Save the Children

Funded by
European Union
Civil Protection and
Humanitarian Aid

Status of Disaster Risk Reduction in Bhutanese Schools:

Findings of the nation-wide study

Pedup Dukpa, Senior Research Officer, Research Divison, Royal Educaiton Council

Norbu Wangchuk, DRR Focal Project Officer, Curriculum Developer, Curriculum Development Centre, Royal Educaiton Council

Karma Phuntsho, Training Developer, Professional Development Division, Royal Educaiton Council

Sonam Phuntsho, Curriculum Developer, Curriculum Development Centre, Royal Educaiton Council

Published in 2018 by the Royal Education Council, Shari, Paro, Bhutan with the financial support from Save the Children, Country Office, Bhutan

First Print : 2018

Funding for this study was provided by the Save the Children, the Country Office Bhutan and European Civil Protection and Humanitarian Aid Operations (ECHO). Any opinions, findings, conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the Save the Children or ECHO. The Save the Children, ECHO, and its agencies are in no way bound by the recommendations contained in this document.

Overall Coordination by: Norbu Wangchuk, Unit Head, Social Science Unit, Curriculum Development Centre , REC

Layout and Design by: Jangchu Tenzin, Instructional Media Divsion, REC

Tashi Zangpo, Curriculum Development Centre, REC

ISBN-978-99936-0-460-0

Foreword

The Royal Education Council as the main centre for education innovation and transformation strongly believes research to be the key to development of quality curriculum, effective professional development programmes, and curricular policies. The REC Operational Framework mandates all curriculum development to follow the curriculum development cycle that includes the four phases: curriculum review and planning, curriculum design and development, curriculum implementation, and curriculum evaluation. In the first phase, the conduct of situational/needs assessment for introduction of new curriculum is mandatory. This study report serves the purpose of ascertaining the status of Disaster Risk Reduction in Schools and the need for a curriculum.

The DRR study report has five sections. The first section is the introduction - it includes the context, rationale, objective and significance of the study. The second section is the literature review - it includes the definition of disaster, hazards, risks and vulnerability, risk triangle, world conferences on disaster risk reduction, disaster management act of Bhutan, institutional set up for disaster management at the Central, Dzongkhag, Dungkhag/Gewog/Thromde, and School Level. The third section is the methodology - it contains the sampling design and research instruments. The fourth section is the findings and analysis and the last section is the recommendation.

On behalf of REC, I would like to thank Save the Children, Ministry of Education, District/Thromde Education Officer, Principals, Teachers and Students for making this report possible. I also urge all to use the findings of the study.

Trashi Delek!

Kinga Dakpa

Director

Acknowledgement

The report would not have been completed without the support and assistance of many individuals and organisations. Hence, the Royal Education Council would like to extend our sincere thanks and appreciations to the following:

Save the Children, Country Office, Bhutan, for the collaboration through the commission work on Disaster Risk Reduction and for the necessary technical and financial support provided.

Ministry of Education for approving nation-wide data collection from identified students, staffs, teachers, principals, and District or Thromdey Education Officers.

All the students, staffs, teachers, principals, and District and Thromdey Education Officers from all the Dzongkhags for voluntarily participating in this study.

Officials from Department of Disaster Management, Ministry of Home and Cultural Affairs (MoHCA), Fire Services (MoHCA, and Ministry of Education, for providing valuable feedback and comments during the consultative meeting.

The REC research team for successful completion of the commissioned work on time despite many other assigned responsibilities. Similarly, to all other officials of REC who assisted in refinement of research instruments and in data collection are acknowledged.

Table of Content

List of Figures

List of Tables

Executive Summary

Context

The Constitution of the Kingdom of Bhutan, 2008, mandates the government to ensure a minimum of sixty percent of the country's total land is maintained under forest cover for all time. All developments in Bhutan are guided by the Gross National Happiness (GNH) philosophy that emphasis both economic growth and non-economic aspects of wellbeing. The four pillars of GNH are good governance, sustainable socio-economic development, cultural preservation and environmental conservation.

Earthquakes are a possibility. The Indian tectonic plate is moving northwards to the Eurasian tectonic plate thereby pushing the Himalayas upwards on collision. From 1937 to 1998, Bhutan experienced about 30 earthquakes measuring 4.5 to 6.75 on the Richter scale (World Bank, 2009).

Climate change is a reality and glaciers are retreating fast. There are 677 glaciers and 2,794 glacial lakes of which 25 have been labelled as potentially dangerous. A partial breach of the Lugge Tso in October 7, 1994, caused catastrophic flood wave along its path downstream claiming 22 human lives and severely damaging houses and infrastructures (Royal Government of Bhutan, World Bank, United Nations, 2009).

The distinct seasonal pattern of Spring (March to May), Summer (June to August), Autumn (September to November) and Winter (December to February) has become unpredictable with frequent weather variation. Seasonal strong winds that cause cyclones, a hazard that was unheard of in a faraway country from the sea, is becoming a climatic feature. Dengue fever and malaria are advancing into central Bhutan. In the dry winter months' forest fires are an annual event. Drought and other seasonal hazards are slowly affecting more people of Bhutan.

Rationale

The primary purpose of education is to prepare learners for life. No human is immune to disasters. As a result, it is imperative that schools cover components of disaster risk reduction and climate change adaptation so as to enable learners to live a safe and sustainable life. Throughout the history of humankind, disasters have caused deaths, suffering and economic losses. Although these disasters are in most cases beyond human control, vulnerability is generally a result of human activity.

Objective

The following were the objectives of the study:

1. To determine the expectation on what the Bhutanese students should know and be able to do at the end of schooling (on Disaster Risk Reduction (DRR)),
2. To identify gaps in the DRR policies and curriculum, and
3. To recommend strategies to mainstream DRR into the school curriculum.

Methodology

Mixed method research was used with a convergent parallel design to ensure both data sets (quantitative and qualitative) were concurrently gathered, independently analyzed and then meaningfully interpreted to derive the overall findings and interpretation of the study. Survey questionnaires were used to collect the quantitative data from the school students and teachers, while the focus group discussion with identified teachers and students were used for collecting qualitative data. Where required, further triangulation of the data with the desk review of pertinent policy and other relevant documents was done. The survey questionnaire and focus group discussion questions were piloted in three schools of the western region prior to the nation-wide rollout.

Findings of the study

Current status of DRR in Schools

1. *Awareness of DRR documents*

   17 percent of teachers and 13 percent of students were aware of the Disaster Management Act of Bhutan, 2013; 12 percent of teacher and 6 percent of students were aware of the National Disaster Risk Management Framework, 2006; 23 percent of teachers and 16 percent of students were aware of the Disaster Management and Contingency Plan, 2016, developed by Ministry of Education; and 72 percent of teachers and 57 percent of students were aware of the School Contingency Plan. This finding indicates that schools are functioning in isolation.

2. *Opinion on school building safety*

When teachers and students were asked on the safety of the school buildings, only 28 percent of teachers as well as students reported school buildings to be safe. Schools are supposed to be safe place where learning happens, however, this finding indicates that the primary users of school are not confident about the safety of the buildings.

3. *Mocks drills conducted in school*

More than 95 percent of teachers as well as students reported that the school conducts mock drills on earthquake, whereas on fire and windstorm about 30 percent to 7 percent of teachers and students reported mock drills to be conducted. This finding illustrates that the focus of dock drills have been primarily on earthquake, however, given the geological settings of Bhutan there is a need to diversify the approach to mock drills.

