep onderhoude. Ter afsluiting word ’n aantal aanbevelings gemaak ten opsigte van aspekte wat in ag geneem moet word wanneer ramprisiko-vermindering opvoedingsmateriaal ontwikkel word vir laerskool-leerders om sodoende ‘n effektiewe metode van ramprisiko-vermindering en mitigasie te kan wees.

Dit is vasgestel dat wanneer ramprisiko-vermindering aktiwiteite (die Stad van Tshwane Metropolitaanse Munisipale laerskoolprogram) in isolasie geïmplementeer word, dit nie genoegsaam is vir die vermindering van ramprisiko in die Stad van Tshwane nie. Sou die ramprisiko-vermindering laerskoolprogram met ‘n goedbeplande Metropolitaanse ramprisiko-verminderingsveldtog gekombineer word, is die waarskynlikheid dat ramprisiko-vermindering bereik kan word baie hoër.

KEYWORDS: child-centred disaster risk reduction, education, vulnerability, resilience, intervention, awareness, preparedness, prevention, mitigation, response

TREFWOORDE: leerder-gesentreerde ramprisiko-vermindering, opvoeding, kwesbaarheid, weerstandbiedendheid, intervensie, bewustheid, voorbereidheid, voorkoming, mitigasie, reaksie.

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CHAPTER 1:
INTRODUCTION

1.1 ORIENTATION AND PROBLEM STATEMENT

The last three decades have seen an increase in the severity and impact which disasters have had on society (ISDR, 2004(b):3) which has necessitated a radical shift in thinking pertaining to the prevention of and response to disasters. The period 1990–1999 was declared the International Decade for Natural Disaster Reduction (UN, 1989) in which the United Nations General Assembly called for global collaboration in the field of natural disaster reduction. The main objective of the decade being a reduction in the loss of lives, property damage and socio-economic consequences of disasters, achieved through an intensive international campaign.

The primary goals to be achieved within the decade were to develop the necessary capacity in order to mitigate the impact of natural disasters; to formulate strategies and courses of action for application of existing knowledge; to increase knowledge in areas of science and engineering so as to reduce property losses and loss of life; and to circulate information on predicting, mitigating and assessing natural disasters and to implement programmes which would assist in predicting, preventing, mitigating and assessing natural disasters (UN, 1989).

The International Framework of Action for the International Decade for Natural Disaster Reduction (UN, 1989) included specific policy measures to be acted upon by all governments at a national level. For example these measures required that governments devise policies and programmes pertaining specifically to disaster prevention and mitigation, that public awareness be raised in areas such as preparedness, prevention, relief and recovery and the UN Secretary-General should be kept conversant with what policies had been implemented in various countries in order to facilitate information exchange (UN, 1989).

The Framework of Action (UN, 1989) also included the actions to be taken by the United Nations system and UN Organisational arrangements to be instituted throughout the course of the decade. These included a special high-level council, a scientific and technical committee, the Secretariat, detailed financial arrangements and provision for a mid-term review (UN, 1989).

In 1994, during the International Decade for Natural Disaster Reduction the World Conference on Natural Disaster Reduction (1994) convened in Yokohama, Japan. It was out of this conference that the Yokohama Strategy and Plan of Action for a Safer World (1994(a)) was born. The

Yokohama strategy gives guidelines for natural disaster prevention, preparedness and mitigation. The primary aim of the Yokohama Strategy and Plan of Action for a Safer World (1994(b)) was to appeal to countries and states to unite together with a common sense of purpose in order to save human lives and protect natural resources, thus ensuring a safer world. The Yokohama Strategy (1994) formed the starting point for disaster reduction ideology.

On the 9 of July 1999 a declaration of intent was made by the International Decade for Natural Disaster Reduction (IDNDR). The declaration of intent known as The Geneva Mandate on Disaster Reduction (ISDR, 2008) was a commitment made by the IDNDR for significant effort to be placed into ensuring a safer world for future generations and to build on the success already achieved in reducing natural disasters during the period 1990 - 1999.

After a decade in which there was a rise in awareness of and commitment to disaster reduction, the year 2000 saw the United Nations General Assembly establish the International Strategy for Disaster Reduction, known as the ISDR in 2000. The International Strategy for Disaster Reduction (ISDR, 2000) has a primary purpose of building communities that are resilient to disasters. This will be achieved through the endorsement of disaster reduction as a fundamental component of sustainable development. The overall goal of the ISDR is to act as an agent to assist disaster reduction efforts so as to reduce social, economic, environmental and most importantly human losses which have occurred as a result of natural hazards, environmental or technological disasters (ISDR, 2000).

On the 8 September 2000 the United Nations General Assembly adopted the United Nations Millennium Declaration (UN, 2000). Poverty eradication, development issues and protection of the environment formed part of the declaration as well as a commitment to protect the vulnerable people of society. Out of this declaration the eight Millennium Development Goals (UNDP, 2006) were formed as a response to the primary development goals faced globally. The Goals are based on targets and indicators which make them quantifiable and measurable. One of the most significant aspects of the development of the Millennium Development Goals was the tripartite relationship made between sustainable development, poverty and growth and the acknowledgment that the three concepts are intrinsically linked.

The Millennium Development Goals received additional reinforcement at The World Conference on Disaster Reduction (ISDR, 2005) in Kobe, Japan in January 2005. The conference delegates drafted the Hyogo Declaration which adopted the Framework for Action 2005-2015: Building the

Resilience of Nations and Communities to Disasters as the guiding framework on disaster reduction for the ensuing decade (UN, 2005). The declaration stated that the Millennium Development Goals would be used as a means to sustain disaster reduction activities on an international basis.

Disaster risk reduction education received widespread international exposure when the theme for the United Nations International Strategy for Disaster Reduction world disaster reduction campaign (ISDR, 2006) for 2006–2007 was declared “disaster risk reduction begins at school”. The idea behind the campaign was twofold, firstly to reinforce Priority three in the Hyogo Framework for Action 2005-2015 (UN, 2005) which states that knowledge should be used in conjunction with innovation and education at all levels to construct a culture of safety for all. Secondly the United Nations International Strategy for Disaster Reduction (ISDR, 2006) argued that the school setting is one of the most appropriate environments to create a culture of disaster prevention and resilience, thereby instilling lasting values in learners. The campaign encouraged disaster risk reduction education to be mainstreamed into school curricula.

Within the South African context, the South African Disaster Management Act 57 of 2002 heralded a new paradigm in disaster management planning and practice within the South African context. This legislation required that an emphasis be placed on prevention of disasters and the practice of mitigation strategies rather than simply responding only once a disaster occurred. The legislation further proposed that disaster management should be a concern across all three spheres of government within South Africa.

The new disaster management legislation was set to revolutionise traditional disaster management thinking and lined up very well with international standards and best practice associated with disaster risk management. Date of commencement of the Act was scheduled for the 1 April 2004. Due to slow implementation of the Disaster Management Act a sunset clause was given up until the 1 April 2006 for provincial government and 1 July 2006 for municipalities (Williams, 2007).

According to the Disaster Management Act 57 of 2002 (South Africa, 2002) one of the powers and duties of national, provincial and municipal disaster management centre’s is to “promote disaster management capacity building, training and education, including in schools” throughout the Republic of South Africa. The National Disaster Management Framework (South Africa, 2005) expands on this by stating that “disaster risk reduction education must be integrated in primary and secondary school curricula”. The City of Tshwane Metropolitan Municipality was one of the first municipalities to comply with this part of the legislation with the introduction of “The Primary School Disaster Management Guide Pack” programme. Thereafter others like Dr Kenneth Kaunde District

Municipality, Dr Ruth Mompati District Municipality, the City of Cape Town, the Western Cape Provincial Government and Ngaka Modiri Molema District Municipality followed suit (Van Niekerk, 2009).

The school guide pack consists of a teacher's guide, grade five, six and seven workbooks, a poster, a CD containing a song and a rap, a DVD with a movie about disaster risk reduction as well as a board game called Riskland, coupled with an activity book. The programme was launched in the City of Tshwane Metropolitan Municipality in 2007 and was written to supplement topics such as drought covered in Economic and Management Sciences (EMS) and disasters covered in Social Sciences (SS) as well as to be incorporated in the subject Life Orientation (LO) as part of the curriculum. The school guide pack was piloted in two schools, namely Mokonyama Primary School and Walter Sisulu Primary School (Thinda, 2009). In 2008 the City of Tshwane Metropolitan Municipality obtained funding from a corporate sponsor to implement the school guide pack in one additional school within the City of Tshwane Metropolitan namely the Refitlhile-Pele Primary School (Thinda, 2009).

The researcher is of the opinion that this theme should be studied due to the fact that the integration of disaster risk reduction education in school curricula is a policy of the South African government as stated in the Disaster Management Act 57 of 2002 (South Africa, 2002) and the National Policy Framework for Disaster Risk Management in South Africa (South Africa, 2005). On a global level the Hyogo Framework for Action 2005-2015 (UN, 2005) calls for a culture of resilience and safety to be integrated into society by means of education at all levels. It is imperative that the Republic of South Africa take this appeal for action seriously and be part of a global campaign to reduce disaster risk.

The initiative which the Emergency Management Services Department at the City of Tshwane Metropolitan Municipality (CoT) took in developing a programme to assist in integrating disaster risk reduction education into school curricula, may inspire other provincial and local governments within the Republic of South Africa to follow suit. Thereby complying with an additional part of the disaster management legislation as well as responding to the international appeal specified by the Hyogo Framework for Action.

Further this theme should be studied in order to facilitate the creation of a culture of taking action towards disaster risk reduction instead of simply being aware of disaster risk reduction concepts and not acting on them. Integrating disaster risk reduction education material into school curricula

must motivate a culture amongst learners of disaster resilience and prevention. The impact of disasters can be reduced through simple changes in day-to-day behaviour. The United Nations International Strategy for Disaster Reduction (ISDR, 2006) is of the opinion that it is far simpler and more effective to inculcate a culture of disaster risk reduction in children who are open to new ideas and learning than trying to persuade adults, who already have established patterns of behaviour, to change the way they do things.

The problem is that the specific and measurable guidelines provided for the inclusion of disaster risk reduction education in the Disaster Management Act 57 of 2002 (South Africa, 2002) as well as the National Policy Framework for Disaster Risk Management in South Africa (South Africa, 2005) are extremely brief and lacking in detail. There is no point of departure indicating what should be included in the educational material or even what type of material should be utilised in order to effectively raise awareness about disaster risk management and disaster risk reduction amongst primary and secondary school children. There is simply a statement in the National Policy Framework for Disaster Risk Management in South Africa (South Africa, 2005) which states that "disaster risk reduction education must be integrated into primary and secondary school curricula. Schools should be regarded as focal points for raising awareness about disaster management and risk reduction". Practical application of this statement is left solely to the discretion of all three tiers of the South African government as well as those developing the disaster risk reduction educational material.

The following research questions can be asked, namely:

(i) To what extent is implementation of the City of Tshwane Metropolitan Municipality (CoT) primary schools programme an effective tool for disaster risk reduction (DRR)?

(ii) What does South African disaster management legislation require in terms of disaster risk reduction education in primary schools?

(iii) What disaster risk reduction education material was available to the City of Tshwane Metropolitan Municipality (CoT)?

(iv) What content and components should ideally be included in disaster risk reduction educational material in order for it to be an effective method of disaster risk reduction and mitigation?

1.2 OBJECTIVES

The objectives of this study are:

(i) To gain an understanding of disaster risk reduction;

(ii) To determine what South African disaster management legislation requires in terms of disaster risk reduction education in primary schools;

(iii) To conduct a literature review on disaster risk reduction educational material developed for schools across the globe and determine the main pitfalls and good practices experienced;

(iv) To determine what content, components and other practices should ideally be included in disaster risk educational material in order for it to be an effective method of disaster risk reduction and mitigation;

(v) To determine the focus of the school guide pack in terms of awareness, prevention, mitigation, preparedness and response;

(vi) To ascertain how well the School Guide Pack integrates with the current Republic of South Africa (RSA) outcome-based education system;

(vii) To establish the current curriculum criteria for disaster risk reduction education in the Republic of South Africa (RSA);

(viii) To determine how and in which learning areas the City of Tshwane Metropolitan Municipality School's Guide Pack is being implemented; and

(ix) To compare knowledge of learners with respect to disaster risk reduction in schools that implemented the City of Tshwane Metropolitan Municipality School's Guide Pack with schools that did not.

1.3 RESEARCH METHOD

A qualitative research approach was employed. Struwig and Stead (2007:19) explain qualitative research as research which aims to better expand on preliminary knowledge about a specific research problem or topic.

Data was analysed using an inductive approach (Fox & Bayat, 2007:106) in order to determine the emergence of specific patterns, themes and tendencies. Welman and Kruger (2001:29) describe the inductive process as a method of research whereby one firstly examines a specific case and thereafter identifies a theory upon which to base the conclusions reached by the findings.

1.3.1 *Literature study*

A literature study in which primary and secondary literature will be used in this research in order to provide a thorough understanding of the concept disaster risk reduction. The literature study also pertains to relevant South African disaster management legislation in the context of disaster risk reduction and disaster risk reduction education for primary school learners. Academic journal databases have been consulted as part of the literature review.

International literature was consulted to conduct a desktop study of disaster risk reduction educational material developed for primary school children across the globe.

Core literature included journal articles, South African legislation on Disaster Management, ISDR reports, books, case studies and the database of PreVention Web educational submissions.
The following research objectives were achieved through the literature review:

(i) To gain an understanding of disaster risk reduction;
(ii) To determine what South African disaster management legislation requires in terms of disaster risk reduction in primary schools;
(iii) To conduct a desktop study of disaster risk reduction schools educational material developed for primary school children across the globe;
(iv) To determine what content, components and other practices should ideally be included in disaster risk educational material in order for it to be an effective method of disaster risk reduction and mitigation; and
(v) To establish the current curriculum criteria for disaster risk reduction education in the Republic of South Africa (RSA).

1.3.2 *Empirical research*

Focus group interviews (Lues & Lategan, 2006:20) were conducted with grade seven learners as well as semi-structured interviews with educators who taught the school guide pack. The purpose of this design is to facilitate group discussion amongst the learners in order to aid a better understanding of the focus of the material in terms of disaster risk reduction awareness, prevention, mitigation, preparedness and response.

The focus group interviews were carried out at two schools which have implemented the City of Tshwane Metropolitan Municipality school guide pack, as well as two schools which have not. This provided a platform to analyse the effectiveness of the disaster risk reduction project for primary schools implemented by the City of Tshwane Metropolitan Municipality by comparing schools that

did implement the school guide pack with schools that did not. The semi-structured interviews provided more specific information about the implementation of the school guide pack and its integration in to the school curriculum.

An inductive approach was followed in this study. According to Terre Blanche *et al* (2006:7), an inductive approach is where imprecise assumptions exist regarding the proposed research question and the aim of the research is to ultimately assist in contributing to more distinct knowledge of the research question or topic.

1.4 CHAPTER LAYOUT

This research will be divided into five chapters:

Chapter 1: Introduction

Chapter 2: A literature review

Chapter 3: Implementation of the disaster risk reduction educational project and empirical research

Chapter 4: Analysis of the disaster risk reduction educational project for primary schools implemented by the City of Tshwane Metropolitan Municipality

Chapter 5: Recommendations and conclusions

1.5 CONCLUSION

This chapter aimed to provide the reader with a broad synopsis of the research to be carried out. An introduction was given in order to orientate the reader in terms of the overarching subject matter of this research. Thereafter more specific information was provided about the need for the research to be conducted as well as a brief overview of the school guide pack. After that the research questions were posed and the research objectives outlined. Next a concise synopsis of the research method was given and finally a summary of the layout of the chapters. The following chapter will provide the reader with a literature review related to this research.

CHAPTER 2:
A LITERATURE REVIEW

2.1 INTRODUCTION

In this chapter, a contextual overview of disaster risk reduction will be given, which will include defining the concept disaster risk reduction and highlighting key concepts used in disaster risk reduction. In addition a concise overview of international conventions dealing with disaster risk reduction and the role they have played in shaping the disaster risk reduction discourse will be presented. As well as the focus which these conventions have placed on disaster risk reduction education for children. A short examination of disaster risk reduction legislation in the South African context will also be provided.

A discussion on child-centred disaster risk reduction will follow and key features of disaster risk reduction awareness campaigns and interventions aimed at children will be presented. In addition disaster risk reduction education and specifically primary school education will enjoy attention. The chapter will end with a desktop analysis of disaster risk reduction educational material developed, in English, for children under 13 years of age.

2.2 DISASTER RISK REDUCTION – THE CONCEPT

In his introduction to the Secretary-General's Annual Report in 1999, Mr. Kofi Annan added credence to the disaster risk reduction agenda by stating that developing more efficient disaster reduction strategies would not only save a substantial amount of money but save many lives as well. The former United Nations Secretary-General (UN, 1999:3) also pointed out that more resources should be placed into improving sustainable development initiatives rather than spending them in the aftermath of a disaster on disaster relief and recovery efforts.

The United Nations Secretary-General (UN, 1999:3) warned that this kind of shift in focus would be difficult to achieve, however the future benefits, although hard to measure tangibly, would be recorded as the disasters which did not take place as opposed to disaster which did take place. He further addressed the need for reducing vulnerability of communities as well as the need for effective Early Warning mechanisms which, when combined, aid in preventing disasters.

The United Nations Secretary-General (UN, 1999:3) acknowledged the ground breaking work achieved from 1990 – 2000, during the International Decade for Natural Disaster Reduction (IDNDR) and gave his full commitment and support to "A safer world in the twenty-first century: risk

and disaster reduction" for the new millennium (UN, 1999:4). It was recognised that the formative steps taken during the IDNDR would need to be continued as disaster risk reduction is a long-term process rather than a once off initiative (ISDR, 2004(a)11). The International Strategy for Disaster Reduction (ISDR) would be the vehicle to carry disaster risk reduction into the future.

The International Strategy for Disaster Reduction, also known as the ISDR was established by the United Nations General Assembly in 2000 (Jeggle, 2005:29). The primary mandate of the ISDR is to direct and coordinate role-players and partners in order to achieve significant and measurable reduction in loss of lives and damage associated with the impact of a disaster, as well as equipping countries and societies to cope with the hazards to which they are exposed (ISDR, 2011(h)). The ISDR is thus a key voice in the ongoing discourse of conceptualising disaster risk reduction.

The United Nations International Strategy for Disaster Reduction (ISDR, 2009(a):10) defines disaster risk reduction as "the concept and practice of reducing disaster risk through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events".

From the ISDR's definition it is evident that disaster risk reduction is concerned with curtailing a community's vulnerability to the ongoing risks which it faces. Disaster risk reduction is further concerned with preventing or minimising the impact and consequences which natural or human-centred hazards can have on a community. It is apparent that disaster risk reduction can only be effective when it is incorporated as an integral part of sustainable development (Jeggle, 2005:372). The ISDR (ISDR, 2009(c)) also draws reference to the fact that the Hyogo Framework for Action provides an extensive approach and plan for reducing disaster risk on a global level. The Hyogo Framework for action will be discussed in more depth during the course of this chapter.

Karimanzira (1999:23) notes that there must be a common understanding of the concept disaster risk reduction and that sustainable development is only possible through instituting preventative measures rather than merely planning for and responding to disasters. He is also of the opinion that pre-emptive measures and mitigation strategies should be prioritised into economic, environmental, social and land use policies. Thus ensuring that disaster risk reduction interventions are used to aid development and that the link between disaster risk reduction and development is firmly in place.

The International Strategy for Disaster Reduction (ISDR, 2007:1) refers to disaster risk reduction as being a “cutting and complex development issue”. This statement immediately cements the relationship between disaster risk reduction and development as well as underlining the fact that disaster risk reduction is a diverse subject. From the literature it is therefore feasible to deduce that disaster risk reduction is a multi-disciplined, multifaceted, dynamic concept involving numerous fields of specialisation whilst adopting a holistic approach to diminishing and preventing disaster related risks.

The former Atmosphere, Climate and Environment Information programme (ARIC, 2005) at Manchester Metropolitan University have retained archival documentation which report that sustainable development received international attention after publication of the Brundtland report in 1987. The report referred to sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (ARIC, 2005). Consequently development solutions which are implemented to reduce disaster risk must consider generations that are yet to come and ensure that resources used are not overexploited. The ISDR (2009:11) points out that sustainable development can be attained through disaster risk reduction initiatives which will result in fewer economic and physical losses and an enhancement in development practices.

In addition to the resounding and dominant voice of the United Nations’ International Strategy for Disaster Reduction (ISDR) a number of authors and academics have posited their understanding of disaster risk reduction as a concept. Wisner *et al.* (2004) state that global socio-economic forces play a key role in the devastating effects of disasters and can thus be seen as one of the root causes which leads to unsafe conditions. Thereby inferring that there is indeed a close link between the results of natural events or hazards on a community, and the range of social processes which affect the said community.

In terms of conceptualising disaster risk, Wisner *et al.* (2004:51) explain disaster risk through the Pressure and Release model. In the Pressure and Release model, root causes, for example political and economic ideologies and limited access to power, resources and structures lead to what Wisner *et al.* (2004:57) term ‘dynamic pressures’. Dynamic pressures are represented by lack of the following: training, freedom of press, local investments, markets and institutions, appropriate skills and ethical standards in public life. They also attribute macro forces such as deforestation, debt repayment schedules, arms expenditure, decline in soil productivity, rapid changes in urbanisation and population growth to dynamic pressures. These factors interacting with less than

perfect environmental, economic, social and political conditions lead to the progression of vulnerability of a community.

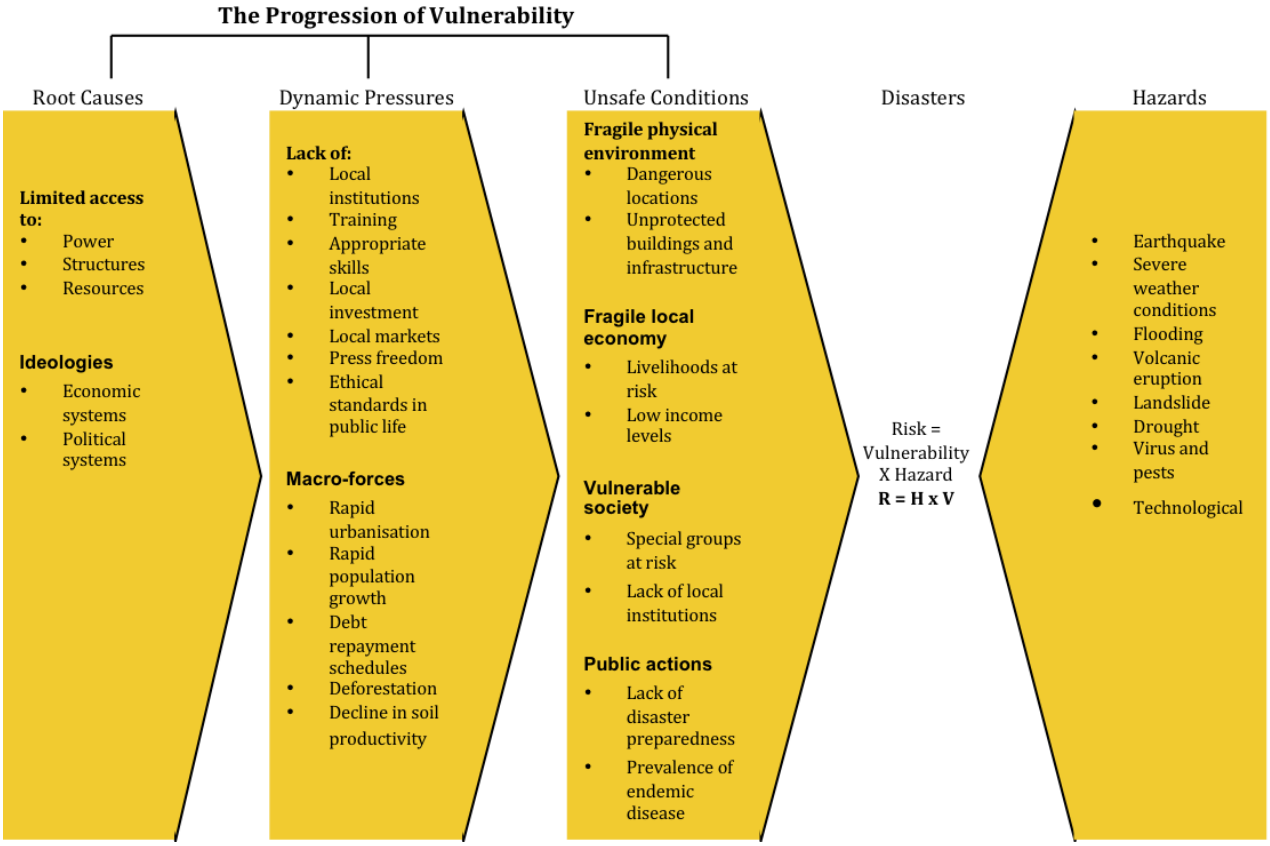

Figure 2.1 – The Pressure and Release (PAR) Model

According to Wisner *et al.* (2004:57), when root causes, dynamic pressures and unsafe conditions interact with hazards, for example a drought, flooding, high winds and landslides, the ensuing result is a disaster. The loss of human life and devastation depends largely on how the risk of the community has been accurately and timeously assessed. Disaster risk is calculated according to the following equation: disaster risk = hazard x vulnerability. Therefore the outcome of the impact of hazards on vulnerable people will be a disaster and that causes of vulnerability can be traced backwards from unsafe conditions, economic and social dynamic pressures right back to the underlying root causes.

Wisner *et al.* (2004:87) further stress that the Pressure and Release (PAR) model indicates factors and processes which, when viewed in isolation, could appear to have very little to do with the disaster, but when examined in more intricate detail could be indicative of root causes. Therefore

root causes leading to the multi-linked chain of factors which cause a disaster should be addressed so that the 'pressure' which causes disasters can literally be released.

However useful the Pressure and Release model may be in understanding disaster risk, it is not without its limitations. Wisner *et al.* (2004:87) acknowledge that the PAR model does not offer a theoretically sound analysis of the relations between the environment and a society at the point where the disaster starts to unfold. Therefore a model needed to be developed which highlighted the extent of events which took place at the pressure point in order to better understand the interactions between social processes and natural or human induced hazards.

The Access model was thus proposed by Wisner *et al.* (2004:87). The Access model, as a dynamic framework for understanding disaster risk, focuses on what happens at the pressure point between the hazard and the string of longer term social processes leading up to the disaster. The Access model also helps to identify why unsafe conditions emerge as a result of political and economic processes and even how nature can be used to explain hazard impacts. The Access model is used to illustrate how various social systems and norms produce the relevant conditions in which hazards impact whole communities as well as sub-groups within these communities (Wisner *et al.* 2004:87). A hazard, in this context, can be defined as "a dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage" (ISDR, 2009(a)).

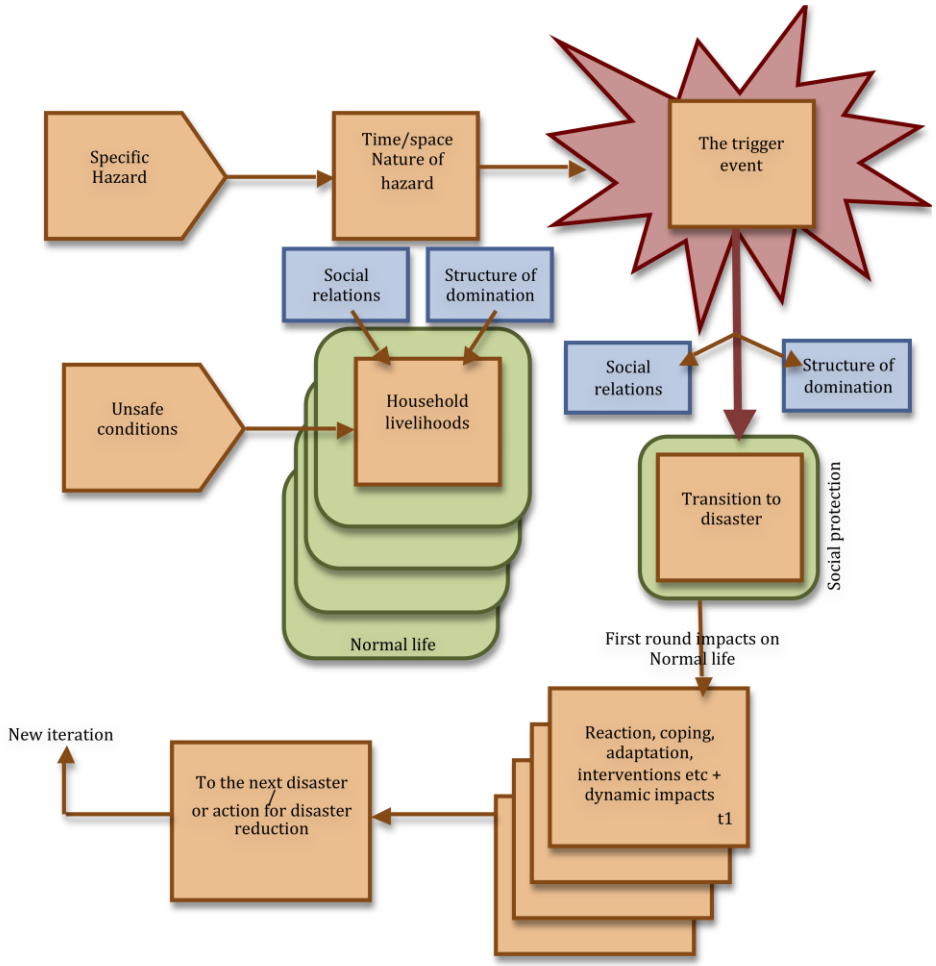

Figure 2.2 – The Access Model

Wisner *et al.* (2004:121) conclude that the Access model as a framework focuses on the socio-economic interactions which cause disasters or map the outcome of disasters. The Access model also assists in facilitating an understanding of what causes people to remain in a perpetual state of vulnerability, apart from a disaster occurring. The ISDR (2009:30) define vulnerability as "the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard". Finally Wisner *et al.* (2004:121) state that the Access model as a framework, allows for a response by the community either by looking at ways to become less vulnerable or by actively addressing the socio-economic state in which they function.

Another concept of disaster risk reduction is cited by Jeggle (2005:28) in which he states that "*disaster risk reduction is the conceptual framework of elements considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of*

sustainable development". He contextualizes disaster risk reduction within the framework of sustainable development and highlights its diverse and complex nature.

Like Wisner *et al.*, Jeggle (2005:29) also emphasises a shift in focus away from concentrating on hazards and their immediate physical consequences to the practice of integrating socio-economic and physical aspects of vulnerability into a wider evaluation of risks in order to understand and manage them in a more efficient manner. Jeggle is of the opinion that disaster risk is a diverse issue that requires wide scale and holistic approaches which take into consideration political, economic, social and environmental factors in order to understand it and reduce it.

Hamilton (2005:31) concurs with Jeggle as he states that "*disaster risk reduction is a complex array of related political, social, economic and environmental challenges of global dimensions, rather than just a series of scientific and technical problems to be solved*". He further asserts that a larger proportion of professionals need to become more intricately involved in reducing disaster risk in order to address the myriad of factors which exacerbate the risks. He concurs that disaster risk reduction is linked to and falls within the context of sustainable development. He further notes that development practitioners should follow the practice of conducting a risk assessment before commencing with development initiatives.

Numerous authors and institutions have helped to shape the concept of disaster risk reduction by adding to the discourse. The United Nations Development Programme (UNDP) also purport to the existence of a relationship between disaster risk and development. They contend that cementing this relationship will require amendments to existing policy. Thus providing tools for policy makers to achieve this outcome successfully is a prerequisite. As a concept, the UNDP (2005:33) explain disaster risk as an "unresolved problem of development, but one that is inevitable" and that enabling and focused policy as well as increased awareness can assist in reducing disaster risk.

Schipper and Pelling (2006) look specifically at the linkage between climate change, development and disaster risk. They recognise and acknowledge the link between development and disaster risk by stating that sustainable development will not be able to exist without an all encompassing, integrated approach. Disaster risk reduction is referred to as a component of disaster risk management. They conceptualise disaster risk reduction as consisting of three components namely prevention, preparedness and mitigation. Therefore, they assert that disaster risk reduction is concerned with preventing disasters, developing capacities to predict, cope and recuperate from

disasters as well as to decrease the stresses and shocks associated with hazard events or disasters.

Taylor and La Trobe (2006) agree that disaster risk reduction as a concept can be a perplexing one due to its ambiguous nature and the myriad of definitions attached to it. They pointed out that in its broadest, most widely used sense, disaster risk reduction is concerned with preparedness and mitigation and noted that in its approach to disaster risk reduction, the European Union, substitutes the word mitigation with prevention. Prevention in this context pays specific attention to vulnerability reduction and reducing exposure to risks and therefore sees addressing vulnerability as a key element in disaster risk reduction.

Benson and Twigg (2007) concur with Schipper and Pelling (2006) that disaster risk reduction is a fundamental part of development and can therefore not be viewed in isolation. They support mainstreaming disaster risk reduction into development and have developed substantial literature providing development organisations with the necessary steps to implement this process. Development interventions can save considerable amounts of money in relief efforts as well as saving lives and loss of infrastructure, should a disaster occur. However Pelling *et al*. (2002:293) note that development interventions that do not take cognisance of disaster risk reduction can have the opposite effect and intensify vulnerability and ultimately disaster risk.

According to Van Riet (2009:194) the concept of disaster risk reduction has been through a significant metamorphoses since the 1970's, with accelerated interest in the development field from the 1990's. He further adds that disasters are the result of humans and their day to day activities and thus can be predicted to a greater of lesser degree. If they can be predicted it follows that the consequences of a disaster can be mitigated and humans can be adequately prepared should they occur. Van Riet (2009:195) also acknowledges that disaster risk reduction as an integral part of sustainable development.

Pelling and Wisner (2009:46) state that disaster risk reduction and the activities associated with it aim to develop resilience to disasters from a micro level (the individual) all the way through to a macro level (societies). However, they, stress that for a drop in risk to occur there needs to be a change in the current status quo surrounding disaster risk reduction. Actions, policy and development initiatives must move from general rhetoric to practical applications which actually increase resilience. Only once this transpires will disaster risk reduction truly be effective.

In the Southern African context Holloway (2003:31) observes that disaster risk reduction and specifically policy related to it have been informed by disaster events, the media, political agendas and humanitarian needs. She deems that disaster related policy and practice within the Southern African context have not been informed by theoretical conversation. This together with issues like a reliance on foreign aid to recover after a disaster, severe lack of disaster risk reduction programmes and a lack of skills and capacity have combined to hinder commitment in taking on full ownership of disaster risk by Southern African countries.

It is evident that the term disaster risk reduction has evolved and will continue to evolve as the discourse develops and new ideologies, methodologies and best practice emerge (Van Riet, 2009; Taylor and La Trobe, 2006). Despite the varying interpretations and diverse practical application of disaster risk reduction it is apparent that disaster risk reduction is intrinsically linked to development and should be incorporated into sustainable development planning and practice (ISDR, 2009(c); Wisner *et al*, 2004; Jeggle, 2005; Hamilton, 2005; UNDP, 2005; Schipper and Pelling, 2006; Benson and Twigg, 2007; Van Niekerk, 2005).

From the literature there are a number of recurring themes that provide insight into the concept of disaster risk reduction. Although perception and meaning of disaster risk (Bankoff and Hilhorst, 2009) can differ amongst various role players and stakeholders there is broad consensus regarding the fundamental concept of disaster risk reduction. Nathan (2008:337) points out that over the last two decades, the discourse related to the terms ‘disaster’ and ‘risk’ has shifted to a much more holistic paradigm which considers socio-economic and environmental factors and is no longer a purely technocratic viewpoint.

Therefore, it can be concluded that disaster risk reduction, as a concept, is an outcome of systematic, multi-functional (ISDR, 2009(a); Jeggle, 2005) disaster risk management (Schipper and Pelling, 2006) which addresses conditions of vulnerability (ISDR, 2009(a); Wisner *et al*, 2004; Jeggle, 2005) and exposure to hazards (ISDR, 2009(a); Wisner *et al*, 2004; Jeggle, 2005) by means of building and increasing capacity (Schipper and Pelling, 2006) and resilience (Pelling and Wisner, 2009) of people through preparedness (ISDR, 2009(c); Schipper and Pelling, 2006; Taylor and La Trobe, 2006; Van Riet, 2009) mitigation (Schipper and Pelling, 2006; Taylor and La Trobe, 2006; Van Riet, 2009), sound environmental management (ISDR, 2004(a)) and effective and enabling policy (UNDP, 2005; Pelling and Wisner, 2009; Holloway, 2003).

2.3 KEY CONCEPTS IN DISASTER RISK REDUCTION

There are a number of key concepts and terminologies which have shaped the disaster risk reduction discourse and form a critical part of it. These will be provided below as a uniform understanding of them will be essential in analysing the empirical data. The researcher subscribes to the definitions as devised by the United Nations International Strategy for Disaster Reduction (ISDR, 2009(a)).

2.3.1 ***Disaster***

> "*A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources*".

2.3.2 ***Hazard***

> "*A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage*".

2.3.3 ***Mitigation***

> "*The lessening or limitation of the adverse impacts of hazards and related disasters*".

2.3.4 ***Prevention***

> "*The outright avoidance of adverse impacts of hazards and related disasters*".

2.3.5 ***Preparedness***

> "*The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions*".

2.3.6 ***Response***

> "*The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected*."

2.3.7 ***Risk***

"*The combination of the probability of an event and its negative consequences*".

2.3.8 ***Sustainable Development***

"*Development that meets the needs of the present without compromising the ability of future generations to meet their own needs*".

2.3.9 ***Vulnerability***

"*The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard*".

2.4 INTERNATIONAL CONVENTIONS THAT SHAPED THE DISASTER RISK REDUCTION DISCOURSE AND INFLUECED DISASTER RISK REDUCTION EDUCATION

A number of international conventions and conferences have taken place that have served as catalysts in shifting the emphasis from disaster management to disaster risk reduction. These conventions and conferences will be examined briefly to determine the influence which they have had on the disaster risk reduction discourse as well as observing the contribution they have made in terms of disaster risk reduction education for children.

2.4.1 *The World Conference on Natural Disaster Reduction - The Yokohama Strategy*

In 1994, during the International Decade for Natural Disaster Reduction (IDNDR), the World Conference on Natural Disaster Reduction convened in Yokohama, Japan. It was out of this conference that the Yokohama Strategy and Plan of Action for a Safer World (1994(b)) was born. The Yokohama strategy as it is commonly called gives guidelines for natural disaster prevention, preparedness and mitigation. The primary aim of the World Conference on Disaster Reduction (1994) was to appeal to countries and states to unite together with a common sense of purpose in order to save human lives and protect natural resources thus ensuring a safer world.

Although educating of children in disaster risk reduction is not specifically mentioned, the Yokohama Strategy and Plan of Action for a Safer World (1994(b)) does make reference to education in a number of instances and by inference it can be accepted that all human beings, including children, should be exposed to and educated in disaster risk reduction. The precise detail relating to education in the Yokohama Strategy and Plan of Action for a Safer World will now be examined with specific reference to the inclusion of children falling within the ambit of disaster risk reduction education.

In point seven of the Principles of the Yokohama Strategy and Plan of Action for a Safer World (1994(a):6) it is stated that a reduction in vulnerability can be achieved by "appropriate education and training of the whole community". The use of the words "whole community" most certainly includes the education of all age groups and demographics. The Yokohama Strategy and Plan of Action for a Safer World therefore places the onus of nations, societies and communities to use education as a way of reducing vulnerability and overall disaster risk. According to Van Niekerk (2005:58) the Yokohama Strategy and Plan of Action for a Safer World conceded ultimate responsibility to individual country's to protect citizens from disasters.

The Yokohama Strategy and Plan of Action for a Safer World (1994(a):7) included an "assessment of the status of disaster risk reduction" midway into the International Decade for Natural Disaster Reduction. With specific reference to education it was noted that "education and training programmes" for both professional people as well as the general public had not been "sufficiently developed with a focus on ways and means to reduce disasters" (Yokohama Strategy and Plan of Action for a Safer World, 1994(a):8). Once again it is safe to conclude that children definitely form part of the "general public" and thus also need to have disaster risk reduction educational programmes developed for their specific needs and frame of reference. To this end, the Yokohama Strategy and Plan of Action for a Safer World outlined a Plan of Action for the year 2000 and beyond.

Point 59 of the Review of the Yokohama Strategy and Plan of Action for a Safer World expressed the need for a more targeted and unwavering approach of incorporating disaster risk education into current school systems. It was acknowledged that teachers play a key role in leading within communities and that children have a role to play in disseminating information to other members of the community, for example their parents. It was noted that the practice of incorporating disaster risk reduction education into current curricula was far more talked about than physically implemented. It was further noted in point 60 that a "lack of resources for teachers and materials" could no longer be considered a legitimate excuse for not teaching about disaster risk reduction (UN, 2004:11-12).

2.4.2 *The Millennium declaration and Millennium Development Goals*

On the 8 September 2000 the United Nations General Assembly adopted the United Nations Millennium Declaration (UN, 2000). Poverty eradication, development issues and protection of the environment formed part of the declaration as well as a commitment to protect the vulnerable people of society, for example children. Out of this declaration the eight Millennium Development

Goals (MDG's) (UNDP, 2006) were formed as a response to the primary development goals faced globally. The MDG's are based on targets and indicators which make them quantifiable and measurable.

Although disaster risk reduction education is not specifically mentioned in the United Nations Millennium Declaration, Wisner *et al*. (2004:327) state that the Millennium Declaration indirectly indicated that disaster risk reduction initiatives need to be securely incorporated into structures, plans and policies and can no longer be seen as a remote and isolated rhetoric. This implies that when conducting a holistic approach towards disaster risk reduction, educational material related to disaster risk reduction should be integrated into key learning tools such as school curricula.

2.4.3 *The Johannesburg Summit - World Summit on Sustainable Development*

The World Summit on Sustainable Development, also known as the Johannesburg Summit, took place from the 2 September 2002 to the 4 September 2002 in Sandton, South Africa. The idea behind the summit was to gather leaders from around the globe to focus attention on sustainable development and bridging the gap between what had been declared at the Earth Summit in Rio and Agenda 21 and what had actually happened in the years preceding the summit (UN, 2002(b):1).

Wisner *et al*. (2004:327, 328, 330) are of the opinion that although much thought, preparation and effort went into preparing for the summit, the final document to emerge from the summit included very little pertaining to vulnerability reduction. It was also argued that sustainable development cannot be achieved without addressing unsafe conditions, dynamic pressures and ultimately root causes. The overall development process can be placed in extreme jeopardy if social development or poverty reduction are conducted in isolation from attempts to reduce natural hazards.

Resolution 2, of the Report of the World Summit on Sustainable Development (UN, 2002(a)), which is the Plan of Implementation of the World Summit on Sustainable Development, does address poverty eradication. It is clearly noted that educating children about specific issues related to poverty eradication should be endorsed, as this is a mechanism for behavioural change (UN, 2002(a):11; 61). Therefore by educating children in various topics which address unsafe conditions within a society, it will assist them in adopting certain positive behaviour from a young age. Thus the children act as change agents for future generations and thereby are valuable instruments in reducing vulnerability.

Reference to education was noted extensively in the Report of the World Summit on Sustainable Development (UN, 2002(a)). Specific reference was also made to education at all levels (UN, 2002(a):60; 61; 62) proving a commitment to include children in educational endeavours. There was no specific reference to disaster risk reduction education for children, however it can be inferred from numerous references. A commitment was given by members of the Summit to ensure that education and training be used as a tool to expel underdevelopment (UN, 2002(a):3) and promote sustainable development (UN, 2002(a):61). It was further noted that in order to address and modify unsustainable patterns of consumption and production, awareness-raising programmes should be developed with specific intent to target "the youth" (UN, 2002(a):20).

2.4.4 *The World Conference on Disaster Risk - Hyogo Framework for Action*

In January 2005, an event took place whereby the critique against the outcomes of the World Summit on Sustainable Development by Wisner *et al*. (2004:327) was addressed. The World Conference on Disaster Reduction was held in Kobe, Hyogo, Japan (ISDR, 2005). This conference was held with the specific purpose of advocating a "strategic and systematic approach to reducing vulnerabilities and risks to hazards" (ISDR, 2005). The conference also devoted much attention to reviewing the Yokohama Strategy for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation and Plan of Action in terms of lessons learned and gaps identified (ISDR, 2005).

The Millennium Development Goals also received additional reinforcement at The World Conference on Disaster Reduction in Kobe, Japan in January 2005. The conference delegates drafted the Hyogo Declaration which adopted the Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters as the guiding framework on disaster reduction for the ensuing decade (UN, 2005). The declaration stated that the Millennium Development Goals would be used as a means to sustain disaster reduction activities on an international basis.

Five priorities of action for the period 2005 – 2015, resulted from the World Conference on Disaster Reduction (ISDR, 2005):

- *Priority 1: Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation;*
- *Priority 2: Identify, assess and monitor disaster risks and enhance early warning.*
- *Priority 3: Use knowledge, innovation and education to build a culture of safety and resilience at all levels.*
- *Priority 4: Reduce the underlying risk factors.*

- *Priority 5: Strengthen disaster preparedness for effective response at all levels.*

Although the necessity to place a strong emphasis on disaster risk education was evident from all the priorities, priority 3 spoke very specifically into using education in building a resilient and safe culture. The priorities for action were thus set to play an important part in not only bringing a strong voice to the disaster risk reduction discourse but also making a valuable contribution to disaster risk reduction education, through advocacy of using education to bring about disaster risk reduction in a holistic manner (ISDR, 2005).

The use of knowledge, innovation and education to build a culture of safety and resilience at all levels.

The premise behind priority 3 was that by creating a culture in which people are well informed about hazards, vulnerabilities and capacities it would bring about a reduction in the number of deaths and destruction caused by disasters. Under priority 3, key activity 2 refers to education and training as well as highlighting the necessity to include disaster risk reduction education into school curricula (ISDR, 2005:9). Hence this indicates the importance of including children in disaster risk reduction educational programmes.

2.4.5 *African Regional Strategy for disaster risk reduction in Africa*

The African Regional Strategy for Disaster Risk Reduction was published in July 2004 (AU/NEPAD, 2004). The primary focus of the strategy was disaster risk reduction for sustainable development in Africa. The strategy identified issues and gaps in disaster risk reduction on the African continent, provided aims, objectives and strategies to deal with the issues and gaps as well as providing institutional arrangements and a strategy for monitoring and evaluation (AU/NEPAD, 2004). A baseline study was conducted across the African Continent to determine disaster risk reduction issues and gaps (AU/NEPAD, 2004). Of great concern at that time was the fact that Africa was the only continent in the world showing an increase in reported disasters and victims during the period 1994-2004.

The strategy provided six objectives to address poverty eradication, sustainable development and integration of disaster risk reduction techniques into development within Africa (AU/NEPAD, 2004:9). In an effort to increase public awareness of disaster risk reduction as an objective of the Strategy, it was noted that disaster risk reduction education must be integrated into school curricula. This would be carried out through discussions with governments, identifying resources as well as providing leadership and knowledge to make this objective a reality (AU/NEPAD, 2004:12). Monitoring of this objective and all the objectives would be carried out by the African Union,

Regional Economic Communities (REC's) and African National Governments (AU/NEPAD, 2004:16).

Child-centred disaster risk reduction is a relatively new concept which has been receiving increasing attention over the last few years and will be examined in greater detail in the next section. According to Mitchell *et al* (2008), child-centred disaster risk reduction makes use of both children and youth, both in groups and individually, to actively work towards disaster risk reduction by making communities and the people who live in them more resilient to disasters. In Child-centred disaster risk reduction children are viewed as excellent conduits of risk information as well as very efficient receivers of disaster risk information. Clerveaux and Spence (2009) purport that children play a critical role in disaster risk reduction and they have a vital role to play in creating disaster risk awareness. It is therefore imperative that disaster risk reduction strategies should include the promotion of disaster risk awareness aimed at children.

2.5 CHILD-CENTRED DISASTER RISK REDUCTION

Child-centred disaster risk reduction is:

> "*an innovative approach to Disaster Risk Reduction (DRR) that fosters the agency of children and youth, in groups and as individuals, to work towards making their lives safer and their communities more resilient to disasters. It is empowering for children, and respectful of their views and rights as well as their vulnerabilities.*
>
> *Child-centred DRR is a flexible rights-based approach combining child-focused (for children) and child-led (by children) activities with interventions geared towards bringing about change in community, local and national duty bearers. It applies strategies such as awareness raising, capacity building, group formation, institutional development, research and influencing and advocacy across a range of arenas.*" (Plan UK, 2010:3)

The Child-centred disaster risk reduction approach works in synergy with and supports the Hyogo's Framework's Priorities for Action as well as the principles for children highlighted at the UN Convention on the Rights of Children (Plan UK, 2010). Plan International UK examined the possibilities presented by the concept of child-centred disaster risk reduction in six countries between 2005 and 2010. The six countries included El Salvador, Philippines, Cambodia, Sierra Leone, Ecuador and Indonesia. Thereafter two additional countries were examined, namely Bangladesh and the Dominican Republic.

The basic premise of child-centred disaster risk reduction is the “theory of change” and the rights that children have to be active contributors in disaster risk reduction programmes and policies which may affect them (Plan UK, 2010). In order to implement the “theory of change” a number of activities aimed at children were instituted, these included using participatory hazard, vulnerability and capacity assessments to build capacity and increase risk awareness as well as mapping risk and teaching children about disaster preparedness, prevention and mitigation.

In addition the “theory of change” programme facilitated grant money to support children’s groups in small-scale disaster risk reduction interventions and child disaster risk awareness campaigns in order to reduce vulnerability of children (Plan UK, 2010). The programme also included utilising the creative skills of children by empowering them to produce DVD’s, radio programmes and street theatre productions in order to raise disaster risk awareness in the broader community. The disaster awareness was intended to reach education practioners, community media and local government officials who would all have a contribution to make in advocating child-centred disaster risk reduction.

Further activities for the “theory of change” programme was the development of disaster risk reduction curricula, school safety manuals and leader training materials. In addition governments were petitioned to include children in disaster risk decision making practices, opportunities were created in various national and global platforms for children to make a meaningful contribution to the disaster risk reduction and climate change discourse and partnerships, networks and alliances were advocated in order to promote child-centred disaster risk reduction (Plan UK, 2010).

According to Plan UK, the results recorded from these intentional interventions showed positive results not only for children but for the broader community as well. Firstly there was evidence that during the “theory of change” programme there was an increase in children’s knowledge of risks and disaster risk reduction. Secondly there was evidence of children actively taking steps to reduce risks not only in their schools but in their broader community. Thirdly it was noted that children can be active participants in disaster response and the school environment is safer after the programme than before. Results also showed that after the “theory of change” programme children were playing a greater role in disaster risk reduction governance structures and communities as a whole were better prepared for natural hazard events (Plan UK, 2010).

Peek (2008) supports the notion of child-centred disaster risk reduction and advocates that in order to better understand the needs of children and their unique vulnerabilities, participatory child-

centred research needs to be conducted *prior* to a disaster occurring. She is of the opinion that children have a unique role to play in disaster risk reduction by actively contributing to disaster preparedness, response and recovery activities. Peek further states that organisations can play a role in protecting children through the development of disaster preparedness and response activities.

It is therefore clear that children do have an important role to play within the disaster risk reduction framework and are useful channels for disaster risk awareness in the broader community. There needs to be a bottom-up approach whereby children are active participants at the local level in the design, implementation and assessment of disaster risk reduction programmes. These programmes should be integrated both in the formal curricula of schools as well as in extra-mural activities and it is imperative that government's support and invest in this process (Save the Children, 2008; Martin, 2011, Wisner, 2006).

2.6 DISASTER RISK REDUCTION AWARENESS CAMPAIGNS AND INTEVENTIONS AIMED AT CHILDREN – KEY ASPECTS

A number of disaster risk reduction awareness campaigns and interventions aimed at children have been documented and provide key aspects to consider when developing or implementing disaster risk reduction educational programmes for children. Four such interventions will now be examined to determine their effectiveness.