4. *Field recommendation on DRR Curriculum*

During the survey, 72 percent of students and 58 percent of teachers recommended that there be a separate DRR curriculum. While, 81 percent of students and 83 percent of teachers recommended integration of DRR with existing curriculum.

Recommendations of the Study

1. *Integrate Disaster Risk Management into relevant subject*

Countries such as Bangladesh, Cambodia, India, Indonesia, Iran, Maldives, Lao People's Democratic Republic (PDR), Nepal, Pakistan, Malaysia, Philippines, and Sri Lanka, have either integrated Disaster Risk Management into the school curriculum or are in process of integration (UNICEF, 2009). The method of integration differed, however, the success stories of best practices across the globe advise integration with existing curriculum. Further, the recommendation made by the respondents of the study also suggests integration. Therefore, as a way forward for Bhutan, it is recommended that the integration approach be adopted.

2. *Execute region specific DRR strategies based the vulnerability and risk assessments*

Risk of hazards differ from place to place due to the geographical setting of the country. Hence, to effectively prepare students for disaster it is imperative that region specific DRR strategies and activities be executed.

3. *Institute inclusive approach to provide awareness and capacity building programmes*

   No human is immune to disaster, hence, there is a need to institute an inclusive approach to providing awareness and capacity building programmes so as to build a resilient society.

4. *Ensure strict compliance of building codes for school construction and retrofit and maintain existing structures*

   It is the sovereign responsibility of the State to protect its citizens. About 28 percent of the population, consisting of students and teachers, spend most of their time in schools. Therefore, it is of utmost importance that the school structures be disaster resilient. This demands for strict compliance of building codes and retrofitting and maintaining of existing structures.

5. *Strengthen linkages between the Central, Dzongkhag and Local Level*

   The study highlighted poor coordination between the Central, Dzongkhag and Local Level in the DRR activities and programmes. Significant number of teachers and students were not aware of the existing DRR policies and role of agencies. Hence, there is a need to strengthen the linkages between the Central, Dzongkhag and Local Level for effective coordination and implementation of DRR activities and programmes.

1. INTRODUCTION

1.1. Context

Bhutan is a landlocked country situated in the eastern Himalayas sandwiched between its heavily industrialized neighbours, China and India. It has an area of 38,394 square kilometres with elevation ranging from 160 meters to 7314 meters above sea level, and population of 735,553 people (Population and Housing Census of Bhutan, 2017). About 90 percent of Bhutan's land comprise of forest (70.46 percent), shrubs (10.43 percent), snow cover (7.44 percent) and meadows (4.10 percent), while less than 10 percent consist of bare areas (3.20 percent), cultivated agricultural land (2.93 percent), water bodies (0.72 percent), build up areas (0.16 percent), degraded areas (0.54 percent), marshy areas (0.01 percent) and non-build up areas (0.01 percent) (Ministry of Agriculture and Forests, 2010).

Bhutan is the only carbon negative country in the world that has made a commitment to sustain its carbon negative status forever (in the 2009 Copenhagen Summit). The Constitution of the Kingdom of Bhutan, 2008, mandates the government to ensure a minimum of sixty percent of the country's total land is maintained under forest cover for all time. All developments are guided by the Gross National Happiness (GNH) philosophy that emphasis both economic growth and non-economic aspects of wellbeing. The four pillars of GNH are good governance, sustainable socio-economic development, cultural preservation and environmental conservation.

Earthquakes are a possibility. The Indian tectonic plate is moving northwards to the Eurasian tectonic plate thereby pushing the Himalayas upwards on collision. From 1937 to 1998, Bhutan experienced about 30 earthquakes measuring 4.5 to 6.75 on the Richter scale (World Bank, 2009). Eastern Bhutan (Mongar) was struck by an earthquake of magnitude 6.1 on the afternoon of September 21, 2009. 12 people died and 47 people from Mongar, Trashigang, and Pemagatshel were injured with many schools, monasteries and houses damaged throughout the country. Subsequently, on 18 September 2011, Sikkim, a neighbouring Indian state, faced a magnitude of 6.9 earthquake, and on 25 April 2015, Nepal, a country that shares its boarders with Bhutan, experienced an earthquake of magnitude 7.9. The tremors of both earthquakes were felt throughout Bhutan and are indicative of the serious damages that occur when an earthquake has its epicentre located within or close to the country.

Climate change is a reality and glaciers are retreating fast. There are 677 glaciers and 2,794 glacial lakes of which 25 have been labelled as potentially dangerous (Royal Government of Bhutan, 2012). A partial breach of the Lugge Tso in October 7, 1994, caused catastrophic flood wave along its path downstream claiming 22 human lives and severely damaging houses and infrastructures (Royal Government of Bhutan, World Bank, United Nations, 2009). The Lugge Tso outburst demonstrates Bhutan's vulnerability to such events. Further, Glacial Lake Outburst Flood (GLOF) is known to trigger secondary and tertiary hazards such as debris blocking the river causing aquatic disaster, flash flood washing away structures, homes, and traffic disruptions.

Flash floods are an accepted fact given its frequency. During the months of June to September, most of the annual rainfall is experienced. Apart from the normal damages to life and properties, in July 2016, one of the oldest commercial settlement in Southern Bhutan, Sarpang town, was completely wiped out in a matter of hours.

Every year during monsoon, landslides block road across the country. The life line of Bhutan, the Phuentsholing to Thimphu highway, often gets blocked by landslides. Sorchen landslide area has been the most difficult to address. On 19 March 2010, the Royal Government of Bhutan as a strategy started building an alternative route as an avoidance strategy (Kuenza, Dorji & Wangda, 2010).

The distinct seasonal pattern of Spring (March to May), Summer (June to August), Autumn (September to November) and Winter (December to February) has become unpredictable with frequent weather variation. Seasonal strong winds that cause cyclones, a hazard that was unheard of in a faraway country from the sea, is becoming a climatic feature. Dengue fever and malaria are advancing into central Bhutan. In the dry winter months' forest fires are an annual event. Drought and other seasonal hazards are slowly affecting more people of Bhutan.

1.2. Rationale

The primary purpose of education is to prepare learners for life. No human is immune to disasters. As a result, it is imperative that schools cover components of disaster risk reduction so as to enable learners to live a safe and sustainable life. Throughout the history of humankind, natural disasters have caused deaths, suffering and economic losses. Although these disasters are in most cases beyond human control, vulnerability is generally a result of human activity. In all countries, the poor and socially disadvantaged groups suffer most from natural disasters and are least equipped to cope with them. Recognising that

each country has the sovereign responsibility to protect its citizens from natural disasters and that the world is increasingly interdependent, three world conference on natural disaster reduction was convened. As an outcome of the first, second and third world conferences the Yokohama Strategy for a Safer World, the Hyogo Framework for Action 2005-2015, and the Sendai Framework for Disaster Risk Reduction 2015-2030, respectively was adopted by the United Nations. Bhutan is signatory to the Hyogo Framework for Action 2005- 2015 and the Sendai Framework for Disaster Risk Reduction 2015-2030, both of which emphasise the importance of mainstreaming the Disaster Risk Reduction in education. Further the Disaster Management Act of Bhutan, 2013, mandates relevant agencies to develop public education, awareness and capacity building programmes on Disaster Management and Disaster Risk Reduction.