2.6.1 *Masters of Disaster*

Wachtendorf *et al*. (2008) examined three disaster risk reduction interventions aimed at children of various age groups and reiterate that children are among the most vulnerable in the aftermath of a disaster. But through disaster risk reduction educational school interventions learners can filter information about disaster mitigation, preparedness, response and recovery to not only their immediate household but also the entire community. This is contrary to the previously held notion that during a disaster a child is an extension of its mother.

The "Masters of Disaster" initiative was developed by the American Red Cross for learners from Grade 00 – Grade 9 and piloted in 23 disaster-prone states. It is an interactive programme comprising videos and lesson plans which cover topics on disaster preparedness, response and recovery and was developed in 1999 to bridge an identified gap in the school curriculum. The "Masters of Disaster" programme was developed to easily be incorporated into existing school learning areas for example Science, Maths or Language Arts. The kit contains a teaching video for

grades six to eight, lesson plans, classroom activities, posters and additional teaching aids. Hazards covered in “Masters of Disaster” include lightening, earthquakes, tornados, floods and hurricanes. Lesson plans were ideally suited to seamlessly integrate into core learning areas and promoted the learning culture to not stop in the classroom but to extend to the home as well (Wachtendorf *et al*., 2008).

According to Wachtendorf *et al*. (2008) although “Masters of Disaster” is easy to incorporate into existing learning areas and is distributed through the American Red Cross, it is the educator’s prerogative to obtain the programme for a school. There is a challenge in implementing this programme in all schools across the United States as not all chapters of the American Red Cross endorse the intervention. Thus a valuable disaster risk reduction tool might not be used to its maximum potential if educators are not willing to take some time and effort to seek out the material.

Having examined the three interventions for pre-schoolers, primary school and high school children, Wachtendorf *et al*. (2008) report that less than half of the 83 countries that belong to the United Nations International Strategy for Disaster Reduction (ISDR) account on having disaster-focussed educational material in primary and secondary curricula. They also contend that not much research has focussed on the success, in terms of increased knowledge of disaster risk preparedness, mitigation and response, of these and similar interventions. Wachtendorf *et al*. (2008) recommend that additional research is required in order to better understand the effectiveness of school-based disaster risk reduction educational interventions and the extent to which there is a long-term increase in disaster risk awareness and knowledge. In addition they advise that further research should be carried out to determine the role children play in vulnerability reduction and capacity building with their community.

2.6.2 *Managing food security in Zimbabwe’s Binga District*

Manyena *et al.* (2008) studied the role children played in managing food security in the Binga District in Zimbabwe. The study was conducted in order to understand how children felt about being included in disaster risk reduction activities, particularly related to drought and famine. The findings revealed that children do want to get involved in disaster risk reduction activities and can play a meaningful role in enhancing community resilience.

After completing the study, Manyena *et al.* (2008) provided some useful tips to make use of when developing disaster risk reduction educational material for children. Firstly Manyena *et al.* (2008) advise that the programmes must consider the culture of the learners who will be using the material

as well as the geographical location and develop the material to be contextually relevant. A participatory approach should also be adopted in developing the material in order to gain a bottom-up approach that deals with disaster risks specific to the intended learners. Developers of the educational material should always bear in mind that children are key role-players in disaster risk reduction activities and should not be discounted due to preconceived ideas about their age or disaster risk knowledge.

2.6.3 *The Disaster Awareness Game (DAG)*

Clerveaux and Spence (2009) did preliminary testing on children in the Caribbean who had used the Disaster Awareness Game. The Disaster Awareness Game consists of presentations on local hazards and a board game with question cards. It was designed with the specific needs of children in mind. The game exposes the player to disaster preparedness, prevention, mitigation, emergency response, and recovery/rehabilitation. The Disaster Awareness Game is currently available in electronic format. Clip art, graphics and colourful pictures were used in order to create a fun context in which players can learn more about disaster risk reduction.

Clerveaux and Spence (2009) report that preliminary findings reveal that the Disaster Awareness Game was successful in raising disaster risk awareness amongst the children who played the game. In addition, they noted, that the Disaster Awareness Game can be used to identify and prioritise interventions that would promote disaster risk awareness in specific communities. They also recommend that disaster prevention should be a key component of any community development intervention. Lastly, they advise that when developing disaster risk reduction educational material for school children it is crucial to ensure that the learning be age-appropriate, interactive and most of all fun.

2.6.4 *Annual earthquake education programme in Israel*

Soffer *et al.* (2010) evaluated the effectiveness of an earthquake educational intervention carried out in Israel. This intervention is rolled out in all schools in Israel on an annual basis in which three types of interventions are used, namely lectures, drill and a combination of both. The lectures deal with earthquakes and are divided into ten separate lessons dispersed throughout the year. In the drill intervention, a total of three drills are carried out during the course of the year. The drills last for three hours and include getting the children to take shelter as they would during an earthquake, evacuation of a building prior to the earthquake and gathering the smaller children and taking them to a designated area away from the building and administering mock first aid. The intervention

combining the lectures and the drills had children attending all the lectures and participating in all the drills.

Soffer *et al.* (2010) research findings revealed that in order to increase knowledge of topics not covered in the school curriculum, educational interventions are a necessary component. They further discovered that an intervention combining both theory and practice, in this case both lectures and drills improved the disaster risk knowledge of learners and thus an advanced level of disaster preparedness.

From the discussion of the interventions above it seems reasonable to note that disaster risk reduction school interventions do appear to increase disaster risk reduction awareness and increase disaster risk preparedness, mitigation and response. There is however consensus that further research is critical in analysing the long term effectiveness of school-based disaster risk reduction interventions for children and determining if they are effective in reducing disaster risk on a community wide level.

2.7 DISASTER RISK REDUCTION IN THE SOUTH AFRICAN CONTEXT

Within the South African context, the South African Disaster Management Act 57 of 2002 brought about a new era in disaster risk reduction planning and practice. This legislation required that emphasis should be placed on prevention of disasters and the practice of mitigation strategies rather than simply responding only once a disaster occurred. The legislation further proposed that disaster risk management should be a concern across all spheres of government within South Africa. It is therefore important that government institutions consider development programmes that will assist communities in facing possible risks and hazards (Holloway, 2003) thereby exercising "responsible governance".

The Disaster Management Act 57 of 2002 (South Africa, 2003), makes reference simply to the term disaster management. The Act defines disaster management as "*a continuous and integrated multi-sectoral, multi-disciplinary process of planning and implementation of measures aimed at –*

a) preventing or reducing the risk of disasters;
b) mitigating the severity or consequences of disasters;
c) emergency preparedness;
d) a rapid and effective response to disasters; and
e) post-disaster recovery and rehabilitation".

Although the Disaster Management Act 57 of 2002 (South Africa, 2003) does not make specific reference to the term “disaster risk reduction” the concept is implied as stated in the main aim of the Act which is to provide for “an integrated and coordinated disaster management policy that focuses on preventing or *reducing the risk* of disasters, mitigating the severity of disasters, emergency preparedness, rapid and effective response to disasters and post-disaster recovery” (South Africa, 2003:2). Throughout the Disaster Management Act 57 of 2002 there is reference to reducing disaster risk.

In addition to adding to the disaster risk reduction discourse, the Disaster Management Act 57 of 2002 also makes a contribution to addressing the issue of disaster risk reduction education in schools. This is referenced in a number of areas (South Africa, 2003: 14, 18, 32, 44) and reinforced quite extensively in the National Disaster Management Framework (South Africa, 2005). It is therefore clear that incorporating disaster risk reduction education into school curricula is a requirement stipulated by law in the Republic of South Africa. Just as with all aspects of the Disaster Management Act 57 of 2002, incorporating disaster risk reduction into school curricula must be implemented. The National Disaster Management Framework (South Africa, 2005) provides guidelines on how to adhere to this requirement of the law.

The National Disaster Management Framework (South Africa, 2005) consists of 4 Key Performance Areas (KPA’s) and 3 Enablers. The KPA’s are as follows (South Africa, 2005):

- Key Performance Area 1 - Integrated institutional capacity for disaster risk management;
- Key Performance Area 2 - Disaster risk assessment;
- Key Performance Area 3 - Disaster risk reduction; and
- Key Performance Area 4 - Response and recovery.

The Enablers are as follows (South Africa, 2005):

- Enabler 1 - Information management and communication;
- Enabler 2 - Education, training, public awareness and research; and
- Enabler 3 - Funding arrangements and disaster risk management.

This literature review will focus specifically on Enabler 2 and what guidance it provides in adhering to the Disaster Management Act 57 of 2002 with reference to incorporating disaster risk reduction education into school curricula. The National Disaster Management Framework (South Africa, 2005:90) states that disaster risk reduction education must be designed as part of the formal primary, secondary and tertiary curricula. The National Disaster Management Framework (South

Africa, 2005:90) further places responsibility on the National Disaster Management Centre (NDMC) for 'promoting, facilitating and monitoring' this process.

The National Disaster Management Framework (South Africa, 2005:91) provides key performance indicators for this process. They are:

- Aspects of disaster risk reduction should be included in primary school curricula;
- The material is written to the appropriate National Qualification Framework (NQF) level; and
- The material has gone through a quality assurance process.

The detail described in the National Disaster Management Framework offers role players guidance on precisely what is required of them in implementing this section of the legislation.

2.8 DISASTER RISK REDUCTION EDUCATION

Disaster risk reduction education has featured extensively in a large number of major documents and reports produced in the last two decades on the topics of sustainable development and disaster risk reduction (Yokohama Strategy and Plan of Action for a Safer World, 1994(a):6, 8, 9, 11, 12; ISDR, 2005:4, 6, 9, 10, 15; AU/NEPAD, 2004:7, 11, 12; South Africa, 2003:14, 18, 32, 44; South Africa, 2005:14, 21, 24, 25, 30, 34, 52, 64, 81, 87, 88, 89, 90, 91, 92, 93, 97, 98, 105, 119, 120). It can thus be deduced from the extensive number of references that disaster risk reduction education is a very important aspect within the disaster risk and sustainable development framework.

2.8.1 *Disaster Risk Reduction Education for children*

Ronan *et al*. (2008) argue that evidence is mounting in supporting findings that learners who have been through a schools-based disaster risk reduction education programme are showing improved knowledge of hazards, better preparedness in the home, reduced levels of fear and more realistic perceptions of risk than those learners who have not been exposed to the same or similar programmes. Ronan and Johnson (2001) contend that evidence is growing in showing disaster risk reduction school programmes as mechanisms for increasing community resilience towards hazards. Wisner (2006) states that in order to be effective, disaster risk reduction school educational programmes must result in greater disaster resilience in communities. This is assessed by determining if tangible changes in knowledge of disaster preparedness, mitigation and response are evident.

Ronan *et al*. (2008) also assert that even a simple school's disaster risk reduction programme can produce tangible disaster risk reduction benefits in homes, schools and communities. Even greater

effectiveness is achieved from adding an interactive component to the programme and having knowledge of specific risks within a community. Wisner (2006) agrees with this statement and suggests including comics, games and music as well as hands-on practical exercises like studying hazards surrounding the school and the wider geographical area. He further states that disaster risk educational programmes must aim to achieve behavioural changes in the community by increasing knowledge of risks which result in the implementation of prevention and mitigation behaviours. Wisner (2006) does however warn that implementing disaster risk reduction educational programmes is a long-term approach and should be incorporated in a broader disaster risk reduction strategy.

Wisner (2006) provides some key insights into disaster risk reduction education for children. He asserts that teaching about disaster risk reduction and hazards at school level is of utmost importance, not only for the learners, but for the broader community as well. Coupled with obtaining a well developed disaster risk reduction educational programme is necessary for capacity building of educators in order to ensure that maximum benefit is derived and knowledge flows from the classroom to the community surrounding it.

In addition Wisner (2006) strongly suggests that disaster risk reduction educational programmes should be contextualised for the audience it addresses and preferably be written in the first language of the learners, even if they are taught in a different language at school. He also encourages ongoing sharing of good practice and lessons learned so as to continuously improve on existing disaster risk reduction educational material for children. In addition, Wisner (2006) identified a number of gaps and opportunities in the current disaster risk reduction educational programmes which he examined.

The first gap which Wisner (2006) identified was that merely teaching in general terms about hazards which exist around the world did not necessarily provide heightened risk awareness or a call to action. He suggests that teaching should focus on local hazards experienced in the geographical area of learners and the wider community. If this occurs there is a higher likelihood of learners understanding, contextualising and achieving greater levels of risk awareness.

A second gap identified by Wisner (2006) was that the majority of disaster risk reduction educational materials for children either focussed too broadly or too narrowly on hazards. A balance should be found between contextualising and viewing the bigger picture. If learners

understood the processes and context associated with specific hazards they would more likely have a more in-depth grasp of the hazard than if they could just name and identify the hazard.

Wisner (2006) also identified opportunities for strengthening of hazard risk awareness and environmental education. As well as taking the opportunity to make the many disaster risk reduction educational programmes available in as many areas around the world as possible and to employ creative teaching methods to create long-term, sustained disaster resilience amongst children and whole communities.

Research has also shown that school based disaster risk reduction programmes must incorporate cultural and individual meaning in order to reach maximum effectiveness (Mitchell *et al*. 2008). In addition, children need to be taught not only to react to a hazard event but to know how to prepare for and cope with such events. Therefore the importance of disaster preparedness cannot be overstated (Fuhrmann *et al*., 2008). Even though there is evidence of positive outcomes of disaster risk reduction programmes in schools, Ronan *et al*. (2008) also concur that further research is required in establishing how effective disaster risk reduction education in schools is as part of a wider community-based disaster preparedness campaign.

2.8.2 *Disaster Risk Reduction Education in Primary Schools within South Africa*

The National Disaster Management Framework (South Africa, 2005:90) indicates that disaster risk reduction education should be incorporated into school subjects that cover the topics relating to development and the environment. South African primary schools follow outcomes based education (RNCS, 2002(a):1). The Revised National Curriculum Statement (RNCS) was devised to provide guidelines for the curriculum taught in South African public schools and was based upon key issues highlighted in the Constitution of the Republic of South Africa (RNCS, 2002(a):1). The Revised National Curriculum Statement (RNCS) comprises eight “Learning Area Statements”. These include Languages, Mathematics, Natural Sciences, Social Sciences, Arts and Culture, Life Orientation, Economic and Management Sciences and Technology.

The Revised National Curriculum Statement (RNCS, 2002(c):71, 89) for grades R – 9 position disaster risk reduction education in the Social Sciences for Grade seven learners, specifically in the learning area Geography. Knowledge focus areas for grade seven learners include a fairly in-depth study of natural hazards for example earthquakes, floods, droughts, volcanoes and tropical cyclones. Additional information included in the curricula pertain to an understanding of how natural hazards occur, their impact, progression of vulnerability, communities at risk and risk management

(RNCS, 2002(c):89). According to the RNCS (2002(b):23) grade fives' should learn about disasters and the effect that disasters have on business in the learning area of Economics and Management Sciences.

TABLE 2.1: Natural Sciences

Foundation Phase	Intermediate Phase	Senior Phase
Weather changes	Weather changes	Major geological events
Storm	Temperature	Earthquake
Flood	Precipitation	Volcanic eruptions
Tornado		Mountain building
Impact of hazards		Global warming
		Climate change

Source: RNCS 2002

TABLE 2.2: Life Orientation

Grade R	Grade 3	Grade 5	Grade 6	Grade 7
Safety in the home and at school	Recycling	Environmental health problem	HIV/AIDS	Importance of volunteer organisations
	Environmental health			

Source: RNCS 2002

TABLE 2.3: Social Sciences

Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7
Personal health and safety	Environmental issues in the community	Changes to the environment	Features of local settlements	Links between natural resources and economic activity in SA	Resources influencing development	Natural Hazards
	Cause of environmental issue	Pollution issues	Geographical and environmental knowledge	Physical environment influences on human activity and vice versa	Ways in which society has changed the environment	Volcano
	Impact of environmental issue	Causes of pollution		Climate & links to economic activities and settlements	Population distribution & density	Earthquake
	Solution to environmental issue	Impact of pollution		Population density patterns	Climate	Flood
		Solutions to pollution		Diseases such as cholera, malaria & tuberculosis	Development issues: Poverty Environmental	Impact of hazards of human lives and socio-

				and precautions and preventative measures	destruction Lack of access to resources Unemployment	economic activities
		Land usage			Development projects	Risk factors relating to natural hazards
		Pollution and effects			Environmental issues:	Managing risks and hazards
		Reducing, recycling, re-using			Disappearing wetlands Soil erosion	Population growth and change
		Change in local environment			Deforestation Extinction	
						Climate change
						Poor environmental management
						Impact of hazards on people's lives
						Distinguishing between disasters and hazards
						Risk Management & risk reduction
						Preventative measures with regards to flooding
						Reducing risk to human lives & the eco-system
						Population growth
						Forced migration
						Rural-urban migration
						Impact of HIV/AIDS

Source: RNCS 2002

TABLE 2.4: Economic and Management Sciences

Foundation Phase	Grade 4	Grade 5
Learning outcome: Sustainable growth & sustainable development	Identification of local community efforts in fighting poverty for example RDP, urban renewal and rural development projects	The effects of natural disasters (e.g. drought, HIV/AIDS) on formal and informal business

Source: RNCS 2002

TABLE 2.5: Arts and Culture

Grade 4	Grade 5	Grade 7
Indigenous culture	Impact of technology on quality of people's lives/health/environment	Impact of technology on people's lives (both positive & negative)

Source: RNCS 2002

Tables 2.1 to 2.5 indicate the disaster risk reduction aspects taught in South African, public primary schools that are either related in a broad sense or in very specific details (Dept of Education, 2002). From inspection of the Revised National Curriculum Statement (RNCS) it is noticeable that a fair amount of disaster risk reduction aspects are currently covered, as per the requirement of the National Disaster Management Act of 2002 (South Africa, 2003). The RNCS was revised again in 2010 and the new Curriculum Assessment Policy Statement (CAPS) will be implemented in primary and secondary schools during the 2012/13 school year.

2.9 DISASTER RISK REDUCTION EDUCATIONAL MATERIAL PRODUCED FROM AROUND THE GLOBE

Although there is no single database that records disaster risk reduction educational material produced around the world, PreventionWeb.net offers a comprehensive listing of disaster risk reduction educational material developed specifically for children. Preventionweb.net is a website facilitated and hosted by the United Nations International Strategy for Disaster Reduction (ISDR). The website aims to be a central portal for disaster risk reduction news, events, information, projects and source of information exchange (Preventionweb, 2008).

There are 424 disaster risk reduction educational material for children listed on PreventionWeb (2011(x)). The material listed does not necessarily form part of formal school curricula, but could also be supplementary items such as posters, games or multimedia applications. A breakdown of the disaster risk reduction educational material is provided in Figure 2.3.

LANGUAGE	NUMBER OF EDUCATIONAL MATERIALS WRITTEN
English	134
Spanish	69
French	43
Farsi	14
Hungarian	8
Russian	8
Arabic	7
Portuguese	7
Urdu	7
Italian	6
Tamil	6
Hindi	5
Indonesian	5
Sinhalese	5
Bahasa	4
Basque	4
Bengali	4
Japanese	4
Chinese	4
Malay	4
Mongolian	4
Nepali	4
Turkish	4
Vietnamese	4
German	3
Tagalog	3
Thai	3
Bulgarian	2
Burmese	2
Dhivehi	2
Dzongkha	2
Khmer	2
Lao	2
Persian	2
Romanian	2
Creoles and Pidgins	1
Haitian	1
Mayan languages	1
Moldavian	1
Norwegian	1
Swahili	1
Tajik	1
Afrikaans	1
Zulu	1

Figure 2.3 – Disaster risk reduction educational material written/translated in various languages

The English educational material will be examined in greater depth to ascertain its bearing on some of the research objectives of this study. The material will be analysed to determine the aim of the material, types of hazards covered, content and components included in the material and to determine whether the focus of the material lines up with awareness, prevention, mitigation, preparedness and response.

2.10 DISASTER RISK REDUCTION EDUCATIONAL MATERIALS ALREADY PRODUCED

A number of disaster risk reduction educational material will be examined in more detail.

2.10.1 *Disaster risk reduction educational material produced in English globally*

Due to practical reasons, only a sample of internationally developed disaster risk reduction educational material that is available online and in English will be analysed as a desktop study according to the following criteria:

- Name of material;
- Who commissioned and developed the material;
- Where the material was implemented (if available);
- Contents and components of the material;
- Aim of the material;
- Hazards covered in the material; and
- Where information can be obtained from the literature, lessons learned through the development and implementation of the material.

2.10.1.1 Survival Island

A board game named ‘Survival Island’ (Preventionweb, 2011(w)) was produced in 2008 and packaged as an educational kit. It was funded by the European Union and implemented by the Pacific Islands Applied Geoscience Commission (SOPAC). The educational kit consists of a 13-page book with 12 different educational board games as well as notes on the specific topics covered. The idea of ‘Survival Island’ is to teach children about disaster prevention, mitigation, preparedness and response in a way which creates disaster risk awareness from an early age. Hazards covered in ‘Survival Island’ are typical of the kind of hazards common to the Pacific region namely tropical cyclone, earthquake, tsunami, landslide, volcano, river floods and flash floods. The focus of the material does line up with awareness, prevention, mitigation, preparedness and response.

2.10.1.2 Discover Floods

'Discover Floods', a 15-page, activity booklet, was developed jointly in 2009 (Preventionweb, 2011(v)) by the Associated Programme on Flood Management (APFM), United States Agency for International Development (USAID), Government of the United States of America and the World Meteorological Organisation (WMO). It deals solely with flooding and includes aspects such as the definition of a flood, what to do when floods strike, how to manage them, the history of floods and the nature of flooding. The booklet aims to reach a wider audience than merely school children, with an intended target audience including parents, educators and whole communities (Preventionweb, 2011(v)). This material can be used in any part of the world to teach 6 – 11 year old children about flooding. The material's focus does line up with awareness, prevention, mitigation, preparedness and response.

2.10.1.3 1-2-3 of Disaster Education

"1-2-3 of Disaster Education" (Preventionweb, 2011(t)) was published in 2009 by the United Nations International Strategy for Disaster Reduction Secretariat of Asia and Pacific, the European Commission (EC) and Kyoto University. It is a 176-page workbook aimed at teaching both students and teachers, not only in the classroom but also in the context of family and community (Preventionweb, 2011(t)). Hazards focused on in the workbook are typhoon, flood and earthquakes. The 1-2-3 in the title describes the contents of the book. There is a one year education programme, two levels of one year education and three kinds of disaster education programmes. The material's focus lines up with awareness, prevention, mitigation, preparedness and response.

<u>Lessons learned</u>

With this material, the authors acknowledge that it is much more beneficial to ensure that the teaching experience moves beyond the walls of the classroom and is meaningfully assimilated into the family setting as well as the community as a whole (Preventionweb, 2011(t)). The authors further acknowledge that disaster risk educational material fulfilling this objective is lacking and thus attempt to achieve this objective through the "1-2-3 of Disaster" Education workbook (Preventionweb, 2011(t)). Further the authors contend that disaster risk education should be a process and not a once off event (Preventionweb, 2011(t)).

2.10.1.4 Town watching handbook for disaster education: enhancing experiential learning

The "Town watching handbook for disaster education: enhancing experiential learning" is a 56-page handbook aimed at both school children and the wider community (ISDR, 2011(f)). It was published as a joint venture between the United Nations International Strategy for Disaster Reduction

Secretariat – Asia and Pacific, the European Commission (EC) and Kyoto University. The objective of the handbook is to teach "town watching" so as to promote disaster risk reduction activities, through participatory mapping and teaching people to be vigilant in terms of vulnerability within a city. The material provides guidelines on how to integrate the material into school curricula (ISDR, 2011(h):20) and lines up with awareness, prevention, mitigation, preparedness and response.

2.10.1.5 Let's learn to prevent disasters: educational kit and Riskland game

"Let's learn to prevent disasters: educational kit' and "Riskland" board game (ISDR, 2011(b)) is a 23-page activity book and separate board game which was developed by the United Nations International Strategy for Disaster Reduction Secretariat (ISDR), International Strategy for Disaster Reduction regional unit for Latin America and the Caribbean and the United Nations Children's Fund (UNICEF) Panama. This material was developed to supplement existing school curricula and is suitable for children aged 8 – 12 years of age.

The material is designed in such a way that it can be very easily translated and used anywhere in the world. The content is comprehensive in nature dealing with a wide variety of hazards for example earthquake, flood, hurricane, volcanic eruptions and landslides. The material has a good balance between information presented and activities for the children to enjoy. There is also a broad glossary of disaster risk reduction terminology listed in the back of the booklet. Let's learn to prevent disasters: educational kit very clearly lines up with disaster risk awareness, prevention, mitigation, preparedness and response throughout its content.

2.10.1.6 Disaster safety education: quality input kit (grade 7)

The "Disaster safety education: quality input kit" (grade 7) was developed by the Ministry of Education of Sri Lanka and the National Institute of Education (NIE) (Preventionweb, 2011(q)) in 2008. The aim of this material was to be used as additional disaster risk resources to existing grade 7 Geography, Life Competencies and Civic Education curriculum. The material can be used for children up to 18 years of age. Interestingly the material contains no information or facts, only activities that can be carried out in the classroom or on a Life Competencies camp (Preventionweb 2011(q)). This material was designed to work seamlessly with the current curricula presented in Sri Lankan schools. Therefore should other countries want to make use of the material, it may be necessary to adapt it slightly to compliment country-specific curricula. Hazards covered include cyclone, drought, flood, storm and tsunami.

2.10.1.7 Simulation activities for disaster risk management

"Simulation activities for disaster risk management" was developed by the Ministry of Education of Sri Lanka and the National Institute of Education (NIE) (Preventionweb, 2011(s)) in 2008. This material was developed for children aged between 12 – 18 years of age. It will be examined due to the fact that it can be used in grade seven. This material was implemented in Sri Lanka but can be adapted for use in other countries, with the proviso that country specific maps be used in the activities.

The material consists of a 16-page book which contains eight pages of teacher's notes giving specific instructions on how to use the book and how to prepare for the lessons (Preventionweb, 2011(r)). This booklet provides an excellent example of how to provide the necessary information to ensure that the aim of the material is achieved. The aim of the material is to get children to role play various disaster scenarios according to specific information given to them. The material can be used as it is or adapted in a myriad of ways to provide a wide range of disaster scenarios. The material covers all hazards and lines up with disaster awareness, prevention, mitigation, preparedness and response as students should include all these aspects as they enact the various scenarios (Preventionweb, 2011(s)).