About 28 percent of Bhutan's population are school going children (Ministry of Education, 2017). Statistics shows that they are the most vulnerable section, and at the same time, they are the most influential game changers. Hence, to better prepare children for life and to capitalize on the advantage of them being change agent, Save the Children commissioned the study to Royal Education Council with the primary intent to facilitate the development of an effective curriculum framework while fulfilling each other's mandates in a mutual manner.

1.3. Objective

The study aims to achieve the following objectives:

4. To determine the expectation on what the Bhutanese students should know and be able to do at the end of schooling (on Disaster Risk Reduction),
5. To identify gaps in the DRR policies and curriculum, and
6. To recommend strategies to mainstream DRR into the school curriculum

.

1.4. Significance of the study

1. All initiatives of new or reformed curriculum needs to be based on empirical evidence that is based on needs assessment (REC Operational Framework, 2018), this study serves the purpose of ascertaining the status of DRR in schools so as to make an informed decision.

2. The study provides necessary insights to authorities, educators and stakeholders on current status of disaster activities and management in school, awareness of DRR documents and roles placed by relevant agencies, expectation of what students should know and be able to do at the end of schooling (focussing on disaster risk reduction), and strategies to mainstream DRR into the school curriculum.

3. This study considers the voices of key players in education such as students, teachers, principals, DEO, TEO and education officials, whereby creating a sense of ownership that would facilitate the effective implementation of DRR activities and programmes.

2. LITERATURE REVIEW

2.1. Definition of Disaster

There has been an increased multi-disciplinary interest in disaster, however, no common definition of disaster is agreed upon by researchers, academics and professional (Alexander, 1993; Al-Madhari et al., 1997; Smith et al., 2009).

The word disaster has French, Italian and Greek origins dating back to 1560s. The French root "desastre" and the Italian root "disastro" both means "ill-starred". While the Latin and Greek roots of the word originate from "astrum" and "astron" respectively, which refers to a calamity blamed on an unfavourable position of a planet (Al-Madhari & Keller, 1997).

Oxford dictionary (1999) defines disaster as "A sudden accident or a natural catastrophe that causes great damage or loss of life". While a catastrophe is defined as "an event causing great and often sudden damage or suffering".

The United Nations International Strategy for Disaster Reduction (UNISDR), 2009, defines disaster as "A serious disruption of the functioning of a community or a society involving widespread human, material, or environmental losses and impacts which exceeds the ability of the affected community to cope using only its own resources."

Disaster Management Act of Bhutan, 2013, defines disaster as "A natural or man-made occurrence which causes environmental loss, increased mortality, illness or injury, and destroys or disrupts livelihoods, affecting the people or an area". The DM Act also classifies disaster into three types. Type I, if disaster can be managed with available resources and is within the coping capacity of the gewog/thromde concerned. Type II, if disaster can be managed with available resources and is within the coping capacity of the Dzongkhag concerned. Type III, if severity and magnitude is so great that it is beyond available resources and the coping capacity of the Dzongkhag concerned.

In essence, disaster is determined by the combination of three factors namely exposure to a hazard, conditions of vulnerability that are present and capacity to reduce or cope with potential negative consequences (UNISDR, 2009).

2.2. Hazards, Risk, and Vulnerability

The terms 'hazard' and 'risk' are often used interchangeably, however, there are two very distinct terms. Hazard is a process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruptions or environmental degradation (UNISDR, 2009).

Whereas, risk is the chance or probability that negative consequences may arise when hazards interact with vulnerable areas, people, property or environment. While, vulnerability is a concept that describes factors or constraints of an economic, social, physical or geographic nature, which reduce the ability to prepare for and cope with the impact of hazard.

2.3. Risk Triangle

Disaster is the realisation of risk. Crichton (1999) illustrated risk in a form of a triangle, where the three sides are represented by hazard, exposure and vulnerability. When any one of the side increase, the area of the triangle also increases whereas increasing the amount of risk. If one of the sides is eliminated, then there is no risk and disaster.

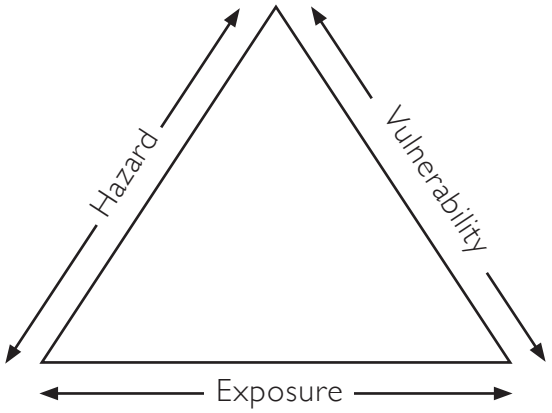


Figure 1. Risk Triangle

2.4. World Conferences on Disaster Risk Reduction

The International Decade for Natural Disaster Reduction (IDNDR) was first proposed by Dr. Frank Press, President of the US National Academy of Sciences, during the 8th world conference on earthquake engineering held in San Franciso, United States of America. This proposal was met with favourable response from the nations and in 1987 during the forty second session the UN General Assembly unanimously adopted a resolution designating the 1990s as the IDNDR (Lechat, 1990). IDNDR was the first concerted effort by the global community to reduce loss of life, property damage and social and economic disruption caused by natural disasters such as earthquakes, windstorms, tsunamis, floods, landslides, volcanic eruptions, wildfires, grasshopper and local infestations, and drought and desertification, especially in developing countries.

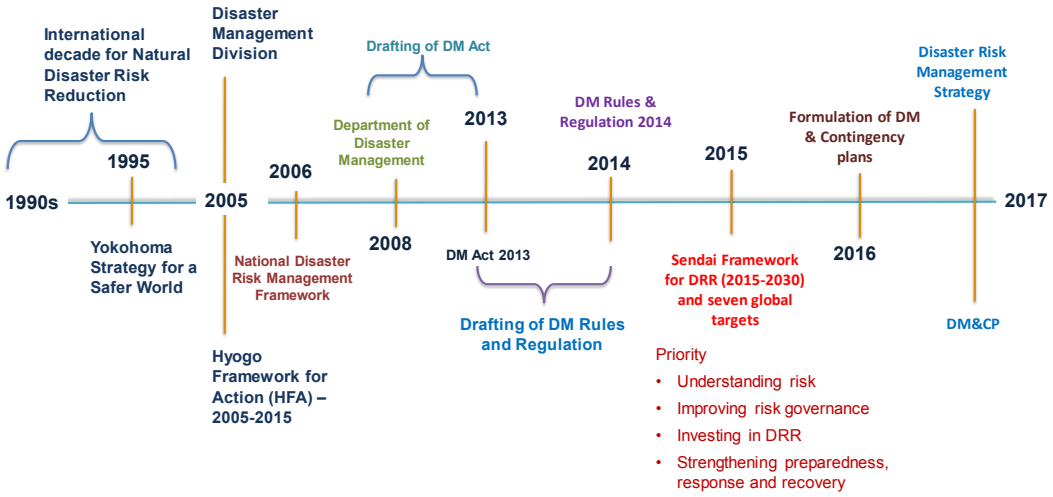


Figure 2. Timeline documenting disaster risk reduction

2.4.1. Yokohama Strategy for a Safer World

The first world conference on Natural Disasters was held in Yokohama, Japan, from 23th to 27th May 1994, as an outcome of the mid-term review of IDNDR. The conference adopted the Yokohama Strategy for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation and its Plan of Action, which was later endorsed by the UN General Assembly. The Yokohama Strategy set guidelines for action on prevention, preparedness and mitigation of disaster risk. The guidelines are based on ten principles that stress the importance of risk assessment, disaster prevention and preparedness, the capacity to prevent, reduce and mitigate disasters and early warning (International Institute for Sustainable Development, 2015).

The ten principles of the Yokohama Strategy for a Safer World were as follows:

1. Risk assessment is a required step for the adoption of adequate and successful disaster reduction policies and measures.

2. Disaster prevention and preparedness are of primary importance in reducing the need for disaster relief.

3. Disaster prevention and preparedness should be considered integral aspects of development policy and planning at national, regional, bilateral, multilateral and international levels.

4. The development and strengthening of capacities to prevent, reduce and mitigate disasters is a top priority area to be addressed during the Decade so as to provide a strong basis for follow-up activities to the Decade.

5. Early warnings of impending disasters and their effective dissemination using telecommunications, including broadcast services, are key factors to successful disaster prevention and preparedness.

6. Preventive measures are most effective when they involve participation at all levels, from the local community through the national government to the regional and international level.

7. Vulnerability can be reduced by the application of proper design and patterns of development focused on target groups, by appropriate education and training of the whole community.

8. The international community accepts the need to share the necessary technology to prevent, reduce and mitigate disaster; this should be made freely available and in a timely manner as an integral part of technical cooperation.

9. Environmental protection as a component of sustainable development consistent with poverty alleviation is imperative in the prevention and mitigation of natural disasters.

10. Each country bears the primary\responsibility for protecting its people, infrastructure, and other national assets from the impact of natural disasters. The international community should demonstrate strong political determination required to mobilize adequate and make efficient use of existing resources, including financial, scientific and technological means, in the field of natural disaster reduction, bearing in mind the needs of the developing countries, particularly the least developed countries.

2.4.2. Hyogo Framework for Action 2005-2015

The second world conference on disaster reduction was convened in Kobe, Japan, from 18th to 22nd January 2005. The conference garnered much attention from international media and governments primarily due to two factors: about a month ago, on 26 December 2004 the Indian Ocean Earthquake of 9.3 magnitude and the resultant Tsunami caused 174,500 casualties, 51,500 missing and roughly 1.5 million people displaced from 14 countries (RMS, 2006); and ten years ago, on 17 January 1995 Kobe experienced the Great Hanshin Earthquake of 7.2 magnitude (Kobe, 2012).

The conference underscored the need to build the resilience of nations and communities to disasters by detailing the work required at all levels (global, regional, national and local) to reduce disaster losses. Disaster prevention, mitigation, preparedness and relief were the four elements identified as crucial for implementation of sustainable development. The 168 states attending the conference adopted the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters, which was endorsed by the UN General Assembly.

The five priorities for action identified and agreed upon were:

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

2.4.3. Sendai Framework for Disaster Risk Reduction 2015-2030

The third world conference on disaster risk reduction was held in Sendai, Miyagi, Japan, from 14th-18th March 2015. During the world conference, States reiterated their commitment to disaster risk reduction and building resilience to disaster with renewed sense of urgency in the context of sustainable development and poverty eradication, by adopting the Sendai Framework for Disaster Risk Reduction 2015-2030. The framework aims to achieve substantial reduction of disaster risk and losses in lives, livelihoods and health in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries, over the next fifteen years.

The seven global targets that have been agreed upon are:

1. Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality between 2020-2030 compared to 2005-2015.
2. Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 between 2020-2030 compared to 2005-2015.

3. Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030.
4. Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030.
5. Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020.
6. Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this framework by 2030.
7. Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030.

Recognising the need for a focused action within and across sectors by States at local, national, regional and global levels, the following four priority areas was identified:

1. Understanding disaster risk,
2. Strengthening disaster risk governance to manage disaster risk,
3. Investing in disaster risk reduction for resilience, and
4. Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction.

2.5. Disaster Management Act of Bhutan 2013

Bhutan is signatory to Hyogo Framework for Action 2005 - 2015 and Sendai Framework for Disaster Risk Reduction 2015-2030. In 2006, the Royal Government of Bhutan formulated the National Disaster Risk Management Framework: Reducing Disaster Risks for a Safe and Happy Bhutan (NDRMF) to specifically address the vulnerability and risk profile of the country. The NDRMF outlined the importance of mainstreaming disaster risk reduction in all sectors and laid out a multi-sectoral strategy to ensure every sector contributes towards promoting disaster resilience to enable achievement of Gross National Happiness.

Building on the NDRMF, the Disaster Management Act of Bhutan was enacted in 2013. The Act calls for the establishment and strengthening of institutional capacity for disaster management, mainstreaming of disaster risk reduction, and

integration and coordination of disaster management focussed on community participation. The act includes financial arrangements, specific disaster management facilities and relief and compensation provisions.

2.6. Institutional set up for disaster management

The Department of Disaster Management under the Ministry of Home and Cultural Affairs functions as the national coordinating body for disaster management. However, to ensure every sector contribute towards disaster management and in promoting disaster resilience within its own mandate, capacity, expertise and strength, the Disaster Management Act of Bhutan, 2013, outlines the following institutional set up:

2.6.1. Central Level Arrangement

a) National Disaster Management Authority

The National Disaster Management Authority (NDMA) is the highest decision-making body on disaster management in Bhutan. It is chaired by the Prime Minister. The NDMA is responsible for approving disaster management policies, plans, national guidelines and assessment tools and ensuring ministries and agencies embed disaster risk reduction into their planning and implementation.

Every agency notified by the NDMA is required to set up a Disaster Management Unit (DMU), prepare and update Disaster Management and Contingency Plans, take up disaster management and advance contingency measures laid out in its plans and seek to ensure continuity of its services during a disaster.

In education, DMU under the School Planning and Coordination Division in Department of School Education, has been instituted to coordinate and institutionalise clear disaster response and management systems, and DRR integration into mainstream education policies, strategies and programme need enhancement. Further, Ministry of Education developed the Disaster Management and Contingency Plan which lays out disaster management plans at National, Dzongkhag, local and school level.

b) Inter-Ministerial Task Force

The Inter-Ministerial Task Force (IMTF) comprising of multi-sector technical experts provides technical guidance and support to the NDMA. Director of Department of Disaster Management under the Ministry of Home and Cultural Affairs is the chair of the IMTF.

c) National Search and Rescue Team

The National Search and Rescue Team (NaSART) comprising of officials from relevant agencies has been established at the national level. Further, Bhutan became a member of the International Search and Rescue Group (INSARAG) and signed the UN customs facilitation agreement and ratified the SAARC Rapid Response Agreement.

2.6.2. Dzongkhag (District) Level Arrangement

At Dzongkhag level, the Dzongkhag Disaster Management Committees (DDMCs) are responsible for coordinating and managing disaster management operations, preparing and updating Dzongkhag Disaster Management and Contingency Plans, mainstreaming disaster management into plans and policies and promoting disaster education, awareness and capacity building in the communities. The DDMCs are chaired by the Dzongdag.

2.6.3. Dungkhag/Gewog/Thromde (Local) Level

The DDMC are authorized to institute Disaster Management Subcommittee as the Dungkhags, Gewogs and Thromdes level to assist in their performance.

2.6.4. School Level Arrangements

All schools have a disaster focal teacher identified and the school disaster management committee chaired by principal of the school.

3. METHODOLOGY

Mixed method research is a methodology for conducting research that entail collecting, analysing and collaborating both quantitative and qualitative data in a single study with the central premise to provide a better understanding of the research problem (Creswell, 2009). A convergent parallel design was adopted as this design ensured that both data sets was concurrently gathered, independently analysed and then meaningfully interpreted to derive the overall findings and interpretation of the study (Creswell, 2009).