2.10.1.8 The Alert Rabbit

The "Alert Rabbit" was developed in 2008 by Save the Children Sweden – South East Asia and the Pacific Regional office (Preventionweb, 2011(n)). The 'Alert Rabbit' is a 46-page story and activity book. The material was developed in Thai as well as English with the explicit aim of teaching about the hazard Tsunami and is suitable for children between the ages of 6 – 11 years old. Although the main focus is on tsunamis, the 'Alert Rabbit' does show how to be prepared for all types of hazards. This material was implemented initially in two school is Thailand in 2006 and 2007 and then expanded to other schools in Thailand during 2007 (Preventionweb, 2011(o)).

The "Alert Rabbit" book formed the basis of the Child-led Disaster Risk Reduction pilot programme and was inspired as a result of the 2004 Tsunami which claimed the lives of so many in Thailand. The developers used children from the Rangong province to assist in writing the story. The material contains messages from children in the region as well as more information about the Rabatbai Group. The Rabatbai group champions the "Child-led Disaster Risk Reduction" programme which includes disaster risk reduction learning camps, situation reviews, community surveys and disaster risk analysis, education initiatives, teaching how to prepare a survival bag, educational puppet shows and tsunami evacuation drills (Preventionweb, 2011(o)). A summary of each activity is

included in the ‘Alert Rabbit’. The ambit of this material falls squarely within disaster risk awareness, prevention, mitigation, preparedness and response (Preventionweb, 2011(o)).

2.10.1.9 Understanding US Geography and weather: Grades 4 – 6

Understanding US Geography and weather: Grades 4 – 6 (Preventionweb, 2011(l)) was developed in 2008 by the US Department of Homeland Security for use in the United States of America. It was developed to be implemented specifically in the United States of America. The material consist of an 8-page booklet and includes a poster featuring a map of the United States of America showing weather facts, physical features and climate averages (Preventionweb, 2011(l)). The material also contains information showing where the material fits in with the national standards and benchmarks, lesson overviews and tips on how to use the material for teachers and parents as well as 4-pages of activities (Preventionweb, 2011(m)).

Understanding US Geography and weather: Grades 4 – 6 aims to provide children with map skills, an understanding of United States geography, reading comprehension and persuasive writing skills. The material is designed to supplement and enhance current curricula in the subjects Geography and Language Arts (Preventionweb, 2011(l)). The material primarily covers hydrometeorological hazards. The focus of the material lines up with disaster awareness and prevention.

2.10.1.10 Masters of Disasters

“Masters of Disasters” was developed by the American Red Cross (Preventionweb, 2011(j)). It is designed to be used in the United States as the hazards covered are hazards typically occurring in the United States of America. “Masters of Disasters” consists of just under 200 ready-to-use lesson plans, which are aligned to the national educational standard of the United States, suitable for children aged 6 – 11 years old (Preventionweb, 2011(k)).

There are activities, lessons and demonstrations on disaster related topics in the material. The aim of “Masters of Disasters” is to be a supplement to existing curricula in order to create a mindset of disaster reduction amongst young children in the United States and covers all types of hazards (Red Cross, 2011). The material further aims to improve skills in various other learning areas for example Science, Social Studies, Mathematics and Language Arts. A Family Kit is available as well as an Educators kit (Red Cross, 2011). The Family Kits consists of printable activity sheets, home safety checklists, safety videos on numerous hazards, background information on each topic covered, a disaster-trivia poster, stickers and a family preparedness certificate (Red Cross, 2011).

The Educator's kit comprises of lessons on CD's, hands-on activities and demonstrations, background information on each topic covered, printable activity sheets, safety videos on numerous hazards, customisable certificates, a poster and stickers (Red Cross, 2011). The focus of the material lines up with disaster awareness, prevention, mitigation, preparedness and response.

2.10.1.11 FEMA for kids

"FEMA for kids" was developed in 2008 by the Federal Emergency Management Agency (FEMA) and is an interactive website (Preventionweb, 2011(i)). The website teaches preparedness and disaster risk reduction and is aimed at children, parents and teachers. The website can be accessed worldwide and is not restricted to a particular country. "FEMA for kids" is divided into a number of areas which can be selected by the website visitor as follows:

- Ready kids;
- Becoming a Disaster Action Kid;
- The Disaster Area;
- Get Ready, Get Set;
- Games and quizzes;
- Disaster Connection: kids to kids;
- Library; and
- For the little ones.

Each section has a comprehensive range of activities to click on. The website was developed to teach children preparedness, what causes disasters to occur and how to prevent damage caused by disasters (FEMA, 2011). A number of different hazards and of course the website can be updated on a regular basis. The website is a good mix of facts as well as interactive games, activities and quizzes (FEMA, 2011). The website lines up with disaster awareness, prevention, mitigation, preparedness and response.

2.10.1.12 Edu4hazards - a guide to preparing for and responding to natural hazards for children and youth

"Edu4hazards - a guide to preparing for and responding to natural hazards for children and youth" is a disaster risk reduction educational website (Preventionweb, 2011(e)). It was developed by Mr Justin Sharpe with the aim of teaching children accessing the website about hazards and how to respond to them. The website is interactive and is a fun way for children to learn about disaster risk reduction. The website consists of video clips, web pages, electronic games, quizzes and a teacher's area (Preventionweb, 2011(e)). The teacher's area is designed to fit into the National

Curriculum of the United Kingdom in the subject Geography. Hazards which are covered on the website include wild fire, volcano, cyclone, earthquake, flood, tornado, avalanche and tsunami. The content of the website lines up with awareness, prevention, mitigation, preparedness and response (Preventionweb, 2011(e)).

2.10.1.13 Card Games: Earthquake Safety, Flood Safety, Road Safety, Fire Safety

"Card Games: Earthquake Safety, Flood Safety, Road Safety, Fire Safety" was developed by the Sustainable Environmental and Ecological Development Society (SEEDS) in 2006. The card game was implemented in India (Preventionweb, 2011(d)) and consists of 4 x 24 cards with the aim of teaching children about all hazards through an educational card game. An example of the cards is not available online and therefore whether they line up with awareness, prevention, mitigation, preparedness and response cannot be known for certain. The mere fact that they have been developed indicates that they are creating awareness about disaster risk reduction.

2.10.1.14 Mapping lost homes

"Mapping lost homes" was developed by GIS Development in 2005. This material was published in India (Preventionweb, 2011(c)). The aim of the material, which took the form of an article, is to assist children in dealing with loss after a disaster and specifically after a tsunami which has damaged their homes or left them homeless. The article contains information on how children can make use of drawing therapy as well as drawing mental maps to support children who have survived a disaster. Although this type of exercise could be used if a dwelling has been destroyed by a variety of hazards, the article was written with specific reference to houses destroyed in the wake of a tsunami. This article's focus lines up with disaster response.

2.10.1.15 Disasters, my government and me: disaster reduction through the eyes of a child

"Disasters, my government and me: disaster reduction through the eyes of a child" was commissioned by ActionAid, United Kingdom (Preventionweb, 2011(a)). From the literature it is not evident in which countries this material was implemented. The material consists of a 6-page brochure and features real examples of disasters and the testimonies of children affected by disasters. The aim of the material is to bring about awareness of various scenarios which could happen in order to facilitate prevention, mitigation, preparedness and response (Preventionweb, 2011(b)) as well as make available a practical explanation of the Hyogo Framework. Hazards covered include flood and drought.

2.10.2 Disaster risk reduction educational material produced for Africa

Educational material produced specifically for Africa will now be examined. It will be examined according to the following criteria:

- Name of material;
- Who commissioned and developed the material;
- Where the material was implemented (if available);
- Contents and components of the material;
- Aim of the material;
- Hazards covered in the material; and
- And where information can be obtained from the literature, lessons learned through the development and implication of the material.

2.10.2.1 Risk Reduction Methods: Disaster Reduction Handbook for Foundation Phase Learners

In 2009 (Preventionweb, 2011(u)) the United Nations International Strategy for Disaster Reduction Secretariat in Africa produced a handbook on disaster risk reduction methods for Grade 1 – 3 learners. The handbook was produced with the specific aim of supporting existing primary school curricula and was developed to assist in building a culture of resilience and disaster prevention. The hazards covered in the handbook include wild fire, earthquake, epidemic, flood, land slide, drought and tsunami.

2.10.2.2 Safari's encounter with drought

"Safari's encounter with drought" was published in 2006 (ISDR, 2011(c)) and was commissioned and developed by the International Strategy for Disaster Reduction Africa and the Intergovernmental Authority on Development (IGAD) Climate Prediction and Application Centre, formerly known as the Drought Monitoring Centre of Nairobi. The material, which consists of a 25-page illustrated story book, deals exclusively with the hazard drought and aims to teach children specifically about meteorological, hydrological and agricultural drought as told in a story with Safari being the main character. A number of questions are included as part of the story and these can be used very effectively in the classroom situation. The story book is not aimed at a specific age group, but would be suitable for children aged 8 – 12 years old. It refers to conditions in Africa specifically but could be used as additional on droughts for children in other regions.

2.10.2.3 Safari's encounter with floods

"Safari's encounter with floods" was published in 2004 (ISDR, 2011(d)) and commissioned and developed by the International Strategy for Disaster Reduction Africa, the Intergovernmental Authority on Development (IGAD) Climate Prediction and Application Centre, formerly known as the Drought Monitoring Centre of Nairobi and the United Nations Environment Programme. It is a 24-page educational story book which focuses on floods and aims to inform children about the causes of floods, the impacts of floods and how to mitigate flooding. The story book has also been translated into French and is aimed at children of primary school age.

2.10.2.4 Safari's encounter with a landslide

"Safari's encounter with a landslide" was published in 2003 (ISDR, 2011(e)) and was commissioned by the International Strategy for Disaster Reduction Africa and the Drought Monitoring Centre of Nairobi. It is a 20-page story book written for primary school children with the aim of informing them about landslides. The educational story book looks specifically at what causes them, the impact caused by landslides and ways in which they can be mitigated. This story book was implemented in Nairobi, Kenya.

2.10.3 Disaster risk reduction educational material produced for South Africa

Educational material produced specifically for South Africa will now be examined. It will be examined according to the following criteria:

- Name of material;
- Who commissioned and developed the material;
- Where the material was implemented (if available);
- Contents and components of the material;
- Aim of the material;
- Hazards covered in the material; and
- And where information can be obtained from the literature, lessons learned through the development and implication of the material.

2.10.3.1 "Be aware, prepare, share": DVD

The "Be aware, prepare and share" DVD (Preventionweb, 2011(f)) is a 10-minute DVD which was developed by the African Centre for Disaster Studies at the North-West University. The DVD contains a short cartoon telling a story about fires and floods, a song for younger children and a rap for the older children. The aim of the DVD is to accompany the "Be aware, prepare and share" activity booklet and to teach children about the hazards of fire and flood. The DVD was

implemented at primary schools in Gauteng as well as the Western Cape in South Africa. The content of the DVD lines up with awareness, prevention, mitigation, preparedness and response.

2.10.3.2 "Be aware, prepare, share": Educational booklet

The "Be aware, prepare and share" educational booklet was developed by the African Centre for Disaster Studies at the North-West University (Preventionweb, 2011(g)). The educational booklet set comprises of activity books for grade five, six and seven as well as a Teacher's guide. There are various activities for children to complete in the booklets and it is designed to supplement existing curricula. The educational booklets aim to teach learners about the basics of disaster risk reduction. Hazards covered in the educational booklet include flood, fire and drought. The educational booklets were implemented at primary schools in Gauteng as well as the Western Cape in South Africa. The content of the booklet lines up with awareness, prevention, mitigation, preparedness and response (Preventionweb, 2011(g)).

2.10.3.3. "Be aware, prepare, share": Poster

The "Be aware, prepare and share" poster was developed by the African Centre for Disaster Studies at the North-West University. The poster was implemented at primary schools in Gauteng as well as the Western Cape in South Africa. The poster consists of a picture showing children that they should be aware of risks and hazards, they should prepare for them and they should share their knowledge with other people. The aim of the poster is to make up a disaster risk reduction educational guide pack together with the educational booklets and the DVD. There is not a specific focus on one hazard but a reference to all hazards is conveyed by the poster. The content of the booklet lines up with awareness, prevention, mitigation, preparedness and response (Preventionweb, 2011(h)).

From the literature (Preventionweb, 2011(h)) it is apparent that a variety of different formats of disaster risk educational material have been developed and used in a myriad of settings and countries. Some have been stand alone material, others have been used in conjunction with current primary school curricula and still others have been used to shape the writing and development of primary school curricula dealing with disaster risk reduction.

There is very little information available to understand how successful these disaster risk reduction educational materials have been in creating greater risk awareness amongst learners and their communities at large. There is little evidence to determine whether the learners have an increased knowledge of disaster preparedness, mitigation and response. The researcher is of the opinion that

further research is required to determine the successfulness of disaster risk reduction educational interventions at school level. This opinion is matched by Peek (2008), Müller (2010) and Wisner (2006).

2.11 CONCLUSION

In this chapter disaster risk reduction as a concept has been extrapolated to gain a better understanding of how it has evolved as a concept over the last number of years. Next, a number of key concepts used in disaster risk reduction theory and practice were defined. International conventions that shaped the disaster risk reduction discourse have also been considered and attention given to the emphasis placed on the concept disaster risk reduction as well as reference to disaster risk reduction education.

The following international conventions were discussed – the World Conference on Natural Disaster Reduction, the Millennium Declaration and the Millennium Development Goals, the Johannesburg Summit, the World Conference on Disaster Reduction and the African Regional Strategy for disaster risk reduction in Africa. Thereafter the concept of child-centred disaster risk reduction was expanded upon as well as key aspects found in four disaster risk reduction interventions aimed specifically at children.

Disaster risk reduction in the South African context was also examined as well as disaster risk reduction education with specific reference to primary school education. Disaster risk reduction educational material from around the globe was discussed with a desktop study of English material developed, bringing the chapter to a conclusion. There was not much evidence to be found on lessons learned, however the consensus was that in order to be beneficial, the learning experience must extend beyond the classroom to the family and ultimately to the community. The next chapter will explore the implementation of the disaster risk reduction educational project implemented by the City of Tshwane Metropolitan Municipality and then provide details of the empirical research.

CHAPTER 3:
IMPLEMENTATION OF THE
DISASTER RISK REDUCTION EDUCATIONAL PROJECT
AND EMPIRICAL RESEARCH

3.1 INTRODUCTION

The aim of this chapter is to provide information on how the disaster risk reduction educational programme was implemented by the City of Tshwane Metropolitan Municipality. In addition, a thorough description of the content and components of the Disaster Management Guide Pack for Primary Schools is given. Thereafter an explanation of the empirical research conducted is provided. This will give more information on how the participants were selected, what the procedure entailed, how the data was gathered and details on how the focus groups and semi-structured interviews were conducted. Lastly this chapter will indentify how the data was analysed as well as providing insight into the trustworthiness of the research and lastly look at the ethical aspects of this research.

3.2 IMPLEMENTATION OF THE DISASTER RISK REDUCTION EDUCATIONAL PROGRAMME BY THE CITY OF TSHWANE METROPOLITAN MUNICIPALITY

In order to comply with the legislative requirements of the Disaster Management Act 57 of 2002 (South Africa, 2003:53), the City of Tshwane Metropolitan Municipality initiated the “Disaster Management Guide Pack for primary schools”. The school guide pack, as it is generically known, was a combined effort between the African Centre for Disaster Studies (ACDS) at the North-West University and the Tshwane Disaster Management Centre. The main aim of developing the guide pack was to provide Educators with a resource in which they could introduce learners to the subject of Disaster Risk Management as well as provide learners with the basic principles in an appealing, enjoyable manner.

In an effort to promote disaster risk management capacity building in the City of Tshwane, the school guide pack project was a very important one for the Tshwane Disaster Management Centre. It was developed in such a way that its content formed part of the Social Sciences and Economic and Management Sciences learning areas for grades five to seven. As part of the capacity building drive, educators were provided with an outcomes based kit (consisting of an educator’s guide, together with the contents of the school guide pack) and had to undergo an afternoon of training on how to successfully integrate the school guide pack in the class room.

The school guide pack consisted of the following:

- A 15-page, full-colour Educator's Guide;
- Separate full-colour workbooks for grades five, six and seven;
- An A2 full-colour wall poster;
- A CD containing a disaster risk management song and a rap;
- A DVD providing further teaching about disaster risk management; and
- The "Riskland" board game and activity book.

The main topics covered across the school guide pack include floods, droughts and fire. Learning outcomes for grade five learners are as follows (City of Tshwane Metropolitan Municipality, 2006(a):1):

- To demonstrate an understanding of the difference between natural phenomena, hazards, risks and disasters;
- Using this knowledge to:
    - Know how to reduce risks of dangers and hazards becoming disasters in terms of early warning;
    - Knowing what can be done when disasters occur (disaster management); and
    - Prevent disasters recurring.

Grade five learners were also taught a song (City of Tshwane Metropolitan Municipality, 2006(a):3) which made reference to the emergency number and the importance of having a disaster plan. It also introduced them to the term risks and hazards, encouraged them to be prepared and made specific reference to floods and fires. In addition the four characters, Thutlwa, Tshwene, Tau and Nonyana were introduced to the learners. These four characters play a central role throughout the school guide pack. Thutlwa, Tshwene, Tau and Nonyana reiterate the motto of 'be aware, prepare and share'. Learners are taught to "*be aware of dangers and risks that can turn into disasters, prepare for disasters so that you can reduce your risk of becoming a victim and share your knowledge of what to do with others*" (City of Tshwane Metropolitan Municipality, 2006(a):4).

Learning outcomes for grade six learners are as follows (City of Tshwane Metropolitan Municipality, 2006(b):1):

- To demonstrate an understanding of the difference between a disaster, hazard, emergency, risk, vulnerability and natural phenomenon;
- Use this knowledge to become aware of:

- what they can do when hazards or disasters occur and affect their lives and of those around them that is, Disaster Management; and
- How to put measures in place to prevent the effects of disasters occurring again.

Topics covered in the Grade six workbook included a definition and causes of a disaster, fire prevention and reduction of vulnerability, disaster risk reduction and prevention, the motto of be aware, prepare and share as well as reiterating the song and emergency numbers (City of Tshwane Metropolitan Municipality, 2006(b):2).

Learning outcomes for grade seven learners are as follows (City of Tshwane Metropolitan Municipality, 2006(c):1):

- To demonstrate an understanding of the difference between a disaster, hazard, emergency, risk, natural phenomenon and vulnerability;
- Use this knowledge to become aware of:
  - how to reduce hazards/disasters in terms of early warning;
- Demonstrate an understanding of the impact disasters have on:
  - the economy;
  - society;
  - the environment; and
- Consider the implications of sustainable development and the reduction rather than response to a potential disastrous situation.

Topics covered in the grade seven workbook include the duplication of knowledge gained in grade five and six namely, the motto of “be aware, prepare and share”, emergency numbers and the introduction of a rap song (City of Tshwane Metropolitan Municipality, 2006(c):2). Grade seven learners also cover the topics of the impact of disasters, early warning systems, disaster management and an emergency evacuation plan, sustainable development and sustainable livelihoods (City of Tshwane Metropolitan Municipality, 2006(c):2).

The Teachers Guide (City of Tshwane Metropolitan Municipality, 2006(d):2) gives additional information to educators in order to assist them in teaching the guide pack to learners. The teachers guide consists of guidelines on how to teach the song and the rap (City of Tshwane Metropolitan Municipality, 2006(d):3), numerous definitions related to disaster risk reduction, understanding disaster management, sustainable development, sustainable livelihoods, municipal disaster management, early warning systems and how understanding risk can lead to resilience

(City of Tshwane Metropolitan Municipality, 2006(d):2). In addition the Teachers Guide provides guidance on how to use the learners' workbooks and play the "Riskland" game as well as activities to supplement or replace the activities in the workbook (City of Tshwane Metropolitan Municipality, 2006(d):12).

The Disaster Management Guide Pack was launched initially in two schools, namely the Walter Sisulu Primary School and the Mokonyama Primary School. Thereafter it was rolled out in Refithlile-pele Primary School and Meetsi a Bophelo Primary School. The Disaster Management Centre at the City of Tshwane Metropolitan Municipality would like to, in time, implement the Disaster Management Guide Pack across all English-medium primary schools within the Tshwane Metropolitan area. It is planned that Kanana Primary School and Sekampaneng Primary School will implement in January 2012. It is entirely up to the educators how and in which learning areas they incorporate the Disaster Management Guide Pack.

3.3 EMPIRICAL RESEARCH

Qualitative data was used to critically analyse the disaster risk reduction educational programme for primary schools in the City of Tshwane Metropolitan in order to better expand on preliminary knowledge about the effectiveness of the programme (Struwig and Stead, 2007:19).

3.3.1 *Context*

In South Africa, legislation dictates that disaster risk reduction education should be included in school curricula (South Africa, 2005:90; South Africa, 2003: 14, 18, 32, 44). As this legislation is still relatively young there were not many projects which could be analysed and hence the City of Tshwane Metropolitan Municipality was chosen due to the fact that, as a metropolitan municipality, they had been very intentional in setting up the "Disaster Management Guide Pack for Primary Schools" which forms the basis of the educational project implemented by the Disaster Management Centre.

In the context of this research and in order to gain an understanding of the effectiveness of the Disaster Management Guide Pack for Primary Schools it was necessary to include two schools which had implemented the guide pack and two schools which had not. This would enable the researcher to determine whether the school guide pack added value to existing school curricula in terms of providing knowledge and understanding of disaster risk management to grade five to seven primary school learners.

The geographical area in which the research was conducted was peri-urban and informal settlements. Schools A and C were located in a peri-urban environment and schools B and D in informal settlements. Disaster risk priorities include informal settlement fires, public health concerns, floods, veld fires and severe weather events (Thinda, 2011).

3.3.2 *Participants*

Sampling was done on a purposeful basis. The Headmasters of the four schools selected for the research were contacted and asked to request grade seven educators to select four boys and four girls. The researcher requested that learners chosen were academically strong in order to facilitate good discussions in the focus groups. Three of the schools had grade seven children and one school's highest grade was grade six and so grade six learners were used in a focus group.

3.3.3 *Procedure*

A literature review was conducted. Next the Gauteng Department of Education was contacted to request permission to conduct research in four schools, namely Refithlile Pele primary, Meetsi a Bophelo primary, Mahlasedi Masana primary and Lorato Primary School. Once written permission was received, with the help of Mr. Thabang Thinda, an officer of the Tshwane Disaster Management Centre, the Headmasters of the schools selected for the focus group interviews were contacted telephonically or visited personally to request permission to conduct research in their schools. Headmasters were also given a written letter in which the nature of the research was explained to them (see Annexure 1). The school Headmasters gave permission for the research to be conducted and indemnity forms (see Annexure 2) given to participants and sent home for parents to sign. The indemnity forms also contained information about the research, directed at the parents of the learners selected to participate in the focus group.

Mr. Thabang Thinda acted as a gate keeper between the researcher and the schools due to the fact that he had an existing relationship with the schools being a Disaster Management officer in the City of Tshwane Metropolitan Municipality. Mr. Thabang Thinda acted as a co-observer in the focus groups and two interns from the City of Tshwane also sat in on two of the focus groups as co-observers. Field notes received from them will be recorded in the analysis of the findings. The participants, both in the focus groups and in the semi-structured interviews, were informed of the scope, nature and purpose of the research.

Data gathering then commenced and took the form of focus group interviews (see Annexure 4) and semi-structured interviews (see Annexure 3). Educators who participated in the semi-structured interviews were made aware of the objectives of the study, the importance of the study and how they came to be involved with the study. The educators were also advised that all information received would be kept confidential and anonymous.

3.3.4 *Data gathering*

Data was gathered using qualitative methods of research. These qualitative methods were focus group interviews (annexure 4) with learners and semi-structured interviews (annexure 3) with educators. Focus group interviews were voice recorded and the semi-structured interviews were voice recorded in order to assist with accurate gathering and processing of data. Field notes were taken during the focus group interviews.

3.3.4.1 Focus Groups

Focus group interviews were conducted using grade six and seven learners in four schools within the City of Tshwane Metropolitan Municipality. The focus groups will provide data that will assist in a critical analysis of the disaster risk reduction educational project for primary schools implemented by the City of Tshwane Metropolitan Municipality.

The focus groups consisted of the following:

- One focus group of 4 boys and 4 girls in grade six; and
- Three focus groups consisting of 4 boys and 4 girls in each group from grade seven.

Additionally, semi-structured interviews were conducted with six educators in order to determine in which learning areas the school guide pack was implemented, how well the school guide pack was integrated into outcome-based education and if, in their opinion, the inclusion of the school guide pack or similar interventions would contribute to disaster risk reduction in South Africa.

Focus group interviews are a qualitative research method which, according to De Vos *et al.* (2003:306), is a useful method to employ when numerous responses are required. The focus group interviews thus provide the opportunity to gather data from a larger sample group, in a shorter period of time, as opposed to conducting one-on-one interviews with the learners. De Vos *et al.* (2003:307) also mention that the benefit of focus group interviews over one-on-one interviews is that research respondents in the group setting feel willing and able to share more information than what they may have shared in an interview with the researcher.

Due to the fact that respondents were children, it was important to provide a non-threatening environment in which to conduct the research so that they felt at ease and willing to share their experiences, thoughts and feelings. According to Hakim (2000:35) potential pitfalls in carrying out focus group interviews is that data pertaining to the individual learners' personal outlook and reasoning is difficult to gauge in a group setting. Questions should be phrased in such a way as to try and persuade the learners to motivate their reasons for the comments made in the focus group interview.

The use of focus group interviews will assist in understanding how the grade seven learners feel about disasters and disaster risk. Focus group interviews will also determine whether the inclusion of disaster risk reduction education in school curricula has contributed to a greater degree of disaster risk awareness, prevention, mitigation, preparedness and response amongst learners which could effectively contribute to disaster risk reduction in the City of Tshwane Metropolitan Municipality.