Survey questionnaires was used as a tool to collect the quantitative data from the school students and teachers, while the focus group discussion with identified teachers and students was used for collecting qualitative data. Where required, further triangulation of the data with the desk review of pertinent policy and other relevant documents was done.

3.1. Roadmap of the study

At the outset, the REC research team comprising of officials with different academic background, spent 10 days doing desk review on Disaster Risk Reduction. This process enabled the team to get a better understanding on disaster and to draw a common understanding of the context.

The outcome of the review was presented to expert group comprising of Disaster Management Unit officials from Ministry of Education and Ministry of Home and Cultural Affairs, and Save the Children officials from Bhutan Country office, for validation and to collaboratively draw up the roadmap for the study. Accordingly, the following was decided (Figure3):

- Literature review to focus on definition of Disaster, the three World Conferences on Disaster Risk Reduction, and Legislative Arrangement at Central, Dzongkhag and School Level.
- Research instruments to be develop considering the objective of the study and in particular the current status of disaster activities and management in school, awareness of DRR documents and roles played by key stakeholders, ranking of perceived hazards, student and teacher expectation of what a student should know and be able to do (related to DRR), and field recommendation on future direction.
- Sampling frame to be the school, considering the commonality in the target respondents, namely the students and teachers.
- Mixed method research to be adopted, given the nature of study, where collection of both quantitative and qualitative data was deemed necessary. Survey to be used to collect quantitative data, while focus

group discussion and desk review of materials for collection of qualitative data.

- The study to ultimately contribute to the DRR mainstreaming in the school curriculum.

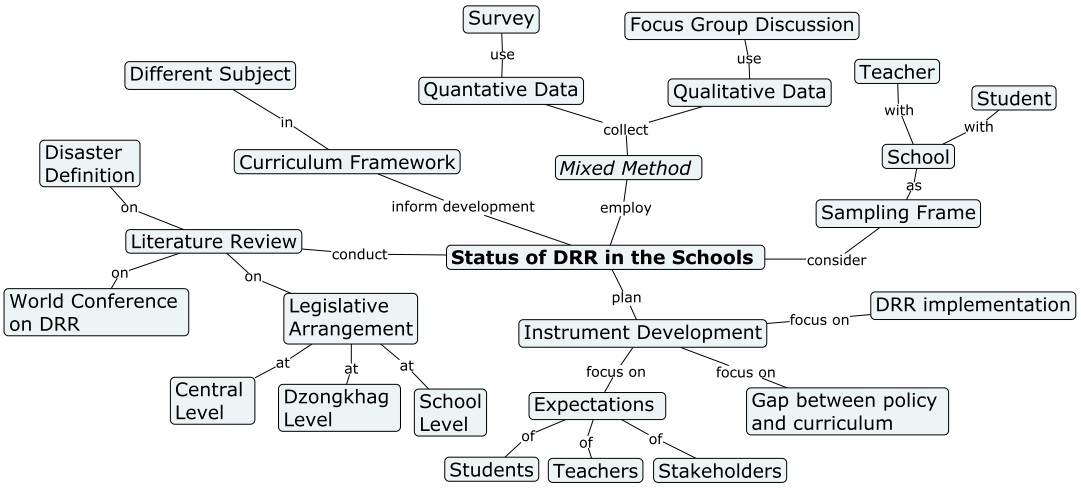


Figure 3. Roadmap of the Study

3.2. Sampling Design

Considering the commonality in the target respondents, namely the students and teachers, the sampling frame was decided to be the school. There are four categories of schools in Bhutan: Primary, Lower Secondary, Middle Secondary and High Secondary Schools. On studying the available statistical data, it was observed that all lower secondary schools had primary classes too. In order to avoid overlap in the sample, the primary and lower secondary schools were clubbed and considered as one category. From all twenty Dzongkhags (Districts), a Primary/Lower Secondary, Middle Secondary and High Secondary School each were considered the sampling frame to ensure a representative sample.

The calculation of the required sample size was done using Equation 1. The population figure of students and teachers was taken from the Annual Education Statistics, 2017. A non-response rate of 10 % was added to the required sample size. Which was then divided by 20 to identify the exact requirement of sample

in each Dzongkhag, the resultant number was rounded to the nearest multiple of 5 as shown in Table 1.

Equation 1. Formula for calculating the required sample size

$$\text{Required Sample Size, } n = \frac{X^2 N P (1-P)}{d^2 (N-1) + X^2 P (1-P)}$$

Where,

X^2 is the table value of Chi-Square @ d.f. = 1 for desired 95 % confidence level = 3.841;

N is the total population size of the target respondent;

P is the population proportion (assumed to be 0.5 since this would provide the maximum sample size); and d is the degree of accuracy = 0.05.

Table 1

Required Sample Size by Target Respondents

1. Teacher	HSS	MSS	LSS/PS	Total
Population (N)	2328	2435	4167	8930
Required Sample (n)	330	332	351	1013
Sample with non-response 10%	363	365	386	1114
Sample from each Dzongkhag	~20	~20	~20	~60
2. Student	**HSS**	**MSS**	**LSS/PS**	**Total**
Population	18171	54735	96654	169560
Required Sample	376	381	383	1140
Sample with non-response 10%	414	419	421	1254
Sample from each Dzongkhag	~25	~25	~25	~75

3.3. Research Instruments

3.3.1. Survey Questionnaire

Survey is a tool in gathering information to do with people's attitudes, feelings, opinions, and other such self-reported behaviour (Fontana & Frey, 2005; Neumann, 2006). To address the objectives of the study, the identified sample of teachers and students filled the survey questionnaire which comprising of Likert scale items on the following areas:

1. Current status of disaster activities and management in school,
2. Awareness of disasters management policies and roles of various agencies,
3. Ranking of perceived hazards,
4. Expectation of what student should know and be able to do, and
5. Recommendations in curriculum.

3.3.2. Focus Group Discussion (FGD)

Semi-structured question was used for the FGD. As and where required further probing was done. The FGD questions revolved around the following questions:

1. What do we expect our learners to know about disaster?
2. What do we expect our learners to understand about disaster and disaster risk reduction?
3. How do we expect our learners to respond in the event of disaster?
4. What are some of the DRR aspects in our existing policies?
5. What are the gaps in the policies and curriculum?
6. What do you expect the DRR curriculum framework to look like?

3.4. Piloting of Research Instruments

The survey questionnaires were piloted in 3 schools (a Primary, Middle Secondary and Higher Secondary School) in the Western Region of Bhutan. These schools were not selected for the main survey. From each of the identified school, 10 students from grade 3 and above, and 15 teachers taking into consideration different subject combination and gender was selected as the sample.

3.4.1. Reliability and Validity

According to Field (2009), the Cronbach's Alpha score of 0.8 and above is considered reliable. During the piloting of the survey questionnaires, the student questionnaire yielded a Cronbach's Alpha reliability score of 0.915, while the teacher questionnaire generated a Cronbach's Alpha reliability score of 0.860 (Table 2).

Table 2

Reliability Statistics on Student Survey Questionnaire

Questionnaire	Cronbach's Alpha	N of Items
Student	.915	75
Teacher	.860	76

Content validity was done for both the student and teacher questionnaires by seeking feedback and suggestions from the professionals in Save the Children, Disaster Management Unit from both Ministry of Education and Ministry of Home and Cultural Affairs, and the Royal Education Council, on each and every item.

3.5. Data Collection

Considering the geographical spread of the country and the fact that this was a nation-wide study, additional enumerators for data collection was recruited from the office of the Royal Education Council (all enumerators had prior experience in research and data collection). Yet, to establish a common understanding of the purpose of the study and on each question of the study, a day was dedicated for enumerators training.

Prior to the commencement of the data collection, all regulatory obligations were fulfilled. Survey clearance for the conduct of the nationwide survey was sought and received from the Department of School Education, Ministry of Education. Accordingly, all Dzongkhag Education Officers and the concerned principals were contacted by the enumerators and the data collection date agreed upon.

The quantitative and qualitative data was collected concurrently. While collecting data, ethical considerations such as getting informed consent from the concerned target respondent of the study was made. Privacy and confidentiality was assured and maintained.

3.6. Data Analysis

The data analysis of the quantitative data and qualitative data was done independently. Descriptive statistics such as frequency, percentages and cross-tabulations in SPSS version 23 was done for survey questionnaire, while the focus group discussion analysis was done using basic content analysis. Simultaneously filtered literature review was also done. After getting the preliminary analysis of the quantitative and qualitative data, meaningful integration, inference and triangulation was done to come up with the main findings of the study.

Figure 4. Data analysis

4. FINDINGS AND ANALYSIS

4.1. Demographic profile of teacher respondents

The following are the demographic profile of 1075 teacher respondents that participated in the study.

- 59 percent were male teachers while 41 percent were female teachers.
- 28 percent of teachers were within the age profile of 20 to 29 years, 57 percent within 30 to 39 years, 12 percent within 40 to 49 years, and 3 percent above 50 years of age.
- 24 percent of the teachers were located in urban area, 57 percent in semi-urban area, 12 percent in semi-remote area, 5 percent in remote and 2 percent in very remote area.
- 16 percent were single, 80 percent married, 1 percent living together, 1 percent separated and 2 percent divorced.
- 71 percent of teachers had bachelors' degree, 14 percent had master's degree, 8 percent had class XII certificate, 4 percent had Class X certificates and 3 percent had other qualifications such as ZTC, diploma etc.

Table 3

Summary of Demographic Profile of Teacher Respondents

Variable		Frequency	Percentage
Gender	Male	631	58.8%
	Female	443	41.2%
Age	20 to 29 years	299	28.0%
	30 to 39 years	606	56.8%
	40 to 49 years	124	11.6%
	50+ years	38	3.6%
Location of school	Urban	250	23.6%
	Semi Urban	603	56.9%
	Semi Remote	131	12.4%
	Remote	56	5.3%
	Very Remote	20	1.9%

Marital Status	Single	168	15.6%
	Married	862	80.3%
	Living Together	10	.9%
	Separated	7	.7%
	Divorced	25	2.3%
	Widowed	2	.2%
Educational Background	Class X	38	3.6%
	Class XII	86	8.0%
	Bachelor's Degree	765	71.6%
	Master's Degree	153	14.3%
	Others	27	2.5%

The detailed breakdown of the number of teachers from twenty Dzongkhags that participated in the study is shown in Figure 4. Thimphu had the highest number of teacher (84), while Gasa had the least number of teacher (31) participants in the study.

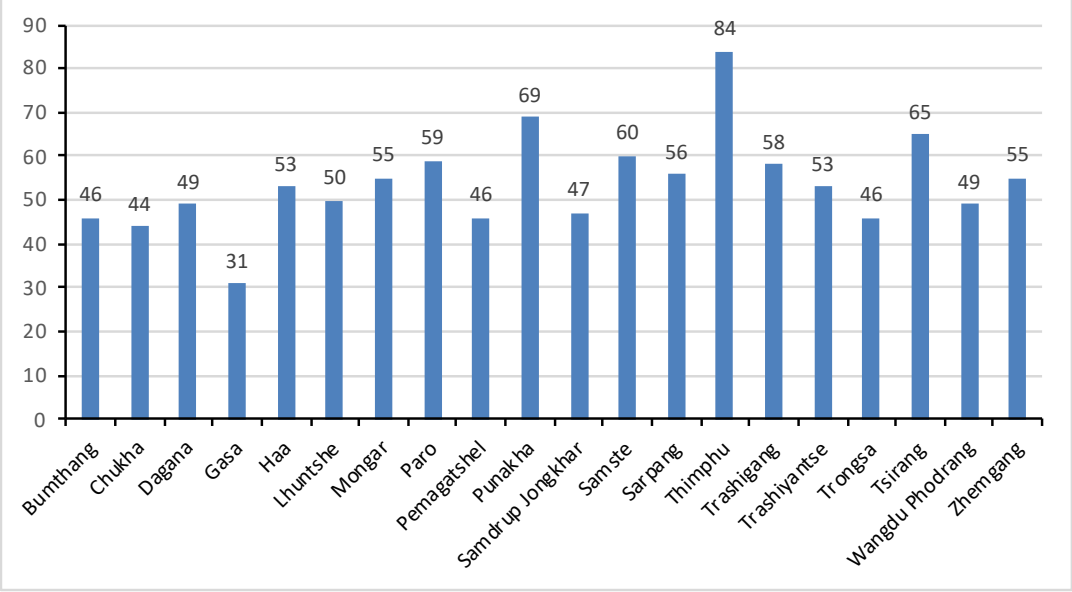


Figure 5. **Dzongkhag-wise representation of teacher respondent**

Figure 5 shows the subject taught by teacher respondent. There were 268 English, 246 Mathematics, 157 Dzongkha, 119 Integrated Science, 99 History, 90 Social Studies, 86 Geography, 65 Physics, 65 Biology, 57 Chemistry, 55 Economics, 41 EVS, 39 ICT, 26 Commerce, 24 Accounts, 17 Agriculture for Food Security (AgFS) 11 Media Studies, 6 Rigzhung, and 2 Vocational, teachers

that participated in the study. Further, 47 non-teaching staff rom schools across the country also participated.

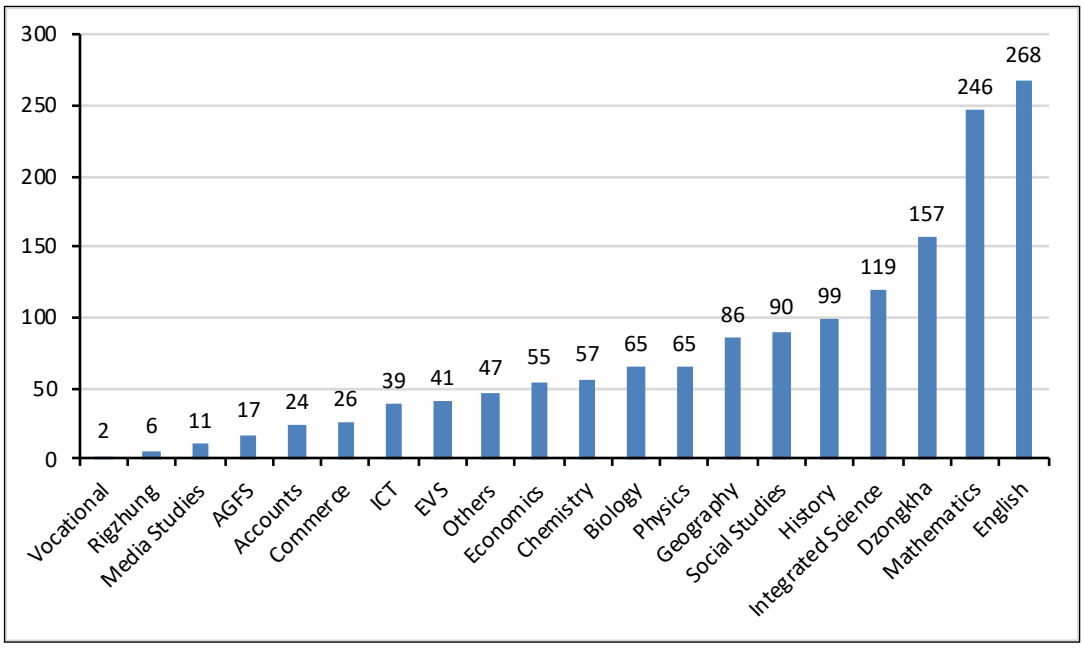


Figure 6. Subject taught by teacher respondent

4.2. Demographic profile of student respondents

The following are the demographic profile of 1506 student respondents that participated in the study.