According to De Vos *et al.* (2003:316) it is a complicated task to conduct a pilot study for a focus group. Due to time constraints a pilot study, for this research, will not be conducted. However the first focus group interview will serve as a pilot study. Should it be deemed necessary to make any adjustments to the focus group procedure, it will be done before the second focus groups commences.

3.3.4.2 Semi-structured interviews

Semi-structured interviews were conducted with educators who have taught the school guide pack to the grade seven learners either in grade five, six or seven. Semi-structured interviews were selected so that pre-planned questions could be drawn up to ensure that the research objectives were obtained, yet also allowing for the flexibility of probing areas that may need more clarification. Thus incorporating a flexible way to collect data (Welman & Kruger, 2001:161). According to Struwig and Stead (2007:98) this technique permits richer evidence to emerge through the interviewing process. In addition, numerous answers and opinions from the same question can be recorded.

Interviewing the educators will provide insight into which learning areas the City of Tshwane Metropolitan Municipality School's Guide Pack is currently being implemented, how well the school guide pack was integrated with the outcome based education currently used in the Republic of South Africa and whether they believe that the integration of disaster risk reduction education in existing curricula is able to contribute to disaster risk reduction in South Africa.

3.3.5 *Analysis of data*

All data obtained from the focus group interviews as well as the semi-structured interviews was taken into consideration and a conclusion drawn based on the findings. These answers were cross checked with a voice recorder during analysis of the data.

A thematic analysis was used to interpret the research data. Data obtained from the focus group interviews and the semi-structured interviews was used, in conjunction with the literature review, to determine themes, patterns and tendencies (De Vos *et al.* 2003:318) which were identified and used to analyse the effectiveness of the primary school guide pack intervention.

3.3.6 *Trustworthiness*

Triangulation methods were employed to ensure the trustworthiness of the research conducted. Babbie (2001:113) refers to triangulation as a research method employed to ensure trustworthiness of the data. He points out that using a variety of research methods to test the same finding is a very helpful tool to use in research.

3.3.6.1 Investigator triangulation

Five different investigators participated as co-observers in the focus groups and semi-structured interviews; and provided feedback of their observations and experiences of the groups in the form of field notes submitted to the researcher.

3.3.6.2 Data triangulation

In order to obtain data triangulation a variety of methods of data collection were used, these included a literature review, focus group interviews and semi-structured interviews.

3.3.7 *Ethical aspects*

The research proposal for this research was submitted to the North-West University, Potchefstroom campus and ethical approval was obtained. Permission to conduct the study was requested and obtained, in writing, from the Gauteng Department of Education (GDE). Permission was also requested from the four schools involved in the research, namely Refithlile Pele primary, Meetsi a Bophelo primary, Mahlasedi Masana primary and Lorato Primary School. Written consent was obtained from the parents of the participants of the focus groups. Neither educators nor learners names were included in any of the findings and the learners were assured at the beginning of the focus group interviews that their identity would remain anonymous. No photographs were taken of the children's faces during the course of the focus group interviews.

3.4 CONCLUSION

This chapter provided the reader with a thorough understanding of how the school guide pack intervention was implemented by the City of Tshwane Metropolitan Municipality. Further a discussion was given on how the empirical research was conducted. Information providing the context for the research was given, as well as details about the participants, procedure, data gathering, data analysis and trustworthiness of the study. A short section on ethical aspects was also discussed. The next chapter will offer the reader an in-depth analysis of the disaster risk reduction educational project for primary schools as implemented by the City of Tshwane Metropolitan Municipality.

CHAPTER 4:
ANALYSIS OF THE DISASTER RISK REDUCTION EDUCATIONAL PROJECT FOR PRIMARY SCHOOLS IMPLEMENTED BY THE CITY OF TSHWANE METROPOLITAN MUNICIPALITY

4.1 INTRODUCTION

The aim of this chapter is to address four of the objectives set out to be achieved by this research, namely, establishing the focus of the school guide pack in terms of awareness, prevention, mitigation, preparedness and response. Determining how the school guide pack integrated into the current outcomes-based education system in South Africa. Identifying the learning areas in which the school guide pack was integrated and comparing the disaster risk reduction knowledge of learners from schools which implemented the school guide pack compared to learners in schools which did not implement the school guide pack. Therefore this chapter will examine the findings drawn from the focus group interviews with learners as well as the semi-structured interviews with teachers. General as well as specific observations made at all four school will be given as well as themes, patterns and tendencies identified amongst the schools that participated in the research will be weaved throughout the chapter.

4.2 GENERAL OBSERVATIONS

Verbal and non-verbal cues were noted and will be presented briefly and arranged by school as recorded from field notes.

4.2.1 *School A (intervention)*

The researcher observed that the learners at School A were enthusiastic, knowledgeable about disaster risk reduction, confident and not shy to express their opinions. The learners actively participated in the focus group and co-operated fully when asked to complete any instruction, question or exercise. These learners were particularly enthusiastic about the disaster song which forms part of the school guide pack and even though the school did not have the facilities to play the CD containing the song, the learners had learnt the song and sang it twice during the course of the focus group. The learners knew all the words of the song and the actions. They had adapted the song words to say the emergency number which is relevant to their area, namely 10177.

It is also interesting to note that school A only caters for grades one to six. Thus the learners in the focus group at this school were in grade six and not grade seven. However this did not prove disadvantageous for the learners and their answers in the focus group proved to be of a very high standard indicating that they have good knowledge of disaster risk reduction.

Sarah Webb (2011), a co-observer, noted the following about School A – "I observed at School A, that the educators appear enthusiastic about being there. There was also a generally pleasant atmosphere amongst the learners and educators that I spoke to or greeted."

4.2.2 *School B (intervention)*

The findings from the focus group were somewhat surprising. The answers coming from a school which had supposedly implemented the school guide pack, created doubt in the researchers' mind as to whether the intervention had been implemented properly or at all, since the learners were not nearly as confident, spontaneous and creative with answers compared to the learners in School A. Certain basic disaster risk reduction concepts which should have been well known by learners and which the researcher was expecting to hear where not forthcoming from learners. The answers given by the learners did not create overwhelming assurance in the researchers' mind that the learners had in fact been taught the work presented in the school guide pack. Learners could be described, at best, as average in their knowledge of key concepts in disaster risk reduction although they did display a willingness to learn more about the topic.

After interviewing the educators, there was no concrete evidence that they had NOT implemented the school guide pack, however based on the answers given by the learners in School B, the effectiveness of the implementation is questionable unless there are deeper issues at play which need further investigation. Terms such as "hazard" or "disaster" should be understood by learners who had been taught from the school guide pack. Co-observer, Thinda (2011) is of the opinion that the educators did not teach the school guide pack adequately to the learners due to the fact that learners could not answer certain basic questions in the focus group which came directly from the school guide pack. Thinda (2011) also believes that the educators play a vital role in creating awareness and enthusiasm about disaster risk reduction and need to have sufficient training in order to assist them in championing the disaster risk reduction agenda within a school.

4.2.3 *School C (no intervention)*

From spending time at this school talking to the Headmaster and conducting the focus group interviews, the researcher experienced a generally pleasant atmosphere at School C. Learners were friendly, well-mannered and helpful towards the researcher and co-observers.

Observing the geographical location of the school it is easy to perceive that it could be difficult for learners to get to school and sometimes tempting for them not to attend at all, due to the rather remote location of the school and poorly maintained access roads and infrastructure surrounding the school. In addition the river which runs just below the school presents additional social and environmental challenges for example flooding, pollution and crimes against children committed in that area.

> Webb (2011) made the following observations when visiting School C: "*Specifically for School C, the river has a major impact on the school and community. If someone was raped while at school or going home from school – that could result in them not wanting to go to school. In addition to rape, the flooding of the area and children drowning during the rainy season, the access road could also potentially wash away or deteriorate further (which looks very possible). The response time for Emergency Medical Services (EMS) and/or maintenance could be a major problem. These problems are more seasonally related (but the response time is an ongoing thing). The pollution (litter) aspect in the river is on ongoing concern – namely: what pollutants are children being exposed to in that region.*"

The learners who participated in the focus group indicated an eagerness to learn, were confident in giving their answers and were more than willing to participate in the focus group although they did find one or two questions difficult to answer. Even though the school guide pack had not been implemented in School C the learners showed excellent general knowledge in the area of disaster risk reduction in that they knew about numerous hazards, they could identify methods to reduce the impact of hazards and for the most part, they knew what constituted a disaster. The focus group did however reveal that although learners displayed a good general knowledge about disaster risk reduction, more specific and contextualised knowledge on the subject is required.

4.2.4 *School D (no intervention)*

In the focus group, learners from School D were passionate about the subject and exhibited interest in it. Perhaps future research could be conducted to understand why a lot of emotion came through during the focus group, where the learners made numerous references to underlying social problems, for example "we must tell about our secrets" or the use of words such as "problems",

"danger" and "fighting". Initially in the focus group they were a little unsure of the answers and it took a fair bit of coaxing to get answers out of them. However once they felt more relaxed and realised that the intervention was not a "test" the answers started to flow. The researcher also observed that in the focus group, learners built on the answers given from a previous learners thus they felt more confident in a group setting than being questioned one-on-one.

The educators at School D were eager to assist and pass on the message about disaster risk reduction in whatever way they could. They are looking forward to teaching the school guide pack once it has been officially launched at the school. It will be key to keep and maintain that enthusiasm.

4.3 FINDINGS

The findings were coded based on the specific questions asked in the focus group and the semi-structured interviews. The codes were grouped into categories and themes, patterns and tendencies were identified and discussed.

4.3.1 *Knowledge of the emergency number*

Table 4.1 below illustrates the answer to the question "what is the emergency number?" given by each of the schools which participated in the focus group.

TABLE 4.1: Knowledge of the emergency number

School A (intervention)	School B (intervention)	School C (no intervention)	School D (no intervention)
10177	911	911	173
	10177	112	10111
	10111	082 001 0111	911
		082	0800 0555
			0860 010111
			11177

The emergency number given in the guide pack was 10111. However 10111 is not listed on the City of Tshwane website as a number to call in an emergency situation (City of Tshwane:2011). The City of Tshwane website lists a multitude of numbers to contact should an emergency situation be experienced. These numbers range from amongst others fire and rescue, ambulance services, fire, Metro Police to drug abuse, sanitation and water problems.

From the information in Table 4.1, it is clear that schools A and B knew the correct emergency number for the City of Tshwane and could recite it easily when asked. Learners in schools A and B had been taught the City of Tshwane toll free fire and rescue number. From the Revised National Curriculum Statement there is no evidence to show that the emergency number should be taught to learners.

Neither School C nor School D knew the emergency number. Interestingly both School C and School D cited the number 911 and School D gave the answer 10111 which is the number for the flying squad. 10111 could be called in an emergency, depending in what context the word "emergency" is used and understood. Learners in both School C and School D took a while to come up with answers and were uncertain and hesitant when giving the answers, in contrast to learners in schools A and B that quickly and confidently gave the answer.

From the results of the focus groups however, there is strong evidence that by making use of the school guide pack, educators were successfully able to teach learners the emergency number. The case for this is quite strong based on the findings of the focus group as learners from Schools A and B were the only ones who knew the emergency number. Even though the emergency number in the school guide pack is only indicated as 10111, the number for the South African Police Services flying squid, educators who taught the guide pack were able to convey the emergency number to the learners and even adapted the song to include the number 10177.

Themes emerging from this question, which will be discussed in great detail in section 4.4, include awareness, prevention, mitigation, preparedness and response. Schools who used the school guide pack showed evidence that there was an awareness of possible emergencies that could happen and the learners knew the number to dial in an emergency. Prevention, mitigation and preparedness have been addressed successfully in the school guide pack in that a child should call the emergency number as early as possible.

4.3.2 *Causes of disasters*

Table 4.2 illustrates the causes of disasters as given by the learners. This question was asked to determine whether learners understood what a disaster is and what could cause a disaster.

Learners from School A answered the questions very easily and had no problem in giving a myriad of answers. School B learners also exhibited confidence in answering the question. School B learners gave good answers although there was a tendency to repeat variances of the terms for

example “hot lava”, “hot molten rock” and “volcano”. As well as “earthquake” and “earth crust”. School C learners were initially apprehensive about giving an answer, however they were well aware of different types of disasters. School D answered this question very easily, even though they had not been taught from the school guide pack, however the Revised National Curriculum Statement indicates that causes of environmental issues are taught in Social Sciences.

TABLE 4.2: Causes of disasters

School A (intervention)	School B (intervention)	School C (no intervention)	School D (no intervention)
Bad accident	Hot lava	Pollution	Volcano
Misfortune	Earthquake	Climate change	Flood
Heater	Hot molten rock	Soil erosion	Earthquake
Storm	Flood	A person	Tsunami
Burning	Tsunami	Volcano	Tectonic boundaries
Flood	Storm	Tornado	Drought
Earthquake	Earth crust	Flood	Storm
Tornado	Volcano		Hurricane
Rain	Wind		Tornado
Thunderstorm			Thunderstorms
Burst water pipe			
Volcano			
Hurricane			
Plague			
Fire			
Candle/Primus stove			

However there is insufficient evidence to determine whether the learners actually understood the questions completely or whether they perceived the question to be “what is a disaster?”. Alternatively the learners across all the schools had a very good understanding as to the fact that hazards cause disasters. In addition it should be established what definition of the term “disaster” is being taught in the current school curriculum. Even in professional circles the definition of a “disaster” can vary widely. How the term “disaster” is defined will certainly have an effect on the answers given by learners.

From this question it is possible to deduce that a range of more diverse answers came from learners in School A. It was also interesting to note that the context and geographical location determined the answers of the learners. For example learners in School C gave the following answers which could all be related to the river which runs just below their school – “soil erosion”, “floods” and “a person”. On walking around the school, the researcher and co-observers were advised by Mr. Thabang Thinda of the Tshwane Disaster Management Centre that a fence had recently been erected around the school due to crimes which had been committed by criminals lurking around outside the school grounds. When the river is dry, it is easy for people to grab learners from the school while they were crossing it and for example, rape or mug them.

A tendency which is beginning to emerge from the focus groups is that learners from School A answer questions in a much more specific manner, whilst the learners from the other schools tend to give more general answers. This is starting to show up in the answers given by School A, and will be examined further in later sections. Early indications show that learners in School A have a more in-depth and intimate knowledge about disaster risk reduction than those in the other schools. Reasons beyond the school guide pack may be the raison d'être for this and further research is thus required. However it does seem feasible to assume that the school guide pack intervention has assisted learners in gaining a better understanding of disaster risk reduction as the answers which they provided were a lot more contextual and specific rather than just speaking about a broad, impersonal terms.

Further analysis of the information indicate that the answers are very much influenced by the learners understanding of the term disaster. A learner is unable to explain the cause of the term disaster if he/she does not know the meaning of it. Furthermore it is difficult to accurately compare the schools, as the lens through which the learners are answering this question is not fully known. In retrospect perhaps the question “define a disaster” should have been asked first in order to establish that all the learners are giving the cause of a disaster and that they attach the same meaning to the word “disaster”.

The answer for causes “flood” and “volcano” were common answers given by learners in all four schools. Investigation of the school curriculum and Revised National Curriculum Statement reveal that the topics of floods and volcanoes are part of the current school curriculum. These are topics which all the learners should have learnt about during the course of their primary school career. The cause “earthquake” and “flood” were common answers given by learners in three of the schools. Earthquakes, floods and the impact of hazards are topics which form part of the current

school curriculum and learners would have been exposed to them through their school career in the learning areas of Natural Science, Social Science, Life Orientation, Arts and Culture and Economic and Management Sciences.

The answers also revealed that learners identified the cause of disasters being from natural occurrences as well as being caused by the human element. It is good to see that they make the connection, however, there is insufficient evidence to establish whether this connection was made due to the school guide pack or from what was taught to them from the school curriculum. The fact that School C, a school that has not been taught the school guide pack, specifically gave an answer referring to a person being the cause of a disaster, indicates that they must have obtained this knowledge from some source other than the school guide pack. Examination of the Revised National Curriculum Statement reveals that in Social Science learners are taught about the cause, impact and solution of various environmental issues, even as early as in Grade two. This indicates that learners are trained from an early age to consider the cause, reason and impact of an event.

4.3.3 *Knowledge of key concepts in disaster risk reduction*

A number of key disaster risk reduction concepts were taught in the school guide pack. This question was asked to determine whether schools that had used the school guide pack had a better understanding of three key concepts in disaster risk reduction, namely “hazard”, “risk” and “disaster” than those who had not been taught the school guide pack. The learners were asked to give any word that comes to mind when hearing the three key concepts. Once again, the answering of this question would have been largely influenced by the definition of the concepts, which the learners had been taught.

Schools A and C were able to very quickly give answers and were in no doubt when giving them. School D on the other hand was hesitant about answering and when they did start giving answers, the answers were in whispered tones. Three of the schools, School B, C and D associated the word ‘disaster” with the term ‘hazard’. There is no conclusive evidence as to whether this answer was given because it was the “expected” answer or the right answer to give in the context of a focus group dealing with disaster risk or whether the learners genuinely do associate hazards with disasters. Further in-depth research may be necessary in this regard.

TABLE 4.3: Knowledge of key concepts in disaster risk reduction – 1st concept: Hazard

School A (intervention)	School B (intervention)	School C (no intervention)	School D (no intervention)
Dangerous	Disaster	Natural hazard	Natural
Risk	Types of disasters	Disaster	Natural hazard
Bad accident	Something that brightens up	Earthquake	Disaster
Natural resources	Something that ruins the world	Drought	Damages
Human-made hazards		Bad weather	Accident
Natural hazard		Water pollution	
		Acid rain	
		Explosion	
		Heavy rain	

Evidence also suggests that the information in the school guide pack was not responsible for teaching the learners the link between disasters and hazards as the only schools which made the connection either had not yet implemented the guide pack or had not implemented it very well. Analysis of the Revised National Curriculum Statement shows that learners are taught about distinguishing between hazards and disasters in grade seven in the learning area Social Sciences. It is again important to note that learners in School A are in grade six and have not been taught that yet.

Learners in School B needed further prompting and guidance in establishing what a hazard is before they would attempt saying what words come to mind when they hear the concept. This is further confirmation that although School B did implement the school guide pack, there is mounting evidence that it was not well implemented. There may of course have been extenuating circumstances accounting for this lack of confidence. Further research should be conducted to ascertain if there are social, emotional or academic reasons for School B learners struggling with some of the concepts tested in the focus group. Hazard is a concept which does form part of the school curriculum and thus all the learners should have been exposed to it. It is taught as early as the foundation phase in public schools in South Africa.

Table 4.3 indicates the knowledge of the learners with regards to the key concept “risk”. School A once again answered confidently as did schools B and D. School C answered with greater confidence than with the word “hazard” but were not extremely aware of risks in general. The words “bad accident”, “saving lives” and “danger” were answers given across all the schools. A strong theme coming from School D is that the learners seem to be more emotional than learners in the other schools. It would be worth investigating the emotional state of the learners in School D. The information from the focus group suggests that living with problems and trouble may form part of what learners in School D live with on a regular basis. Answers from learners in School D included words such as “danger”, “problems” and “fighting”. These words and ones evoking similar emotions surfaced in more than one instance during the focus group interview.

TABLE 4.4: Knowledge of key concepts in disaster risk reduction – 2nd concept: Risk

School A (intervention)	School B (intervention)	School C (no intervention)	School D (no intervention)
Bad accident	Playing with fire	Drink & driving	Danger
Save lives	Something dangerous but too risky	Trying something you know is dangerous	Problems
Chance of danger	Being careful	Risking your life to save someone	Fighting
Suffering	Bring danger	Massive accidents	Accident
Something can harm children		Broken bridge	Damage
		Traffic incidents	
		Ceiling wants to fall	

Schools A, C and D specified the term “natural hazard”, this provides substantiation that learners are not necessarily learning about natural hazards in the school guide pack only but is also included in the school syllabus. Schools C and D did not implement the school guide pack and yet learners were aware of the term natural hazard. School A, however was the only school which came up with the words “human-made hazards”, which is not specifically taught in the school guide pack, but could have been included as additional information by the educator. Results from the semi-structured interviews with educators reveal that “natural hazards” form part of the school curriculum as does collaboration with the Revised National Curriculum Statement.

Table 4.5 confirms the pattern which is starting to emerge that School A provided answers that were inherently more on a micro scale, whereas Schools B, C and D provided more general answers which would appear to indicate that they have knowledge of disaster risk reduction on a macro scale for example they know about it in broad terms, however they don't appear to have the more specific and appropriate knowledge of learners in School A. Distinguishing between a disaster and a hazard is an outcome in the learning area Social Science for grade seven. Interestingly, the learners in School A are in grade six and thus would be the only learners who had not covered that section in their formal school context. However this preliminary research seems to suggest that School A has more detailed, specific and contextualised knowledge of disaster risk reduction compared to the other schools, providing early indications that the school guide pack must have had an influence on learners in School A.

TABLE 4.5: Knowledge of key concepts in disaster risk reduction – 3rd concept: Disaster

School A (intervention)	School B (intervention)	School C (no intervention)	School D (no intervention)
Plane crash	Kills people & animals	Car crash	Danger
Bad accident	Ruin the world – like a volcano	Tsunami	Accidents
Misfortunate accident	Destroy the place – like a tsunami	Drought	Damage
Avoid the danger	Destroy home & lives	Earthquake	Injuries
Volcano	Floods in Japan	Volcano	Troubles
Flood	Earthquakes	Tornado	Death
Natural hazard		Flood	Problems
Human-made hazards			Risks
Fire that burns hours/shacks			
Never sleep when heater is on			
A disaster			
Never sleep when candle is on			
Never leave a child at night			

School A (intervention)	School B (intervention)	School C (no intervention)	School D (no intervention)
Don't leave water tap open			
Don't leave a primus stove burning			
Never leave a child to play with fire			
Never leave a child playing with paraffin			
Don't drink paraffin			
Never leave a child playing with a tub of water			
Keep matches away from children			
Never leave electricity on when asleep			
Don't pollute environment			
Don't break glass bottles			
Always reduce reuse recycle			
Burning of houses			
Be able to stop problems			
Car accident			
Floods			
Accidents			
Natural disaster			
Environmental disaster			
Causes damage or suffering			

The fact that this evidence is not appearing from the answers provided by School B is unfortunate as that would have presented more conclusive support for this finding. However, answers from learners in School B, do make one question the validity and implementation of the school guide pack in that school or even to ponder on whether there are other reasons for the answers given by the learners in School B. After conducting the focus group at School B, both the researcher and the co-observers questioned how well the school guide pack had been put into practice. However more research is needed in order to understand the social, economic, environmental and political conditions prevalent to that specific community and how these conditions may affect the academic performance of learners.

4.3.4 *Knowledge about floods*

During the focus group interviews, the learners were asked two questions specifically relating to floods in order to determine their understanding of floods and flooding. Educators, in schools which implemented the school guide pack, were given answers to all the questions asked in the school guide pack and were therefore able to assess whether the learners had answered correctly and had adequately understood the content of the school guide pack.

TABLE 4.6: How a rain storm becomes a disaster

School A (intervention)	School B (intervention)	School C (no intervention)	School D (no intervention)
It's partly cloudy	It kills people	It is raining	Global warming
Floods in houses	Killing plants & animals	It turns to floods	Water pollution
Building houses in wrong places	Washing away people's homes	When clouds bring heavy rain	Air pollution
Near the hills & mountains	Ruining the environment	When thunder storms become stronger	Lightening
Children become wet when coming to school		River overflows	
Emergency vehicles can't arrive due to rain		Ruins people's houses	
Books will get wet			

Table 4.6 shows the answers given by the learners when asked the question "*A rain storm can become a disaster when?*". The answer provided in the guide pack was "*When it rains heavily for a long time*". None of the learners specifically gave that answer, however the answers given reveal that the learners took the concept a step further and provided answers which related more to the impact of what happens when it rains heavily for a long period. The topic of floods and flooding are covered in the current school curriculum, namely in the Foundation phase of Natural Sciences and again during grade seven in Social Sciences.

Learners from School A were knowledgeable and aware of the impact of building houses in the wrong places for example in a flood plain or on a river bank and that could result in houses being flooded or destroyed. They were also aware of the importance of response to a disaster and indicated that flooding could result in emergency vehicles not being able to reach the emergency situation as a direct result of the rain. Once again, learners from School A gave much more in-depth and detailed answers compared directly with the learners of School D. The learners from School B did provide reasonable answers to this question and there is certainly some evidence that these learners are aware of the consequences of a rain storm turning into a disaster. The answers these learners gave did show awareness of the impact of a flood for example, "killing of people and animals", "washing away people's homes" and "ruining the environment".

Learners from School C had no problem answering the question and although this school has not implemented the school guide pack, the learners displayed good general knowledge about flooding and floods. These learners understood that disasters occur when "thunderstorms become stronger", "rivers overflow" and "people's houses are ruined". Learners from School D provided answers that were in very broad terms and only one answer – "lightening" could be vaguely related to the question. This indicates that they either did not understand the question or they were just guessing an answer and had not contemplated the impact of heavy rain. That being said, if one were to analyse a bit further, the answers "water pollution" and "global warming" could be related to flooding and excessive rain and thus it may be feasible to conduct further research into the level and intensity that the topic of floods is currently taught in the school curriculum.

Thus the answers to this question showed that learners had an awareness of the result of floods and flooding and what the impact could be. The learners in School A were the only school which exhibited consciousness of prevention and mitigation by indicating the location of houses playing a factor when flooding occurs. There was no very strong evidence of preparedness emerging from this question although, once again learners from School A provided an answer of “emergency vehicles can’t arrive due to rain” which points to comprehension of response.

The next question relating to floods that was asked in the focus group was, “*can we prevent floods from occurring*?”. This aspect was taught as one of the topics in the grade five learners’ workbook. The researcher was looking for answers to emerge which were indicated in the learners’ workbook. These answers included “strong dam walls, watch the weather, choose high ground, obstructions in river, avoid dry river beds”. Should the answers be given it would provide evidence of good understanding of the concepts taught in the school guide pack. Table 4.7 provides an indication of the answers given.

The first answer given by School A, 10117 indicates that they know the emergency number however it also provides confirmation that the learners realise that a flood is an emergency. It may additionally indicate that learners are under the impression that a flood can be prevented by simply phoning the emergency number. But then learners from School A came up with a rather profound answer, namely “a flood is a natural disaster and therefore cannot be stopped”. The topic of floods is taught during the Foundation phase of primary school in Natural Science and then only in Grade seven is a topic on preventative measures pertaining to floods and flooding taught.