- 53 percent were female students while 47 percent were male students.
- 13 percent of students were within the age profile of 10 to 12 years, 29 percent within 13 to 15 years, 34 percent within 16 and 17 and 24 percent above 18 years of age.
- 21 percent of the students were located in urban area, 52 percent in semi-urban area, 22 percent in semi-remote area, 6 percent in remote area.
- 13 percent of the students were from Primary School, 17 percent of students were from Lower Secondary School, 31 percent of the students were from Middle Secondary School and 39 percent of the students from Higher Secondary School.

Table 4

Demographic Profile of Student Respondents

Variable		Frequency	Percentage
Gender	Male	709	47.1%
	Female	796	52.9%
Age	Below 9 years	16	.1%
	10 to 12 years	201	13.4%
	13 to 15 years	432	28.8%
	16 to 17 years	500	34.3%
	18+ years	352	23.5%
Class	IV to VI	244	16.3%
	VII to VIII	283	18.9%
	IX to X	477	31.9%
	XI to XII	492	32.9%
Location of school	Urban	309	20.5%
	Semi Urban	740	51.6%
	Semi Remote	334	22.2%
	Remote	83	5.5%
	Very Remote	39	.2%
Type of school	PS	189	12.6%
	LSS	259	17.3%
	MSS	461	30.7%
	HSS	592	39.4%

The detailed breakdown of the number of students from twenty Dzongkhags that participated in the study is shown in Figure 6. Similar to teacher demographic profile, Thimphu had the highest number of students (101), while Gasa had the least number of students (46) participants in the study.

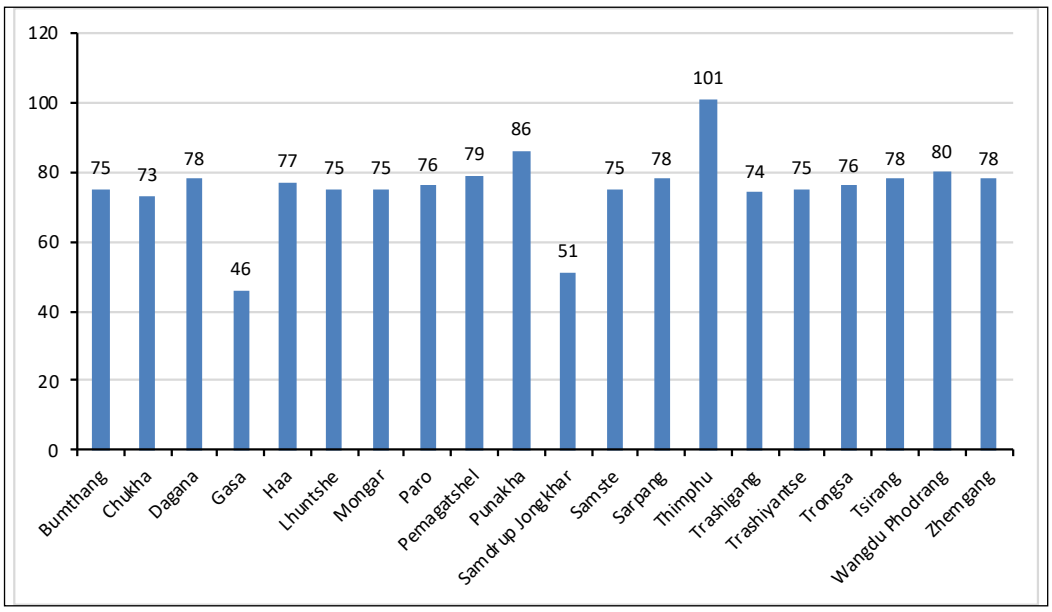


Figure 7. Dzongkhag-wise representation of student respondent

4.3. Current status of disaster activities and management in school

4.3.1. Student view of disaster

When students were asked if they knew what Disaster meant, 87 percent of them stated yes, while 11 percent not sure, and 2 percent no. Similarly, when asked if Disaster Risk Reduction was important, 85 percent of students stated yes, 13 percent not sure, and 1 percent no. However, when students were asked what Disaster Risk Reduction means, 54 percent knew, 38 percent was not sure, and 8 percent did not know what DRR meant.

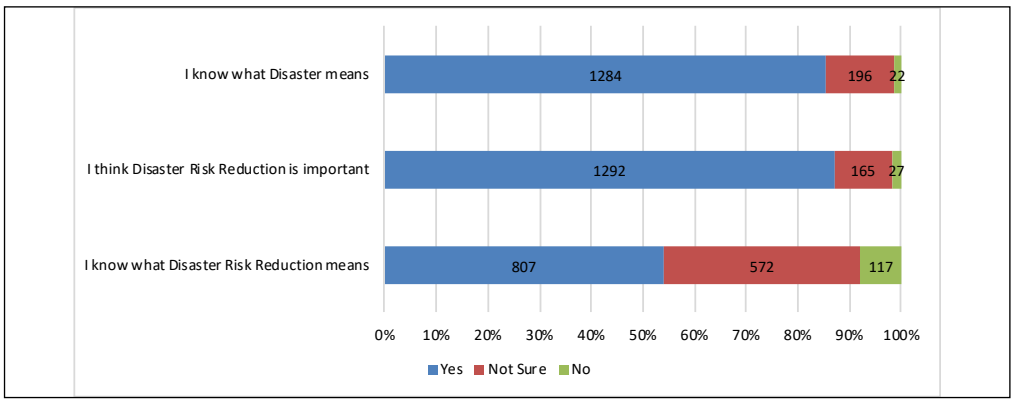


Figure 8. Students view on disaster

4.3.2. Disaster management structures in place

84 percent of students surveyed stated that the school had a teacher identified as the Disaster Focal Teacher. About the same percentage of students reported that the school had the School Disaster Management Committee, the Disaster Plan, and a Search and Rescue Team. 63 and 61 percent of the students also stated that the school had Disaster Evacuation Map displayed, and Early Warning System, respectively.

When teachers were asked the same questions: 97 percent stated that the school had a Disaster Focal Teacher, 93 percent stated that the school had the School Disaster Management Committee, 86 percent stated the Disaster Evacuation Map to be prominently displayed, 74 percent said that the school had identified a Search and Rescue Team and 50 percent stated that the school had Early Warning System.

Teachers rated their school more positively than students on the structures put in place to handle disasters even during the focus group discussions. However, during the field visit most schools were noted to have no proper signage such as emergency exits and evacuation map displayed, nor did the teachers as well as students know where the safe places in the school and home were located.