Early indications point to the fact that the learners from School A learned from the school guide pack that a flood is a natural disaster and cannot be stopped as no other school mentioned a similar answer. In addition the learners from School A are in grade six and not grade seven, this means they would not have dealt with the topic in great depth as yet. This points towards School A having a strong awareness of what a flood is and that floods have been occurring since the beginning of time and cannot be stopped. These learners also understand that the impact of floods can only be mitigated.

TABLE 4.7: How floods can be prevented

School A (intervention)	School B (intervention)	School C (no intervention)	School D (no intervention)
Calling 10177	Building bridges	By planting trees	By closing oceans
Flood is a natural disaster and therefore cannot be stopped	Building dams	By building a strong, tall wall that won't be damaged by floods	Building protective apartments
	Building strong houses	Building your house far from the river	Building around the ocean
	Keeping animals away from flood dangers	By building dams	Building a wall to make water flow through the rivers
	Evacuate people		

In this case, learners from School B did provide answers that most certainly indicated knowledge of how floods can be prevented, although it must be said that they did struggle initially to come up with answers. The learners indicated developmental interventions for preventing flooding like "building bridges and dams". The answers however were not specifically from the school guide pack and did not, in all cases, reflect precautionary methods of preventing a flood from occurring, for example "keep animals away from flood dangers" and "evacuate people". Keeping animals away from the dangers of the flood and evacuating people will not prevent a flood, however it may mitigate some of the damages to people and animals caused by a flood. With answers such as these, one could question whether the concept of prevention is adequately understood by the learners of School B.

Even the answer "building strong houses" will not prevent a flood from occurring. There are topics and concepts in the school guide pack that should be explained in a very practical manner so that learners can differentiate between the diverse concepts. For example prevention and disaster risk are fairly complex concepts for learners to understand. It is thus imperative that the educational material assist learners in grasping these concepts. This would include helping learners to understand how developmental interventions could go a long way in preventing flooding, compared to instituting actions which will reduce loss and damage caused by flooding.

Learners from School C were able to answer this question with ease. All the answers given by the learners were feasible. It was however observed that terms and definitions are sometimes confused by learners. It is the researchers' recommendation that attention be paid to this in future editions of the school guide pack in order to assist the learners in gaining a thorough understanding of key disaster risk reduction terms and definitions. It is clear that learners in School C are very much aware of disaster risk reduction and even though they have not used the school guide pack, they seem to have a mind set of prevention and/or are able to think out preventative measures using their existing knowledge.

Learners from School D struggled the on the whole with this question and essentially found it the most difficult question of all the questions asked in the focus group interview. The learners appeared to be guessing the answers rather than having knowledge about them and none of the answers given were very practical in application. Fascinatingly enough, answers given by learners in School D all related to implementing developmental interventions to prevent floods from occurring. The majority of the answers given by learners in School D began with the word "build". The researcher is of the opinion that either consciously or subconsciously these learners knew that floods could be prevented by "building something". Thus there seems to be an inherent understanding that putting some kind of infrastructure in place could equal risk reduction. Sustainable Growth and Sustainable Development are topics which are covered in the Foundation phase of the school curriculum in Economic and Management Sciences.

4.3.5 *Knowledge about reducing disasters and the motto, "be aware, prepare and share"*

The questions "*what did we learn about reducing disasters*" was asked in the focus group in order to ascertain whether a mindset of awareness, prevention, mitigation and preparedness is beginning to take shape in the minds of the learners who participated in the focus group interview. Across the schools, answers were given that indicated that something should be built in order to reduce disasters thus inadvertently suggesting developmental and infrastructural solutions for example using structural mitigation to reduce disasters.

From table 4.8 one can see that learners from School A provided answers that related to building and infrastructure development. They also indicated awareness that government has a role to play in various aspects of disaster risk reduction. These learners specifically looked at this role in the context of permission being granted to build, by the municipality or "government" as they referred to it. This seems to indicate that they see a correlation between development interventions and the role of government.

TABLE 4.8: Reducing disasters

School A (intervention)	School B (intervention)	School C (no intervention)	School D (no intervention)
Building storage for floods	Building bridges	*Did not understand, gave no answer*	Stop making air pollution
Move houses from the river	Build strong houses		Stop making water pollution
Build without permission from Government	Never touch electricity with your hands		Stop littering under water
Build houses at wrong places	Evacuate animals on their own		Stop digging
			Stop throwing dirty things in river
			Stop making fire anywhere because it will cause air pollution
			Stop throwing dirty things in the environment
			Clean our environment
			Make sure our environment is not dirty
			Recycle to stop air pollution

Learners from School B also placed a strong emphasis on developmental interventions. They recommended building bridges and strong houses. They also referred to not touching electricity with your hands as reducing a disaster, which provided further evidence that the term “disaster” is not comprehensively understood. There is also added evidence that learners perhaps struggle to apply the disaster risk reduction knowledge that they have learned into their own sphere of influence. Perhaps the perception exists that disasters are big events which take place around the world but never in their own neighbourhood.

The learners also seemed to lack the ability to link the answers which they gave to the area in which they live. This could perhaps indicate a lack of awareness of their own risks, hazards and vulnerabilities. Wisner (2006) states that disaster risk reduction educational material or school curricula must direct learners to understanding the risks, hazards and vulnerabilities which they face and must be contextualised for its specific audience.

Learners from School C did not understand this question and therefore did not provide any answers to the question. Instead of making them feel uncomfortable, the researcher moved on to the next question.

Learners from School D connected the notion of stopping a specific activity with disaster reduction by giving numerous answers which all started with the word “stop”. For the most part actually stopping the activities would indeed reduce disasters. Learners from School D did once again need coaxing on this questions which indicates they are unsure about the specifics relating to disaster risk reduction but could work together within the focus group setting and call out a number of activities or actions that should be stopped in order to reduce disaster risk.

The school guide pack carried the motto of “be aware, prepare and share” through all the grades. The idea was to ensure that learners knew that they should be aware of dangers or potential disasters, prepared and ready to take precautions against disasters and cope with the situation and they should share the knowledge they have learned about disaster risk with other people in their community. The learners were asked the question “what should we be aware of?”. This question was set up to test whether learners who had been through the school guide pack remembered the motto.

From the summary of answers provided in Table 4.9 it can be noted that the current context of the person answering can affect the answer given. Learners from School A once again proved that they could answer very easily and provided an extensive list of all the things which they feel they should be aware of. The song which was taught in the school guide pack has the lyrics “be aware of risks and hazards”. Although those words “risks” and “hazards” were not distinctly given, learners from School A did provide a wide range of risks and hazards to be aware of. Learners from School A, sang the song not once, but twice during the focus group interview indicating that they enjoyed learning it and they remembered the words. Hopefully this will translate into their everyday lives and inculcate a culture of prevention of disasters.

TABLE 4.9: What learners should be aware of

School A (intervention)	School B (intervention)	School C (no intervention)	School D (no intervention)
Floods	Strangers	Clouds	Gangsters
Earthquake	Electricity	Rain	Drugs
Volcano	Floods	Change of weather	Alcohol
Thunderstorms	Tsunami	Volcano	Disasters
Tornado	Fire	Atmosphere	Strangers
Wild fires	Cars when crossing the street		Dirty things
Whirl wind	Storms		Violence
Candles	Hooligans		Diseases
Heaters			Bacteria, virus
Primus			Stop using vulgar words at school
Don't wash body parts near heaters			Infections
Burst pipe			Don't discriminate
Matches			Stop breaking the school
Fuels like paraffin, petrol & diesel			Stop vandalising the school
Don't drink & drive			
Don't bring water near plugs			
Never drive an unsafe car			
Avoid the danger			
Don't drink and drive			
Fasten your seat belt			
Know road signs & obey rules of the road			

When answering this question, learners from School B did list a number of hazards, in fact 50% of their answers were hazards and the other 50% of the answers could be associated with risks. This indicates evidence of learners in School B, being aware of the motto taught in the guide pack. Further evidence was uncovered that the school guide pack was not simply ignored by educators at School B, as early indications may have suggested but was implemented, albeit not in the best possible way. Learners in School B further displayed evidence of an awareness of risk and hazards within their environment and surroundings.

It was apparent from the answers given from learners in School C and D that they were not knowledgeable about the motto taught in the school guide pack and it is not reasonable to expect them to know it. Furthermore there was conclusive evidence from their answers that they did not know what risks and hazards they should be aware of on a daily basis. Learners from School C did provide one hazard in their answers, the rest of the answers did not really reflect risk. Although the answers given were things that should be and are monitored namely clouds, rain, change of weather and the atmosphere, these things on their own are not risks per se. However the answers provided by the learners may be more relevant to them than the general hazards taught in school. Thus it is very important that future editions of the school guide pack pay strong attention to contextualising the material.

Learners from School D did not list any hazards and the answers given were largely related to the context of their school life and also to social risks or dangers which they may experience within their community. For example, providing answers such as “stop vandalising and breaking the school”, “don’t discriminate”, “stop using vulgar words at school”. Once again a tendency which is emerging is that learners from School D seem to have social challenges which are coming through in the answers. For example the following answers were given in response to what learners should be aware of “gangsters”, “drugs and alcohol”, “strangers”, “dirty things”, “violence” and “infections”. A learner from School D did give the answer “disasters” but the question must be asked if that is the perceived, expected response in light of the topic of the focus group or if it is a genuine area of awareness for the learner.

Next the learners were asked what they should prepare for. The researcher was looking to see if learners answered the way they had been taught from the school guide pack that is one must be prepared for disasters and ready to take precautions against them. Specifically the song in the school guide pack made reference to having a disaster plan and telling your friends about risks so

that they will be prepared. The rap has lyrics that tell the learner that if you prepare for emergencies you will manage a hazard with ease, you will survive and be okay.

TABLE 4.10: What learners should prepare for

School A (intervention)	School B (intervention)	School C (no intervention)	School D (no intervention)
Tell our community to be safe	To fight disasters	When the clouds change, close your windows	Our future
Tell friends so they can be prepared and be safe	Not to ruin the environment	When there is a flood, go the tallest building	Earthquake
Community emergency number so they can call for help	Do not ruin people's homes	Tornado – get underground	Floods
Stop children from smoking & drinking		Earthquake – go outside	Illnesses
Children must know emergency number			Diseases
			Bacteria
			Tornado
			Problems
			Volcano

With reference to Table 4.10, it can be noted that learners from School A gave 4 out of 5 answers that related directly to the school guide pack. Once again learners from School B seemed to provide rather vague answers although they did clearly indicate that they should be prepared to fight disasters. This does seem to signify that the school guide pack was implemented to some degree but all aspects were either not covered by the educators or not grasped by the learners. The answer that we should prepare not to ruin the environment, is evidence that learners have some knowledge about prevention methods which they would have received as part of the school curriculum.

Learners from School C gave answers which hint at an understanding of indigenous knowledge, for example “when the clouds change close your windows”. The question must be asked, if this practice was taught in school or has this knowledge been passed down from generation to generation? Indigenous culture is taught as part of the primary school curriculum in Arts and Culture in grade 4. It was also clear that learners are spurred on to answer or to improve on the answer given by a fellow learner when they see that the facilitator of the focus group looks relatively pleased with the answer.

Learners from School D indicated that they should prepare for hazards once the facilitator of the focus group had explained the question in more detail. Answers were provided in very general terms with no specific indication as to how to prepare for such hazards. Once again social and emotional factors were given as answers for example “illnesses”, “diseases” and “problems”. Further research is advised to determine how the social and emotional well-being of the learners affects their academic work. Language and understanding of terminology are additional factors which may influence or hinder academic progress. Another possible determinant of answers differing from school to school is the worldview which the learners have and events which they are exposed to on a daily basis. Additional research is recommended to rule out external factors which may be contributing to the awareness levels learners have of disaster risk reduction.

The last question asked in this section was what should be shared? Table 4.11 provides insight into how the learners responded to this question in the focus group interview. In general this question was answered well across all the schools taking part in the focus group interviews. Learners from School A once again came up with an impressive list of things that should be shared and even used the other two words in the motto “be aware” and “prepare” in their answers. Thus evidence is growing that the implementation of the school guide pack in School A has certainly created more awareness about specific disaster risk reduction concepts than at the other schools in which the research was conducted.

Nevertheless it is slightly premature to attribute all of this awareness to implementation of the school guide pack. This being said, however, the research does point to heightened levels of awareness of disaster risk reduction by learners in School A. If nothing else, it would certainly seem as if the school guide pack has succeeded in creating awareness amongst primary school learners. This concurs with findings by Clerveaux and Spence (2009) who contend that the Disaster Awareness Game increased disaster risk reduction awareness levels amongst those who played the game.

TABLE 4.11: What learners should share

School A (intervention)	School B (intervention)	School C (no intervention)	School D (no intervention)
Tell the emergency number	Material	What I learnt at school	Information
Tell them about disasters	House	We must take care of our environment	Our problems
Be aware & tell other children to prepare	Knowledge & skills	How to be aware of disasters happening in the community	Our ideas
Share at home (parents & family)	How to prevent disasters	How to prevent floods	Secrets
Neighbours	Information	How to keep our environment safe	What we have more of – knowledge
So that we can be safe		Stop building houses near the river	Our plans
		Stop using the broken bridge	Problems at home

Learners from School B had to be guided by the facilitator in answering this question as initially they were under the impression that the question was asking them what they should physically share. Hence they came up with answers like “material” and “house”. Once they fully understood the question, they responded with answers like “knowledge and skills” and “how to prevent disasters”. These answers could indicate application and internalisation of the school guide pack.

Learners from School C needed additional prompting about the question, which is understandable as out of context, as a standalone question, it does not make much sense. However once they understood what was required they started to brainstorm nicely, even making use of terms like “prevent” and “aware”. Learners from School D also had to be given the context for this question and only gave one answer that could be related to the guide pack, which was “share what we have more of – knowledge”. Learners from School D then reverted back to emotional types of answers on what they should share, for example “our problems”, “secrets” and “problems at home”. Once again learners in School D provided evidence of troubled social and emotional circumstances.

Throughout all the answers given to this question, it was clear that awareness, prevention, mitigation and preparedness came out as strong themes, with School A providing the best answers and School B and D probably providing the least relevant answers when aligning them to what was presented in the school guide pack.

4.3.6 *Fire awareness and how it can become a hazard and then a disaster*

The learners were asked to draw a poster showing their awareness of fire, how it can become a hazard and then a disaster. The learners were given three rules for the poster and the posters were analysed based on meeting the criteria of the rules, as well as neatness and creativity. Learners had to indicate two escape routes in the drawing, they had to provide instructions or an illustration on how to "stop, drop and roll" away from smoke and fire. They had to indicate that a person should crawl under the smoke and get as low as possible. They could then add any additional information using their own discretion and creativity as well as to illustrate the cause of the fire. This exercise was a duplicate of an exercise in the school guide pack therefore learners from schools which had implemented the school guide pack should have had an advantage over those learners from the other schools.

TABLE 4.12: Poster indicating awareness of fire, how it can move from a hazard to a disaster

Rules for poster	School A (intervention)	School B (intervention)	School C (no intervention)	School D (no intervention)
2 x escapes	x	X	x	☑
Stop, drop & roll	x	☑	☑	x
Crawl under smoke	x	☑	☑	☑
Additional information	Emergency number	Emergency number		
Cause of fire	Primus stove Heater	Gas bottle Match	Candles Matches	Kids playing with fire
Comments		Indicated a gas bottle explosion is a "disaster"	Very well drawn posters	

Drawing of the posters did not provide copious amounts of evidence that the schools who had implemented the school guide pack did better than the schools that did not. In fact learners from School C designed the most impressive posters overall and posters drawn by learners of School D were also well drawn and covered most of the aspects required. Learners from School A were the only learners who indicated the emergency number which is further proof that the school guide pack did create awareness and knowledge of the emergency number. Time and again learners from School A refer back to the emergency number, which is not the case with the learners from other schools.

In theory, learners from School A and B should have had the advantage when it came to designing the posters as they would have had the experience and practice in doing this exercise as part of the school guide pack. The research showed that School A, did not include all the required elements that should have been on the poster, namely the two escape routes, stop, drop and roll and crawling under the smoke. A likely reason for this is that the School A learners who took part in the focus group were in grade six and the exercise comes from the grade seven workbook, therefore they did not have an advantage over School C and D.

Learners from School B did illustrate stop, drop and roll as well as a suggestion to crawl under smoke, but they omitted to indicate the two escape routes. Learners from School B covered most of the required aspects in this exercise, however they showed that their understanding of what constitutes a disaster is perhaps not as accurate as learners in School A and School C. School B learners referred to a gas bottle explosion as being a disaster. Perhaps in the lives of these learners, a gas bottle explosion is a “disaster” for them. This once again highlights the need to contextualise any disaster risk reduction educational material, as concurred by Manyena *et al.* (2008:305), to ensure that concepts and definitions are understood in an appropriate manner for the age group it addresses.

4.3.7 *Reducing the risk of becoming a victim of a disaster (prevention)*

Learners were given a number of scenarios around the impact of droughts, floods and fire and asked what they could do to prevent the seriousness of the impact. The answers which were given by the learners are indicated in the tables 4.13, 4.14 and 4.15.

In general learners from School A answered these questions well, showing that they had thought about ways to reduce the risk of becoming a victim during a drought. The researcher is of the opinion that this was a fairly difficult exercise which was replicated directly from the grade seven

workbook. Bearing in mind the learners from School A are in grade six, it means that they would not have completed this exercise as part of the school guide pack implementation. With this in mind, the answers which they gave show that they are thinking along the lines of mitigation and preparedness.

TABLE 4.13: Reducing the risk of a disaster occurring when faced with drought

School A (intervention)	School B (intervention)	School C (no intervention)	School D (no intervention)
Crops die: • Make another farm at another place • Reservoir & borehole	Crops die: • Watering them • Looking after them • Plant where they can be safe	Crops die: • Build a dam • Plant in fertile soil	Crops die: • Don't waste water • Save electricity • Move to another place • Don't play with water • Water the dry place
Livestock die: • Go to river • Boreholes • Fetch water with a big tank	Livestock die: • Take them to the river where there is a lot of water	Livestock die: • Make a borehole	Livestock die: • Take animals to the hospital • Move them to another place • Don't waste water • Take them to the river
Land dries out: • Use boreholes • Rain water tank	Land dries out: • ?	Land dries out: • ?	Land dries out: • move to another place
Water restrictions: • Rain water tanks • Make a hole • Pipes from municipality to channel water • Store water in dams	Water restrictions: • Prepare food for them • Grass • Ask for help from other countries	Water restrictions: • ?	Water restrictions: • Go to the river • Dig a hole
High food prices: • Farm • Community Farm • Veggie garden at your house	High food prices: • Plant food for them	High food prices: • Make a cave and plant vegetables	High food prices: • Make a farm • Plant vegetables • Make a garden

Answers given by learners in School A which indicated mitigation included “make another farm at another place”, “boreholes”, “rain water tank”, “veggie garden” and “store water in dams”. These interventions could lead to the lessening or limiting of adverse impacts of a drought. In addition the learners showed signs of being prepared for a drought through their knowledge in giving answers like having “community farms” to reduce the impact of high food prices and “fetching water with a big tank” to ensure that livestock have sufficient water.

The answers provided by School B indicated that these learners did not have a good understanding of prevention and preventative methods. None of the answers given by them were really feasible, particularly in the context of drought. Once again there is evidence that the basic concept of drought was either not taught properly or not explained in a way that the learners could grasp it. All answers provided showed a mindset of response and not one of prevention and mitigation, even evidence of preparedness was lacking.

Learners from School C needed a lot of explaining from the facilitator of the focus group in order to understand what was required from the question. Once they did understand, although brief, the answers that they could provide were feasible and relevant. They said that in order to prevent crops from dying, they should “build a dam” and “plant in fertile soil”. They also suggested drilling a “borehole” in order to have adequate water for livestock to drink from. Further they suggested “planting vegetables” so as to mitigate high food prices. The learners provided answers which showed a good understanding of concepts in disaster risk reduction like prevention and mitigation, even though the school guide pack had not been implemented in the school.

Learners from School D also needed a lot of additional coaching in how to answer this question but then showed a good effort in trying to come up with solutions. The answers from learners in School D indicated that they have a general understanding of the broad concepts in disaster risk reduction, however they battle to give details of specifics. For example when providing answers as to how they could reduce crops from dying in a drought they said “save electricity”, “water the dry place”, “don’t waste water” and “move the crops to another place”. These are not sufficient ways to mitigate drought. When the land dries out, they also suggested moving. In theory one could move and it does solve the problem but in practice is that really an option for everybody to move when there is a drought. These answers show that the learners in School D were aware of what a drought is, however they did not display practical ways of mitigating or preparing for a drought.

TABLE 4.14: Reducing the impact of a flood

School A (intervention)	School B (intervention)	School C (no intervention)	School D (no intervention)
Loss of lives: • Move people who live near river • Let them know about floods so they can move	Loss of lives: • Take them to a safer place • Evacuate	Loss of lives: • Buy a boat • Build an underground house	Loss of lives: • Run away • Take people where there are no floods • Move people from risk
Loss of homes: • Build houses at another place • Make pipes to channel water	Loss of homes: • Did not understand	Loss of homes: • Build strong houses • Build a path so water can flow	Loss of homes: • Move to another place where it is safe • Make new homes • Build centres • Move people to another place • Build a wall where water can cross
Loss of jobs: • Move tuck-shop • Make a farm & sell to another company	Loss of jobs: • Did not understand	Loss of jobs: • Use a path to channel water • Dig a hole for water to go in	Loss of jobs: • Become your own boss • Sell something at school • Make a stokvel • Be skilled • Do things on your own
Loss of possessions: • Cover with plastic • Switch off main electricity board	Loss of possessions: • Did not understand	Loss of possessions: • ?	Loss of possessions: • Need clothes • Tell your teacher about your clothes • Sell something • Buy clothes • Wear anything that will protect your belongings
Infrastructure destroyed: • Build strong houses • Make sure building is strong	Infrastructure destroyed: • They did not understand	Infrastructure destroyed: • Build with many bricks • Build the strongest	Infrastructure destroyed: • ?

The next question the learners were asked to answer was “what precautions could my family take to be safe in a flood?”. They were then given a number of impacts of floods and asked to contextualise it to their own reality. Table 4.14 shows a summary of the answers.

Although these questions were once again fairly in-depth questions for grade seven learners, the grade six’s in School A did remarkably well in attempting the questions. It shows that they took note of and understood the concepts which they learned in the grade five and six workbooks of the school guide pack. There is a lot of evidence of mitigating the effects of a flood in the answers given by the learners in School A. They also indicate developmental interventions which will result in either preventing or mitigating the effects of a flood.

Learners from School B did not understand this question at all, even though they are in grade seven and should have done the exact exercise in class. This provides additional proof that the school guide pack was not sufficiently implemented in School B. They answered one part of the question and it showed response rather than prevention, mitigation or preparedness. Even if the school guide pack had not been properly implemented, learners from School B should have been able to answer this question better than what they did based on prior knowledge which formed part of their school curriculum.

School C learners gave good answers for learners who had not been taught the school guide pack. From the answers which they gave there was evidence of preparedness, and development interventions which would result in mitigating the impact of a flood. Examination of the Revised National Curriculum Statement shows that learners are taught about floods in the foundation phase and in grade seven. In addition they are taught the causes, impact and solutions to environmental issues in Social Sciences in grade 2 as well as the impact of hazards in grade seven. Therefore due to knowledge obtained in the classroom, the learners should have been able to answer this question.

Learners from School D gave answers that were seemingly out of context. The answers were either not possible, idealistic and not realistic or given in completely the wrong context and having nothing to do with reducing the impact of a flood. The learners provided answers based on their experiences, understanding of life and worldview as they know it and did not provide feasible ways to reduce the impact of a flood. There was no indication of awareness, prevention, mitigation, preparedness or even response in their answers. This is possibly an indication that they have not been exposed, as yet, to this paradigm of thinking.

The next question given to learners was to provide ways in which they could prevent a disastrous fire. They were once again given a number of resulting impacts of fire and asked to provide ideas on how to mitigate the impact of a fire. The answers are reflected in Table 4.15.

TABLE 4.15: Reducing the impact of a fire

School A (intervention)	School B (intervention)	School C (no intervention)	School D (no intervention)
Loss of lives: • Call emergency number	Loss of lives: • Call fire engine • Don't let kids play with matches • Don't allow kids to swim at dams • Don't urinate in dams • Don't leave kids unattended • Call fire fighters • Don't play with electricity	Loss of lives: • Safety rules of fire	Loss of lives: • Switch off fire with water • Go down when the house is burning • Call the fire man • Open the windows so that steam can go out • Go to the opposite door to exit • Use the fire spray to extinguish fire
Painful injury: • Move people	Painful injury: • Take to hospital • Call ambulance • First aid kits	Painful injury: • Dropping & rolling on ground	Painful injury: • Go to the hospital • Call ambulance • Get help from community • Make a first aid kit • Get a first aid kit
Loss of homes: • Crush the shack and move the people • Build a proper house	Loss of homes: • Call fire fighters • Re-build • Call police to take statement • Build a grass house	Loss of homes: • Keep fire extinguishers in homes • Water	Loss of homes: • Get help from community • Go to the charity • Go to your neighbour • Don't sleep anywhere • Go to a cave with your clothes • Find a lawyer so he can fight for your house • Go to a social worker

Loss of possessions: • Use water & move people • Enough sand	Loss of possessions: • ?	Loss of possessions: • ?	Loss of possessions: • Find a lawyer • Find plastic to wear • Donate clothes • Tell the community about your problems • Share clothes with community
Loss of livelihood: • Fire extinguisher	Loss of livelihood: • Stop, drop & roll • Share your skills with others so they don't play with fire	Loss of livelihood: • ?	Loss of livelihood: • ?

From this question, it is noticeable that learners in School A indicated that the emergency number is a number they will never forget. Since they are the only learners who constantly referred to the emergency number this must provide substantial evidence to suggest that exposure to the school guide pack played a key role in the learners not only learning, but remembering the emergency number. One could go as far as to say the emergency number is well and truly engraved in their minds. The learners did however struggle to find feasible answers to this question. Perhaps the answers were indicative of the learners getting tired at this point in the focus group, as learners in School C also showed signs of tiredness at this stage in the focus group interview. Answers given were more along the lines of response rather than prevention, mitigation or preparedness. The only answer alluding to mitigation was building a "proper" house. Amongst all the learners there is a strong sense that brick houses are more resilient than shacks against hazards.

It is evident that none of the learners in any of the schools understood the term "livelihood". This is a difficult concept in its own right and it is recommended that future editions of the school guide pack offer practical, fun and simple explanations for the term "livelihood" so that learners understand the basic premise behind it. Although learners in School B did indicate an answer to signify mitigation and prevention and School C had one response linked to preparedness namely "safety rules of fire", the remaining answers across Schools B, C and D were response related and not prevention, mitigation or preparedness. This indicates that there is still work to be done in changing the mindset of learners and educators to one of prevention rather than response.

4.3.8 *Early Warning Systems*

TABLE 4.16: Early warning systems

School A (intervention)	School B (intervention)	School C (no intervention)	School D (no intervention)
Thunderstorm: Yes Watch weather / TV	Thunderstorm: No/Yes Indigenous knowledge Weather focus Satellite	Thunderstorm: Yes Clouds	Thunderstorm: Yes By scientists Weather report
Earthquake: Yes Hear & feel shaking	Earthquake: Yes Ground shaking	Earthquake: Yes Sky turns black	Earthquake: Yes Land will shake Scientists can tell
Volcanic erupt: Yes Smoke	Volcanic erupt: Yes Molten rocks falling	Volcanic erupt: No/Yes Seeing earth crack Underground smoke	Volcanic erupt: Yes See fire Report on TV Poisonous gas Magma will go out
Veld fire: Yes Hot temperatures Brown grass	Veld fire: Yes A lot of smoke	Veld fire: No	Veld fire: Yes Scientist
Flood: No	Flood: Yes Clouds are black	Flood: Yes Tides high	Flood: Yes Water coming
House fire: Yes/No Candle near a curtain	House fire: No	House fire: No	House fire: No
Drought: No	Drought: Yes It's raining for a long time	Drought: Yes No rain & hot	Drought: No
Flash floods: No	Flash floods: ?	Flash floods: No	Flash floods: Yes See water coming to house
Train off rails: No	Train off rails: Yes Watching the news	Train off rails: No	Train off rails: No

The second last question asked in the focus group was pertaining to Early Warning Systems (EWS). The learners were asked if disasters could be predicted. This question was also taken directly out of the grade seven workbook of the school guide pack which means technically only School B should have done the exercise before. The answers are presented in Table 4.16.

The answers to these questions indicated that even though the learners may not have been taught from the school guide pack, either by prior knowledge or through logic, they could conceptualise whether they could be warned or not about a potential disaster. Examination of the Revised National Curriculum Statement does not point to the topic of Early Warning Systems per se, it is a topic which an educator may have discussed with learners in the classroom.

The learners across all the schools gave credible, logical answers and could substantiate their reason for saying yes or no. Learners from School A got all the answers correct except they said that prior warning of a flood or a drought becoming a disaster was not possible. Learners from School B, C and D indicated that one could be warned of a flood coming when “the clouds are black”, the “tides are high” and “water is coming”. Learners from School B and C said that a drought could be predicted if there is no rain for a long time and it is very hot. Learners from School D agreed with learners from School A that a drought could not be predicted.

Learners from School B answered well although they did get a number of questions incorrect. These learners tend to fall back to more response than prevention type answers when they are unsure. They suggested that one could be warned of a train derailing by watching the news. Obviously it would only be on the news after it had happened as it is not possible to know before the time if a train will derail.

Learners from School C also did well but got a few incorrect answers. They said we could not be warned about house fires and veld fires becoming disasters. Learners from School D also did well on this question, only getting 3 questions incorrect, rendering knowledge about Early Warning Systems not limited to whether the school guide pack was implemented or not. There was no evidence from this question that indicated that learners were better off in terms of knowledge about Early Warning Systems from schools which implemented the school guide pack than those which had not.

4.3.9 *Disaster Management – Emergency Evacuation Plan*

The final question of the focus group was designed to determine how well learners could plan an emergency evacuation drill, based on an emergency scenario of their choice, taking place at the school. Learners were given specific instructions on how to go about putting together the emergency evacuation drill and were asked to discuss the scenario in pairs and then to report back to the rest of the group. They wrote down their answers on the back of the posters which they had created earlier and these answers were analysed against the criteria provided to them.

TABLE 4.17: Emergency scenario analysis

	School A (intervention)	School B (intervention)	School C (no intervention)	School D (no intervention)
Calm learners	☑		☑	
Inform office	☑		☑	☑
Evacuation plan	☑		☑	☑
What to take	☑		☑	☑
Windows & doors	☑	☑	☑	
Account for everybody	☑			☑
What to do afterwards	☑		☑	☑
Comments	Sang song	Call emergency number	Did not complete task, ran out of time	

The extent, to which the emergency evacuation plan, containing all the required elements, was drafted, is indicated in Table 4.17. As it is clear to see, learners from School A completed the task in an outstanding manner. They included all the necessary requirements and even enthusiastically sang the song which they learned in the school guide pack. Learners in School B seemed to be unsure as to what was required of them. They only included one of the compulsory items and gave very non-specific answers. One thing in the favour of the learners in School B is that they did include and mention the emergency number, indicating positively that learners in schools which have implemented the school guide pack do know the emergency number.

Although the learners in School C ran out of time and did not complete the task, they managed to include most of the requirements except for ensuring that everyone was accounted for. It is debatable whether they would have managed to complete the task correctly if they had more time. This means that this question in the focus group did not provide conclusive evidence that learners who had been taught from the school guide pack had an advantage over those who had not. Even more perplexing is the poor showing once again from learners in School B. Learners in School D completed the task quite well. They did not cover all the aspects as learners in School A did, but managed to include most things, leaving out only how to calm the learners and aspects relating to windows and doors.

4.3.10 *Analysis of semi-structured questionnaires*

Semi-structured interviews were conducted with educators from the two schools which implemented the school guide pack, namely School A and School B. From the semi-structured interviews the following information is revealed.

Table 4.18: Overall impression of the School Guide Pack

School A (intervention)	School B (intervention)
Very useful	Material is good
The song was the favourite part	Everything runs smoothly
Language was difficult for the learners	Not enough materials for learners
Did not use the CD as the school does not have a CD player	

Table 4.18 indicated the overall impression by educators in terms of the school guide pack. It was unanimously agreed by all educators that the material is good and very useful. Educators in Schools A and B noted that the song was the favourite part for the learners, which was proved during the focus group interviews when the learners from School A sang the song. Educators from both schools advised that it was not possible for them to play the CD or watch the DVD due to either resource constraints or lack of electricity. Educators from both schools agreed that the school guide pack was easy to integrate into the current school curriculum and learning areas. The educators also indicated that instructions and guidance in the Educators Guide was adequate.

Educators from School B noted that learners struggled with the section on fire, although they did not go into specific details as to the exact areas of difficulty. According to the educators, none of the sections of the school guide pack were left out due to it being too difficult for the learners or for the educators to understand. As per Table 4.19, both schools agreed that the best part of the material was the song, followed by the workbooks, then the Riskland game and finally the CD/DVD because they were unable to use them.

Table 4.19: Sections in the School Guide Pack enjoyed the most by learners

School A (intervention)	School B (intervention)
1. The Song	1. The Song
2. The exercise books	2. The exercise books
3. The Riskland Game	3. The Riskland Game
4. Crossword puzzles	
5. Emergency situation exercises	
6. Contact numbers	
Not able to watch DVD or play CD as there is no resources to play them on	Not able to watch DVD or play CD as there is no electricity

The educators were asked to make recommendations for future editions of the school guide pack. Educators from School B asked for simpler language to be used and perhaps more integration with the subject Life Orientation. From the focus group interviews it was apparent that language and perhaps the technical level of the school guide pack might have caused learners to battle in grasping some of the concepts. Educators from School A asked for more information to be included on fire and paraffin safety, shack fires and various real life situations and scenarios.

This request seems necessary, as results from the focus groups indicate that learners were not able to sufficiently contextualise disaster risk reduction into their own reality. The educators also asked for real life scenarios to be included on a DVD as well as in a textbook. The educators from School A further requested more communication between the developers of the material and the officials at the Department of Education be scheduled. This will ensure that sections in the school guide pack that are in the school syllabus are not unnecessarily repeated.

Educators from both schools found the school guide pack to be an effective method of teaching about disaster risk reduction. They said it was easy to use, well written and was presented in a format which made it easy for them to teach about disaster risk reduction. However, it should be noted that some of the educators still refer to disaster risk reduction and disaster risk management as 'disaster management'. When asked how the school guide pack integrated into the current curriculum, educators from School A said that disaster reduction only appeared in the assessment standards and not in the curriculum thus the guide pack was very useful to bridge the gap.

However educators in School B said that natural hazards, earthquakes and floods were covered in the curriculum, which would explain some of the answers given by learners at schools which had not yet implemented the school guide pack, and that there were some overlaps between the current curriculum and the school guide pack. These educators also felt that there were no gaps or important sections that should be taught to learners, missing from the school guide pack.

According to the educators interviewed, learning areas in which the school guide pack was included by them were Life Orientation, Social Science and Natural Science. When asked how the guide pack was practically included into lessons, educators from School A said they used the school guide pack as it is, made additional copies and added additional questions relating to current affairs. Educators from School B said they added charts and pictures to the material to help learners understand the work better. Further research could be conducted as to what charts and pictures they used as the learners from School B did not seem to have grasped the concepts in the school guide pack very well.

It was unanimously agreed by the educators that the school guide pack would contribute to disaster risk reduction in South Africa as learners would be the catalysts for influencing their parents and wider community. This view is concurred by the findings of Wachtendorf *et al*. (2008), Mitchell *et al.* (2008), Peek (2008) and Martin (2011). Educators from both schools asked for additional materials as photocopying was expensive and not always possible. Educators from School B asked for training workshops to be held more frequently. Perhaps this is the key as to why the school guide pack was not implemented as well as it might be at School B due to the educators not feeling confident enough in teaching it. The educators in School B also felt that learners needed to be made more aware of disaster risk reduction.

4.4 EMERGING THEMES, TENDENCIES AND PATTERNS

Themes, tendencies and patterns which have emerged from the empirical research will now be discussed.

4.4.1 ***Awareness***

Public awareness is defined by the International Strategy for Disaster Reduction (ISDR, 2011(a)) as "*the extent of common knowledge about disaster risks, the factors that lead to disasters and the actions that can be taken, individually and collectively, to reduce exposure and vulnerability to hazards*". From the commencement of the focus group interview and the explanation to learners of the purpose of the research, to the first question asked in the focus groups, there was overwhelming evidence of existing awareness about disaster risk reduction, for example knowledge or a preconceived perception about disaster risk, factors that lead to disasters and action which can be taken to mitigate the impact of hazards.

Learners from School A exhibited the most tangible levels of disaster awareness as they very easily and confidently answered questions related to disaster risk reduction. It can be deduced that heightened awareness regarding disaster risk reduction was exhibited amongst learners in School B after being exposed to the school guide pack. The awareness levels of learners from School B were at least somewhat more honed than those of learners in School D. Although learners from School D were aware of disaster risk reduction, their awareness and knowledge was very broad and non-specific as was displayed in the answers which they gave in the focus group interviews. Learners from School C displayed above average awareness of disaster risk reduction. This will be discussed further in section 4.5.2 as this fact emerged as an unexpected finding.

Educators interviewed in the semi-structured interviews displayed a keen awareness of disaster risk reduction. Further research is required to compare this awareness with educators who have not been exposed to the school guide pack. It would be interesting to analyse and compare how much awareness is created through the assessment standards of the school curriculum and whether the school guide pack creates greater levels of awareness amongst educators.

4.4.2 ***Prevention***

The International Strategy for Disaster Reduction (ISDR, 2009(a):22) defines prevention as the "*The outright avoidance of adverse impacts of hazards and related disasters*". From the answers given from learners in School A there was evidence that there is a mindset of prevention starting to form in the learners. Some of the answers which they gave showed that if they were implemented

the undesirable impacts of a hazard could most certainly be avoided. School B displayed much less of a preventative mind set although there were incidences when it did come to the fore which is encouraging. However there is not enough evidence to determine whether the school guide pack influenced this preventative mind set in learners from School B or if it was established from the formal school curriculum.

Learners from School C did show some evidence of a preventative mind set when answering the questions and doing the exercises, however they seemed to show more knowledge about disasters and hazards than how to prevent the impact of them. Evidence of this preventative mindset was found in the answers which they provided to the question, "what should we share?". These learners said that you should share "how to prevent floods" and "stop building houses near the river". The learners from School C were strong in answering questions on how to prevent floods from occurring but they did not understand the question asking them what they had learned about reducing disasters.

Answers given by learners from School D in specific response to preventative measures were unrealistic, idealistic and not really feasible. The answers from learners at School D were in stark contrast to learners in School A. This offers an indication that implementation of the school guide pack creates a mindset of prevention and changes the way people think about disasters. More in-depth research is necessary but there are early indications that the school guide pack is having a positive effect on learners and the way they view disaster risk reduction.

4.4.3 ***Mitigation***

According to the International Strategy for Disaster Reduction (ISDR, 2009(a):19), mitigation is defined as "*the lessening or limitation of the adverse impacts of hazards and related disasters*". The researcher is of the opinion that mitigation is a relatively difficult term for primary school learners to grasp, but was suitably impressed with some of the answers provided in the focus group interviews. Whether it was conscious or not, learners gave answers in the focus group which could have a mitigating effect on the impact of hazards if they were to be implemented. Answers relating to mitigation were not necessarily limited to the schools which had implemented the school guide pack but emerged across all schools. From the answers given in the focus group, it would appear that the concept of mitigating the impact of a disaster is being taught to children across primary schools in South Africa.

4.4.4 ***Preparedness***

According to the International Strategy for Disaster Reduction (ISDR, 2009(a):9), preparedness is "*The knowledge and capacities developed by governments, professional response and recovery organisations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions*". In terms of disaster risk reduction knowledge and capacity building, from the outcomes of the focus group interviews, it is safe to say that there is a measure of this occurring throughout primary schools in South Africa as was indicated in the results of the focus groups. The current school curricula does cover aspects of disaster risk reduction; and interventions such as the school guide pack positively add to the learners' knowledge.

The focus groups revealed that learners have a basic understanding of how to anticipate, and to a lesser degree, respond to and recover from disasters. The learners also exhibit a basic perception of the impacts of likely hazard events and how these events could be predicted through early warning systems. It is the researchers' opinion that further consultation and collaboration should occur between Disaster Risk Practioners and the Department of Education in order to ensure that the necessary aspects of disaster risk reduction are covered in the assessment criteria. These aspects should be relevant enough to allow learners to practice what they have learnt within their own homes and communities.

4.4.5 ***Response***

According to the International Strategy for Disaster Reduction (ISDR, 2009(a):10), response is "*The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected*". In terms of an emerging theme, response is perhaps not typically associated with children. One would not imagine children being first responders after a disaster but the focus group interview revealed that learners did have the basic knowledge in knowing how to respond to a disaster and that was to phone the emergency number. They also indicated that they knew how to respond should a fire break out in their house. These responses were not limited to School A and B, but were exhibited across all four of the schools. From interacting with the learners in the focus group interviews they seem to know how to respond to something which they consider to be a disaster.

4.4.6 *Developmental interventions*

Another theme which emerged during the focus group interviews was that there is a belief by the learners that building something can stop an undesirable event from occurring. Interestingly, the object of what to build did not emerge as strongly as the need just to build something in order to mitigate the effects of a disaster. The idea of rebuilding in a different way after a disaster was not evident from the answers given in the focus group. This is perhaps an aspect that could be highlighted in future editions of the school guide pack. Learners also perceive that shacks don't get as much damage as houses. It would seem that the learners are able to discern that people living in shacks are more vulnerable than those living in houses, even if they are not consciously aware of it.

4.5 UNEXPECTED FINDINGS

During the course of the research, a number of unexpected findings emerged and they will briefly be discussed here.

4.5.1 *Apparent lack of implementation of the guide pack at School B*

Both the researcher and the co-observers were very surprised at how poorly the learners from School B performed in the focus group interviews. School B had supposedly been taught out of the school guide pack. The researcher hoped to glean additional information as to the sub-par performance of the learners, from the semi-structured interviews conducted with the educators from School B. However there was inconclusive evidence obtained from the semi-structured interviews and further research is necessary.

The only piece of information which may provide a clue to the under performance by the learners is that the educators of School B stated that they would prefer additional and more frequent training on disaster risk reduction and the guide pack. This issue will be addressed in the recommendations. Although not specifically stated by the educators at School B, it would appear that they were not confident in teaching the school guide pack and this lack of confidence rubbed off on the learners.

Further research is also necessary to discount social and emotional setbacks or difficulties experienced by the learners. The implication of this finding is that it hinders a complete and balanced comparison of schools who implemented the school guide pack compared to those schools that did not. If the school guide pack was not correctly implemented in School B as is suspected, then it becomes difficult to make an appropriate comparison with School's C and D.

4.5.2 *Superior knowledge by learners at School C*

Almost equally as surprising was the excellent performance by the learners at School C. Although they had never seen the school guide pack before and the school has not implemented the school guide pack, they gave very well thought out answers. The learners from School C were neat, enthusiastic, well-behaved and a pleasure to have in the focus group. Their insight into disaster risk reduction was surprisingly good. As in the previous section, the implications of this finding also make it difficult to make a thorough analysis of School's A and B compared to School's C and D and further to indisputably prove that the school guide pack is the only resource providing knowledge of disaster risk reduction to learners. From analysing the Revised National Curriculum Statement topics within disaster risk reduction do receive attention within the public schooling system in South Africa.

4.5.3 *Very emotional answers by learners at School D*

Another surprising outcome discovered from the focus group interviews was the emotional undertones which emerged from the answers given from the learners in School D. Further research is necessary to determine why this is the case and if it is having a negative effect on the learners' academic performance. Additional research will also assist in determining influences on learners' academic performance such as the impact of the geographic location of the school, the consequences and reality of child-headed homes and general unsafe conditions, underlying social pressures and root causes of vulnerability in the community.

4.6 CONCLUSION

This chapter has provided a comprehensive narrative of the findings which emerged from the empirical research. From the findings it can be proven that the school guide pack does create awareness about disaster risk reduction amongst primary school learners and educators. Further the research findings show that the school guide pack is a suitable tool for teaching learners the emergency number. Early findings indicate that, in most cases, learners who used the school guide pack did have a deeper understanding of the context of disaster risk reduction; and it would appear that they were able to contextualise disaster risk reduction into their own sphere of influence and community. However, some learners in schools which had not implemented the school guide pack also showed a good, broad understanding of disaster risk reduction which they would have obtained from the formal school curriculum. This highlights the fact that there are other sources besides the school guide pack providing learners with knowledge of disaster risk reduction, the key source being the school curricula.

Findings, therefore, are not conclusive that the school guide pack is the exclusive provider of disaster risk reduction knowledge in the form of awareness, prevention, mitigation, preparedness and response. There are other sources, namely the current school curricula and indigenous knowledge which has been passed down from one generation to the next. Learners from School A seemed to have the most in-depth knowledge of disaster risk reduction although learners from a school which had not implemented the school guide pack, School C, also showed sound depth of knowledge in disaster risk reduction.

The findings thus conclude that although there are many benefits to implementing a campaign such as the educational programme for primary schools, there are other sources which are also adding to the disaster risk reduction knowledge of learners. If all these efforts were synergised, it might go a long way towards achieving sustainable, disaster risk reduction and resilient communities. Interventions such as the school guide pack present a unique opportunity to supplement as well as further contextualise disaster risk reduction knowledge that is already being taught in schools, within a wider disaster risk reduction campaign aimed at building resilience and capacity within the Metropolitan Municipality. The next chapter will provide recommendations for developing future editions of the school guide pack as well as highlighting areas of possible future research.

CHAPTER 5:
RECOMMENDATIONS AND CONCLUSIONS

5.1 INTRODUCTION

The primary intention of this research was to conduct a critical analysis of the disaster risk reduction educational programme (school guide pack) for primary schools in the City of Tshwane Metropolitan Municipality. The investigation will serve as a platform to guide future interventions as well as to provide developers of comparable disaster risk reduction educational materials a broad framework to consider when developing the material.

Nine objectives guided this research, first the ethos and fundamental nature behind disaster risk reduction was discussed as part of a literature review in order to gain a better understanding of the concept. Secondly, South African legislative requirements were investigated to determine what is required in terms of disaster risk reduction in primary schools. Thirdly, this research compiled a list of disaster risk reduction educational material developed for schools across the globe in an attempt to determine main pitfalls and good practice experienced. Fourthly, this aspect is largely addressed in this chapter, this research attempted to determine what content, components and other practices should ideally be included in a disaster risk reduction educational material in order for it to be an effective method of disaster risk reduction and mitigation.

Fifthly this research aimed at determining the focus of the school guide pack in terms of awareness, prevention, mitigation, preparedness and response. Sixthly, it was the aim of this research to ascertain how well the school guide pack integrated with the current outcomes-based education system currently implemented in the Republic of South Africa (RSA). The seventh objective of the research was to establish the current curriculum criteria for disaster risk reduction in the Republic of South Africa (RSA). The eighth objective was to determine how and in which learning areas the City of Tshwane Metropolitan Municipality School Guide Pack is being implemented and the last objective was to compare the knowledge of learners with respect to disaster risk reduction in schools that implemented the City of Tshwane Metropolitan Municipality School's Guide Pack with schools that did not. These objectives were achieved through a combination of a literature review, focus groups and in-depth interviews and will be discussed in more detail in this chapter.

This chapter will also provide a summary of the objectives of this research and how they have been achieved, a summary of key findings as well as unexpected findings which emerged as a result of

the research. Finally recommendations will be made which might be useful for future primary school disaster risk reduction interventions.

5.2 ACHIEVEMENT OF OBJECTIVES

The nine objectives of this study will be summarised in order to ensure that the goals of this research have been achieved.

5.2.1 *Objective 1 – To gain an understanding of disaster risk reduction as a concept*

Part of the aim of the literature review was to enable the reader to gain a better understanding of disaster risk reduction as a concept. The findings from the literature review reveal that disaster risk reduction, as a concept, is an outcome of systematic, multi-functional (ISDR, 2009(a); Jeggle, 2005) disaster risk management. In order to adequately manage disaster risk, conditions of vulnerability (ISDR, 2009(c); Wisner *et al*, 2004; Jeggle, 2005) and exposure to hazards (ISDR, 2009(c); Wisner *et al*, 2004; Jeggle, 2005) must be addressed. This can be achieved by building and increasing capacity (Schipper and Pelling, 2006) and resilience (Pelling and Wisner, 2009) of people through preparedness (ISDR, 2009(c); Schipper and Pelling, 2006; Taylor and La Trobe, 2006; Van Riet, 2009) mitigation (Schipper and Pelling, 2006; Taylor and La Trobe, 2006; Van Riet, 2009) and sound environmental management (ISDR, 2004(a)) all combined in a framework of effective and enabling policy (UNDP, 2005; Pelling and Wisner, 2009; Holloway, 2003).

5.2.2 *Objective 2 – South African legislative requirements in terms of disaster risk reduction education in primary schools*

The Disaster Management Act 57 of 2002 makes a contribution to addressing the issue of disaster risk reduction education in schools and is referenced in a number of areas within the Act (South Africa, 2003: 14, 18, 32, 44). In addition, the National Disaster Management Framework (South Africa, 2005:90) indicates that disaster risk reduction education should be incorporated into school subjects which cover the topics relating to development and the environment; and provides key performance indicators for this process (South Africa, 2005:91). The National Disaster Management Framework (South Africa, 2005:90) states that disaster risk reduction education must be designed as part of the formal primary, secondary and tertiary curricula.

5.2.3 *Objective 3 – Identification of disaster risk reduction educational materials developed around the world*

PreventionWeb (2011(x)) has 424 disaster risk reduction educational materials developed for children listed on its database, of those 134 were developed in English. The disaster risk reduction educational materials developed in English were examined according to seven criteria in order to identify if similar material to the school guide pack has already been developed. The material was further divided into material developed globally, material developed for African countries and material produced specifically for South Africa.

The desktop study revealed that a variety of different formats of disaster risk educational material have been developed and used in quite a number of different settings and in many different countries. Some have been stand alone material, others have been used in conjunction with current primary school curricula and still others have been used to shape the writing and development of primary school curricula dealing with disaster risk reduction.

5.2.4 *Objective 4 – Determining content, components and other practices that should be included in disaster risk reduction educational material*

The sample of disaster risk reduction educational material for primary school children was analysed according to the content, components and where possible, data was gathered to determine pitfalls and lessons learned. In most cases there was no information available to ascertain the pitfalls and lessons learned. However the content and components comprising the material was listed.

5.2.5 *Objective 5 – Determining focus of current school guide pack in terms of awareness, prevention, mitigation, preparedness and response*

During the analysis of the focus group interviews the researcher looked for evidence of disaster risk reduction knowledge coming forth from the learners in terms of awareness, prevention, mitigation, preparedness and response. The content of the school guide pack was also analysed so as to understand the focus of the material in terms of awareness, prevention, mitigation, preparedness and response.

5.2.6 *Objective 6 – The school guide packs integration with the current school curriculum*

A question was incorporated into the semi-structured interviews of the educators to find out how the school guide pack integrated with the current school curriculum. Educators in both School A and School B concurred that the school guide pack did integrate with the current school curriculum and

was a helpful tool in assisting them to address the assessment standards stipulated in the Revised National Curriculum Statement.

5.2.7 *Objective 7 – Determining the current curriculum criteria for disaster risk reduction education in the Republic of South Africa*

This objective was also addressed in the semi-structured interviews carried out with the educators. The educators confirmed that disaster risk reduction is a requirement in the current national assessment standards. The new Curriculum Assessment Policy Statements (CAPS) have not been examined but will have implications for disaster risk reduction education requirements in the future.

5.2.8 *Objective 8 – To determine how and in which learning areas the City of Tshwane Metropolitan Municipality School's Guide Pack is being implemented*

Once again objective 8 was dealt with in the semi-structured interviews where educators were asked how and in which learning areas the school guide pack was implemented. The educators confirmed that the school guide pack was easily and seamlessly integrated into the learning areas of Life Orientation, Social Science and Natural Science.

5.2.9 *Objective 9 - To compare knowledge of learners with respect to disaster risk reduction in schools that implemented the City of Tshwane Metropolitan Municipality School's Guide Pack with schools that did not*

The focus group interviews were the primary source for comparing disaster risk reduction knowledge of learners in schools that implemented the school guide pack compared to those learners who had not experienced the school guide pack.

The findings showed that the school guide pack does create awareness about disaster risk reduction amongst primary school learners and educators. Findings indicate that learners who used the school guide pack did have a deeper understanding of the context of disaster risk reduction; and it would seem that they were able to contextualise disaster risk reduction into their own sphere of influence and community better than those learners who had not been through the school guide pack. However the school guide pack is not the only source providing learners with knowledge of disaster risk reduction.

5.3 KEY FINDINGS

A number of key findings came to the fore during this research and they will now be summarised. There is evidence that the school guide pack intervention instilled confidence in the learners about their knowledge of disaster risk reduction. For example, learners who completed the school guide pack provided more specific and contextualised answers and were forthright and uninhibited when providing the answers.

Findings from the focus group interviews revealed that the song featured in the school guide pack was well received and an aspect thoroughly enjoyed by the learners across all the schools which implemented the school guide pack. In addition learners who had been taught from the school guide pack had a good understanding that they should specifically be aware of risks and hazards. This knowledge was reiterated by the lyrics of the song.

Learners who had been taught from the school guide pack had the knowledge that to be prepared they need to tell the community how to be safe, to tell their friends to be aware of risks and hazards and to know the emergency number. Learners in schools where the school guide pack was implemented all knew their local emergency number.

5.4 UNEXPECTED FINDINGS

A number of unexpected findings surfaced during the empirical research. The first one was that there seemed to be evidence that School B had struggled with the implementation of the school guide pack. There may also have been underlying social, emotional or academic factors which exist and therefore hindered the learning process of the learners. School B was a school, which for all intents and purposes, had implemented the school guide pack. However this fact did not reflect in the focus group interviews.

Another unexpected finding to surface was that learners in School C displayed a good understanding of disaster risk reduction, even though the school guide pack had not been implemented by the school. They were able to provide well thought out and practical answers to the questions in the focus group. It was however evident that the learners intimate, contextual knowledge of disaster risk reduction was not as strong as what the learners in School A exhibited.

A third unexpected finding to emerge as a result of the focus group interviews was that learners from School D displayed strong, underlying emotions. This was evident as many of their answers used emotive wording such as “problems”, “secrets”, “danger”, “dirty things”, “gangsters” and “violence”. Further research is necessary in order to better understand the environment in which these learners have been raised.

These findings were deemed unexpected as the researcher was expecting School B learners to have a better understanding of disaster risk reduction than School C learners. However this was not the case. In addition, the researcher did not anticipate the emotional answers given by learners in School D and immediately detected that possible social and emotional conditions were challenging for these learners.

5.5 RECOMMENDATIONS

After conducting a literature review on already developed disaster risk reduction material for primary school children and having conducted empirical research a number of recommendations can be made to improve future editions of the school guide pack as well as for future disaster risk reduction interventions for primary schools.

5.5.1 *Emergency number*

From the empirical research it is very clear that the correct emergency number must be included in future editions of the guide pack or any disaster risk reduction material developed for primary school learners. Currently the emergency number in the guide pack is 10111. The number 10111 is the emergency number for the South African Police Services. Although this is an emergency number, the emergency numbers differ from province to province and region to region. It may be good practice to include a set of general emergency numbers in the material and then develop an exercise whereby learners research the emergency numbers in their geographical location. An exercise of this nature was included in the guide pack, however the researcher feels that additional numbers should be included and not limited to the numbers indicated in the guide pack. The City of Tshwane has, for example, an entire page on their website dedicated to numbers which can be contacted in case of specific emergencies.

5.5.2 *Definitions*

It is strongly recommended that definitions used in disaster risk reduction educational material be standardised as how it is defined has an impact on its entire application and use of the words. It is critical to work towards standardisation in the field of disaster risk reduction in all areas and levels.

Using the United Nations International Strategy for Disaster Reduction (2011) 2009 terminology would be a good point of departure as a lot of work has gone into the refinement of these definitions.

In addition, it is recommended that during the development and writing of disaster risk reduction educational material, attention is placed on expounding the definitions and providing practical, contextual examples in order to assist the learner in grasping the concept and creating personal meaning for him/herself. This practice should also be carried out with any material developed for educators in order to provide clear, unambiguous definitions of terminology.

5.5.3 *Monitoring and evaluation of school interventions*

It is recommended that there should be an ongoing monitoring and evaluation programme set up for the schools which purchase and implement the school guide pack or similar disaster risk reduction educational material. In order for interventions to have any meaningful impact on disaster risk reduction efforts, it is critical for monitoring and evaluation techniques to be executed in order to ascertain how well the school guide pack or any other disaster risk reduction initiative is being implemented. This will also assist private or public sectors donors in monitoring specific funding projects.

5.5.4 *Ongoing support for schools that have begun an intervention*

In addition to a monitoring and evaluation programme, it is recommended that there be ongoing support for primary schools which have implemented the school guide pack or a similar intervention. It is not recommended that a once off training session for educators be conducted at the beginning of the intervention and thereafter schools and educators are left to their own discretion to implement or not. Ongoing support will capacitate educators so that they feel enthusiastic about teaching disaster risk reduction to learners.

It is recommended that the support be conducted as follows:

- Regular training sessions for educators throughout the life span of the intervention;
- Hands-on lessons demonstrating how the work should be implemented and taught. This should be done either physically in the classroom setting or on a DVD or YouTube. The DVD or YouTube option is not feasible for schools in peri-urban areas where facilities are not equipped for using this kind of technology;
- Additional reading material and resources on disaster risk reduction made available for educators; and

- Disaster management officials should visit the school on an ongoing basis to answer questions or provide additional input into disaster risk reduction matters.

5.5.5 *Level of technical detail in disaster risk reduction educational material*

It is the recommendation of the researcher that developers of disaster risk reduction educational material should be keenly aware of not pitching the material above the level and ability of the learners. Disaster risk reduction has numerous technical terms associated with it and these should only be introduced once the learners have grasped the basic terms and the basic concepts. As the material is written in the 2nd language of the majority on learners, it makes this point even more salient. If the technical difficulty of the material is at such a level that it becomes hard for the learners to grasp, then they will become de-motivated and demoralised. They may even develop a negative mindset towards disaster risk reduction.

5.5.6 *Incentivising of educators*

From the research conducted it is evident that without enthusiastic buy-in from the educators, a disaster risk reduction intervention such as the school guide pack will merely result in fruitless and wasteful expenditure. To this end there needs to be mechanisms put in place to incentivise the educators and secure their buy in from the onset so that effective implementation is ensured.

The researcher proposes the following incentives to encourage educator buy in:

- Run a competition where a prize is offered to the educator that comes up with a disaster risk reducing activity, carried out by the learners and implemented in the community;
- Provide educators with more comprehensive training as follows:
    - Have training sessions throughout the course of the intervention, breaking up the sections of work into manageable pieces of information;
    - In the training sessions, role-play how the school guide pack should be implemented and taught;
    - Get a facilitator to spend time in the classroom with the educator to guide them and assist with clarifying more technical issues and answering any questions which may arise;
    - Have a DVD produced which can be viewed during the training. This DVD should show how the school guide pack should be presented in class;
    - Provide examples of lesson plans so that educators can use them as a template;
    - Provide step-by-step training in drawing up lesson plans;

- Encourage educators to do additional research in the library and on the internet. Provide practical examples of how they can do this;
- Let educators know that they should spend extra time assisting learners who do not understand the concepts in the school guide pack by providing additional notes or information;
- Help them to get excited about the subject of disaster risk reduction and cast the vision on how their contribution can make a difference in reducing disaster risk within their communities;
- Close collaboration with the Department of Education to ensure sufficient alignment with curricula; and
- The school guide pack should be linked, if possible, to assessment standards to ensure effective implementation and application.

5.5.7 *Further research*

From the research conducted a number of areas for further research emerged. These will briefly be discussed.

5.5.7.1 *Source of disaster risk reduction knowledge*

The researcher is of the opinion that it would be extremely helpful to conduct more in-depth research in order to establish the source of the disaster risk reduction knowledge that the learners who participated in the focus groups displayed. This research will ensure that any disaster risk reduction material developed is covering gaps in the school syllabus or indigenous knowledge and not repeating aspects of disaster risk reduction that is already well known by learners. This research would also identify whether the focus of knowledge is on disaster risk reduction or disaster response.

5.5.7.2 *Teaching methods and combining disaster risk reduction knowledge*

More research is necessary in order to understand the best teaching methods to use in order to make the knowledge about disaster risk reduction stick in the minds of the learners. It is further recommended that the developer of the material consults with educators, the Department of Education and a disaster risk reduction practitioner to ensure that the material is relevant and applicable to its target audience.

5.5.7.3 *Disaster risk reduction topics covered in the primary school curriculum*

The researcher believes that a desktop study of the exact nature and content of disaster risk reduction topics currently included in the national assessment standards and primary school curricula is carried out. Analysis of the Curriculum Assessment Policy Statements (CAPS) should also be examined as this is due to replace the current subject and learning area statements, learning programme guidelines and subject assessment guidelines (DOE:2011).

5.5.7.4 *Implementation methods by primary schools*

Additional research should be conducted in order to quantify specific areas that hinder correct implementation of a disaster risk reduction intervention such as the school guide pack. Obstacles to implementation should be identified and addressed in order to facilitate complete implementation in future interventions.

5.5.8 *Provide more information about floods and flooding*

Analysis of the findings of the research conducted provided early indication that the section on floods and flooding was not clearly understood by the learners. It is recommended that the school guide pack contain more information about floods and flooding as well as additional exercises on the topic. This will ensure a greater level of comprehension by the learners and assist them in coming to grips with the content.

5.5.9 *Unambiguous questions and exercises*

It is further recommended that careful attention is paid to the questions, exercises and activities given to the learners to complete. It is imperative that they are unambiguous and easy to understand. If not, the outcomes can cause confusion amongst learners and inadvertently teach them incorrect information and procedures.

5.5.10 *Teach learners how to prepare*

The empirical research revealed that although learners are aware that they must prepare, it is not clear how they prepare. The researcher recommends that in future editions of the school guide pack, particular attention is placed on exactly how to prepare and what the learners can do to prepare. The guidelines should be contextual and specific.

5.5.11 *More specific, relevant, contextual examples of topics provided in materials*

It is further recommended that the school guide pack or any disaster risk reduction educational material contain many very specific, relevant and contextual examples of the topics discussed in the material. This will make it easier for learners to internalise the knowledge, instead of seeing it as irrelevant and only occurring in distant places and therefore it does not affect them. If learners can truly understand that disaster risk reduction is something that everyone must contribute to and own, there is a higher likelihood that they will participate more willingly in the learning process.

5.5.12 *Supplementary activities and exercises*

The current school guide pack contained supplementary activities and exercises. It is a good idea to have additional activities and exercises that educators can use in the classroom. The researcher recommends that the school guide pack should provide exact instructions on how and when to use the supplementary activities and exercises. To make it even easier to implement, worksheets could be developed and included at the back of the educators guide. Educators are then able to simply make photocopies of the worksheets and use them in the classroom.

5.5.13 *Strong emphasis on "prevention" and "disaster risk reduction"*

It is furthermore recommended that disaster risk reduction educational material and future editions of the school guide pack have a strong emphasis on "prevention" and "disaster risk reduction" as overarching and underlying themes. There should also be very practical exercises and examples to very accurately display the meaning of these words as well as the benefits of promoting a mindset of resilience, prevention and mitigation.

5.5.14 *Material should differentiate clearly between a "disaster" and a "hazard"*

Further editions of the school guide pack should very clearly and intentionally show the difference between a hazard and a disaster. The empirical research indicated that these terms are sometimes used interchangeable and the relationship between them is not adequately understood.

5.5.15 *Include exercises which facilitate community involvement*

The researcher recommends that future editions of the school guide pack or any disaster risk reduction material developed for primary school children should include exercises which involves the community. This will be an excellent way to bring disaster risk reduction activities and methods into a community. The exercises should be simple, fun and teach disaster risk reduction, almost on a subconscious level so that disaster risk reduction becomes part of the very fabric of the

community. This subtle method should hopefully eradicate resistance to forced or unwanted learning.

5.5.16 *Get corporate funding to pay for additional materials*

During the semi-structured interviews with the educators a common complaint came to the fore and that was that schools did not have budget to implement these interventions as they would like. It is understood that should a municipality take responsibility for assisting the school with a "starter pack" by providing them with a certain number of materials, it is up to the schools to purchase additional materials for the additional learners. In order to solve this problem, it is recommended that donor funding be sourced and a private-public partnership formed between the municipality, the school and the donor.

5.5.17 *Write a textbook on disaster risk reduction for primary school children*

Another issue that emerged strongly from the semi-structured interviews with educators was the need for a disaster risk reduction textbook for primary school learners. It is the recommendation of the researcher that a textbook of this nature be developed and distributed with the school guide pack or disaster risk reduction educational material as an additional resource for educators. The textbook should be relevant to the context of South Africa with specific reference to the disaster risks associated with Southern Africa.

The disaster risk reduction textbook should be informative, fun and interactive. Ideally it should be suitable for learners in grade one to seven, so that additional expense is not spent on purchasing textbooks for various grades. A further recommendation is that interactive material is provided with the textbook, however this should not in any way substitute the information provided in the textbook, as it must be kept in mind that many schools in South Africa do not have the technology, computers or DVD players to use the interactive material. Examples of interactive material would be a DVD containing general scenarios of various types of hazards and case studies of how people in the community have used creative ideas to reduce their disaster risk. Computer games are also recommended and there is wide scope to produce educational computer games to teach about disaster risk reduction.

5.5.18 *Towards an integrated approach*

It is further recommended that an integrated approach be followed when implementing such interventions. It is imperative that material developers, the Department of Education, municipalities and schools work together to ensure maximum effectiveness in development, implementation and

effectiveness of interventions such as the school guide pack. The material should provide exercises that allow learners to investigate and identify the disaster risk priorities in the community and to come up with ways of reducing the risk. Exercises should also include ways in which to identify vulnerable areas within the community and allow the learners to come up with solutions that would lower the overall vulnerability.

5.6 CONCLUSION

This chapter described the achievement of the nine objectives set at the onset of this research. In addition key findings as well as unexpected findings were summarised. Thereafter recommendations for further editions of the school guide pack or development of similar disaster risk reduction educational material were made and finally suggested areas for future research.

In conclusion it can be stated that the implementation of the City of Tshwane Metropolitan Municipality (CoT) primary schools programme was an effective tool for raising awareness about disaster risk reduction as well as teaching the emergency number to the learners. The evidence is not conclusive that the programme on its own is an effective tool for reducing disaster risk in the City of Tshwane. However if the disaster risk reduction primary school programme was combined with a well planned, Metropolitan wide, disaster risk reduction campaign which incorporated all spheres of the community, there is a much greater likelihood that disaster risk reduction would be achieved.

The South African disaster management legislation requires that disaster risk reduction education form part of the school curricula and findings from the empirical research as well as the literature review indicate that strong evidence of this. As of 2012, certain grades will be implementing the new National Curriculum and Assessment Policy Statement (CAPS). Further investigation is required to determine the extent to which disaster risk reduction is covered in the new policy statement.

In this chapter recommendations were made as to what content and components should ideally be included in disaster risk reduction material in order for it to be an effective method of disaster risk reduction and mitigation. Further to these recommendations findings from the literature review as well as the empirical research indicate that in order to achieve maximum effectiveness, a disaster risk reduction educational programme aimed at children must show them how to contextualise the risks and hazards which they face. In addition great effectiveness is achieved if the children act as

conduits for the information and it spreads not only to their households but to the broader community. This will assist in building resilient communities and reducing disaster risk.

ANNEXURE 1 TO CHAPTER 3

7 August 2011

Dear Principal,

Permission to conduct research in your school

I am completing my **Masters degree in Management and Development** at the North-West University in Potchefstroom. Part of my research entails determining whether extra curriculum in disaster risk reduction which was implemented in certain primary schools, by the City of Tshwane Metropolitan Municipality, has had a positive effect in reducing disaster risk within the Tshwane Metropolitan area.

I would like to request your permission to conduct my field work in your school. This would consist of the following:

- 1 x 60 minute focus group with 4 x grade 7 boys and 4 x grade 7 girls; and
- 1 x 30 minute interview of the Educators who taught the grade 5, 6 and 7 School Guide Pack.

Your school would benefit by participating in this study in that the outcome of the study will allow us to determine what kind of additional curriculum could be developed in order to further reduce disaster risk in your area. Disaster risk management is everybody's business and knowledge saves lives, your school's participation in this study will allow for more refined curriculum to be developed and used in schools throughout the Tshwane Metropolitan Municipality and South Africa.

Please note that audio recording will take place during the focus group interviews. Audio recording is necessary so that the focus group interviews can be accurately transcribed for purposes of coding the data and quantifying results.

A separate consent form is also attached, which must be completed by the parents of the children participating in the focus group. Please select 4 x grade 7 boys and 4 x grade 7 girls, who perform well academically and can be excused from class for a 60 minute period in order to participate in the focus group. I would further need permission to spend about 30 – 40 minutes with the educators who used the School's Guide Pack in their class rooms, in order to conduct a semi-structured interview.

Kind regards,

Jenny Coles (Ms)
Student # 11935758
North-West University

ANNEXURE 2 TO CHAPTER 3

7 August 2011

Dear Parent/s,

I am completing my **Masters degree in Management and Development** at the North-West University in Potchefstroom. Part of my research entails determining whether extra curriculum in disaster risk reduction which was implemented in certain primary schools, by the City of Tshwane Metropolitan Municipality, has had a positive effect in reducing disaster risk within the Tshwane Metropolitan area.

Your child would benefit by participating in this study in that the outcome of the study will allow us to determine what kind of additional curriculum could be developed in order to further reduce disaster risk in your area. Disaster risk management is everybody's business and knowledge saves lives, your child's participation in this study will allow for more refined curriculum to be developed and used in schools throughout the Tshwane Metropolitan Municipality and South Africa.

Please note that audio recording will take place and thereafter the session will be transcribed for purposes of collected and coding data. The recording will be erased once all data from it has been reviewed and coded. Parts of the recording will be transcribed to written form, without identifying the speakers.

I request that BOTH parents / the legal guardian sign this consent form, giving your child permission to participate in a 60 minute **focus group** during school time.

Kind regards,

Jenny Coles (Ms)
Student # 11935758
North-West University

CONSENT FORM

To be completed by the father / legal guardian

I, _____, being the father / legal guardian of

I, _____, being the mother / legal guardian of

_____,

herby grant him / her permission to take part in the focus group interview to be held at _____

_____ school on _____.

I agree to my child being audio recorded in this focus group Yes/No

ANNEXURE 3 TO CHAPTER 3

SEMI-STRUCTURED INTERVIEW STRUCTURE FOR EDUCATORS

The disaster risk reduction educational programme for primary schools in the City of Tshwane: A critical analysis

Researcher's name: Jennifer Robyn Coles
University: North-West University
Student number: 11935758

Dear Educator,

Thank you for taking the time to participate in this research. Herewith please find more information about the research and why it is important for you to participate.

Objectives of this study

(i) To gain an understanding of disaster risk reduction;
(ii) To determine what South African disaster management legislation requires in terms of disaster risk reduction in primary schools;
(iii) To conduct a literature review on disaster risk reduction educational material developed for schools across the globe and determine the main pitfalls and good practices experienced;
(iv) To determine what content, components and other practices should ideally be included in disaster risk educational material in order for it to be an effective method of disaster risk reduction and mitigation;
(v) To determine the focus of the material in terms of awareness, prevention, mitigation and preparedness and response;
(vi) To ascertain how well the School Guide Pack integrates with the current Republic of South Africa (RSA) outcome-based education system;
(vii) To establish the current curriculum criteria for disaster risk reduction education in the Republic of South Africa (RSA);
(viii) To determine how and in which learning areas the City of Tshwane Metropolitan Municipality School's Guide Pack is being implemented;
(ix) To compare knowledge of learners with respect to disaster risk reduction in schools that implemented the City of Tshwane Metropolitan Municipality School's Guide Pack with schools that did not.

Importance of study

This study is important as it will pave the way for more and better interventions in disaster risk reduction educational material for primary school learners. It will also assist in providing a better platform for the material to be integrated into current primary school curricula and national standards.

How educators came to be involved with study

As an educator you can be involved with the study by providing details of how the study integrated with your curriculum, how easy it was to integrate and how it benefitted your learners.

Please note that all information will be kept confidential and anonymous
PRIVATE AND CONFIDENTIAL

BIOGRAPHICAL DATA:

Name of school	
School district	
Province	
Country	
Did you teach the grade 5, 6 or 7 Guide pack?	

PROJECT DATA:

Question 1:

What was your overall impression of the School Guide Pack?

Question 2:

Was it easy to integrate into your current curriculum?

Question 3:

Did the instructions to the educators and the Educators Guide provide adequate guidance for you to feel confident in teaching on the subject of disaster risk reduction?

Question 4:

Did the learners struggle to grasp any section of the material?

Question 5:

Were there any sections in the Guide Pack which you left out? And why?

Question 6:

Were there any sections in the Guide Pack which you found difficult to understand and consequently to teach to the learners?

Question 7:

What sections of the Guide Pack did the learners enjoy completing the most and why?

The exercise books
The DVD
The song / rap
The game (Riskland)

Question 8:

What recommendations would you make for future editions of the Guide Pack? (include what would you leave out and what would you include?)

Question 9:

Did you find that the Guide Pack was an effective <u>method of teaching</u> about Disaster Risk Reduction? Why or why not?

Question 10:

How did the Guide Pack integrate with the current curriculum? Was there overlaps? Were there gaps namely areas that you felt should have been covered and were not?

Question 11:

What does the current curriculum state about disaster risk reduction and its integration into the curricula?

Question 12:

What learning areas did you include the Guide Pack in?

Question 13:

How did you practically include the School Guide Pack into your lessons?

Question 14:

Do you believe that the integration of disaster risk reduction education materials in existing curricula will contribute to the reducing of disaster risk reduction in South Africa? Give a reason for your answer.

Any other comments or suggestions?

Thank you for your participation and time.

ANNEXURE 4 TO CHAPTER 3

FOCUS GROUP INTERVIEW STRUCTURE
FOR PRIMARY SCHOOLS IN THE CITY OF TSHWANE METROPOLITAN MUNICIPALITY

Welcome and introduction

My name is Jenny Coles and I am a Masters student at North-West University.
A Focus Group is a way that I can find out what you really thought about the disaster risk reduction Guide Pack and I can determine if it was any help to you and how we could improve it in the future. A focus group helps me to get different opinions on the same topic.

Your participation in this Focus Group will assist me in providing ideas to the developers of curriculum in disaster risk reduction so that the curriculum can not only be fun, but also easy to understand and in the longer run reduce disaster risk in your communities.

You will all remember that you used the Guide Pack in grade 5, 6 and 7.
I am going to ask you some questions and I would like you to call out the answers.
I will be audio recording this Focus Group so that I can type out your responses and then analyse them in order to gain a better understanding of how the Guide Pack has served as a tool in reducing disaster risk reduction in the City of Tshwane.

This is not a test, so you can relax, there is no right or wrong answer. I want you to let me know how you feel about the questions that I ask and I would like you to participate in the activities which I give you to do.

So here we go:

Transition into questions

(i) Who can tell me what the emergency number is?
(This is to test if they learnt the song and remember the number).

Key questions

(ii) Who can tell me what causes disasters?

(iii) What is the difference between a hazard, risk and disaster (brainstorm)
Ask the children to brain storm on what comes to mind when they hear the word "hazard", then "risk" and then "disaster". Write down all words on a flip chart.

(iv) I want you to fill in the sentence: (have sentence written on data projector)

A rain storm can become a disaster when ??	It rains heavily for a long time
Can we prevent floods from occurring ??	Strong dam walls, watch the weather, where we plant crops, drainage, where we build our homes, choose high ground, obstructions in rivers, avoid dry river beds

(v) What did we learn about reducing disasters?
(Test whether the phrase Be aware, prepare and share has stuck with them and if they remember them and what they stand for).

What should we ***Be aware of*** ?	(dangers)
Prepare	(to take precautions)
Share	(information with others)

Activities for the grade 7's to do:

(vi) Draw a poster around the awareness of fire and how it can become a hazard and then a disaster and how this can be prevented.
a. Rules for poster – have 2 escape routes from each room, stop, drop and roll, crawl under smoke (provide poster paper and pencil crayons)

(vii) How could you reduce your risk of becoming a victim of a disaster if a drought occurred?
b. Complete the table (data projector, have children call out and call out answers):

Droughts

Impact	How can you/your family prevent a drought from affecting you
Crops die	
Livestock die	
Land dries out	
Water restrictions	
High food prices	

Floods

Impact	Precautions my family can take to be safe in case of a flood
Loss of lives	
Loss of homes	
Loss of jobs	
Loss of possessions	
Infrastructure destroyed	

Fire

Impact	How can you/your family prevent a disastrous fire, or survive on
Loss of lives	
Painful injury	
Loss of homes	
Loss of possessions	
Loss of livelihood	

(viii) Can we be warned that a disaster is coming?

	Yes/No	If yes, how
Thunderstorm		
Earthquake		
Volcanic eruption		
Veldfire		
River/lake flood		
House fire		
Drought		
Flash flood		
Train derailment in populated area		

Ending questions

(ix) <u>Scenario:</u>

An emergency situation occurs in the classroom (decide what it is) e.g. explosion in Science lab
The teacher is hurt and the learners have to take control.
What do you do?

Keep the following in mind:
How to calm your fellow learners down
How to inform the office
Evacuation plan
What to take
Window and doors
Meeting place
Ensuring everyone is accounted for
What to do afterwards.

Discuss, plan, write down (work in two's).

Wrap up

Summarise main points
Seek verification and ask if there are any questions.
Express gratitude for participation and give out chips and a cold drink

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