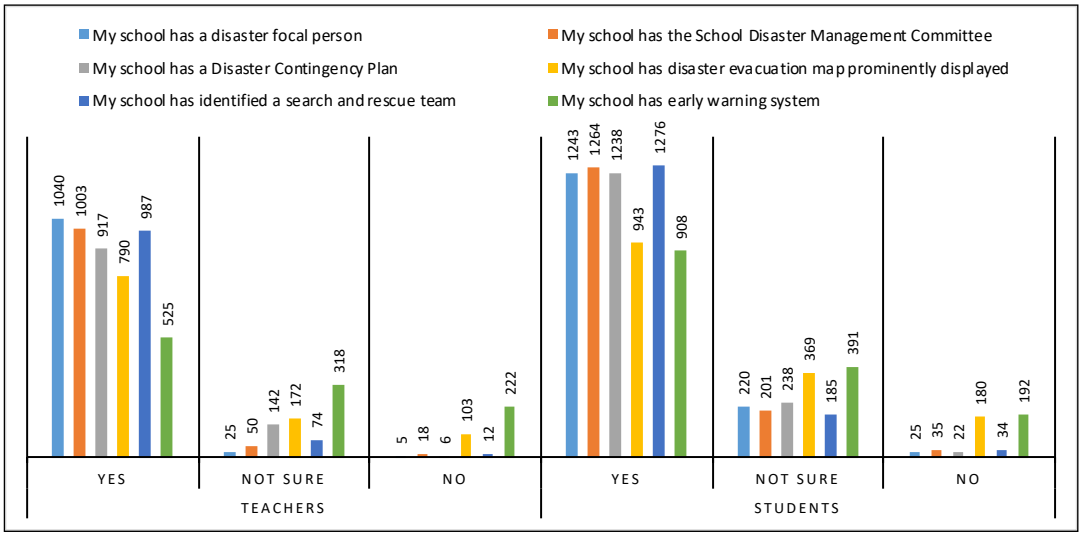


Figure 9. **Feedback on disaster management structures in place**

When teachers and students were asked if they knew the content of the school disaster plan, 72 percent of teachers and 50 percent of students stated yes while 26 percent of teachers and 43 percent of students rated not sure. About 90 percent of teachers and students reported to know what to do

during disaster, 71 percent of teachers and 52 percent of students aware of the probable hazards that might occur in their locality, about 45 percent of teachers and students informed that the school had disaster supply kits and slightly more than 50 percent of both teachers and students have emergency contact numbers to be used in the event of a disaster (Figure 10).

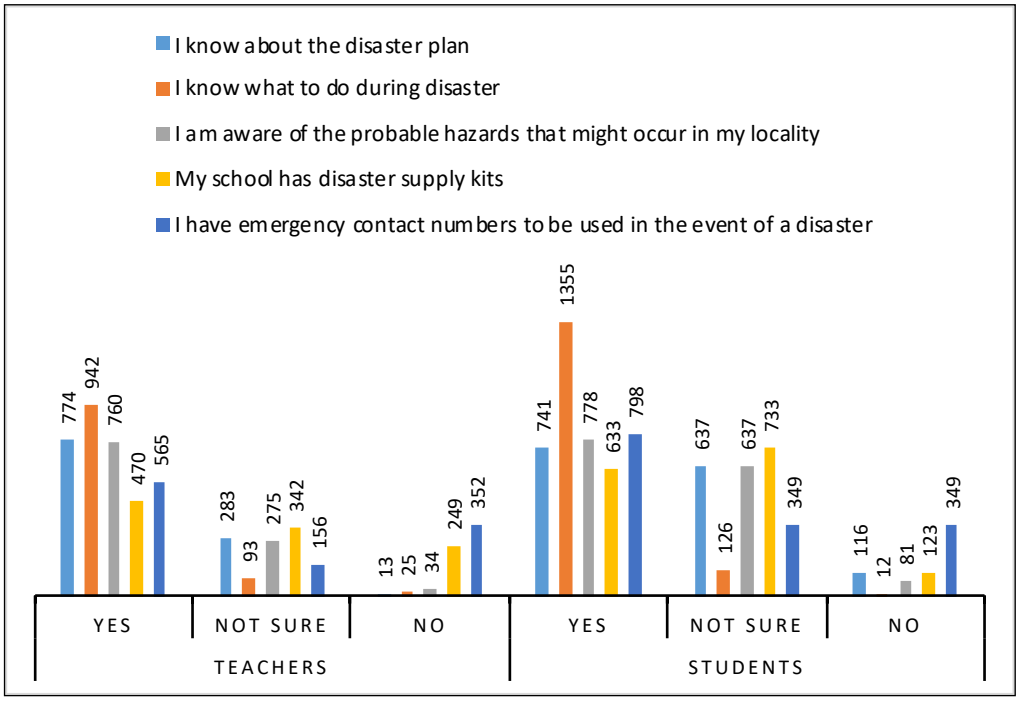


Figure 10. Feedback on disaster mechanisms

During the focus group discussion, when discussing the role of a teacher and student in the event of a disaster, a significant number of teachers highlighted the need to relook at practice of assigning one dedicated teacher in a school as the Disaster Focal Teacher (DFT). They said the assignment of DFT was not safe and sustainable mainly because trainings on disaster and its mitigation strategies are provided only to the disaster focal person. Some teachers cautioned the vulnerability of the school in the event the disaster strikes when the disaster focal person is not in the school. On the disaster supply kit, almost all teacher highlighted the need for a comprehensive disaster supply kit that is regularly maintained, while clearly stating the current disaster supply kit to be inadequate and outdated.

4.3.3. Opinion on school building safety

When teachers and students were asked on the safety of the school building, same percentage of teachers and students (28 percent) reported the school building to be safe while 53 percent of teacher and 58 percent of students were not sure, and 19 percent of teachers and 14 percent of students felt the building was not safe.

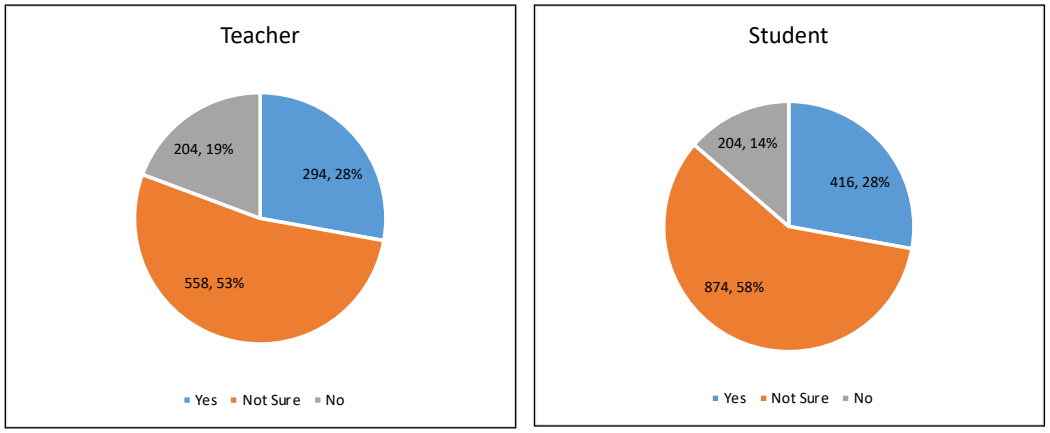


Figure 11. Opinion on safety of school building

During the focus group discussion, in some schools' teachers pointed at the cracks in the very room where the meeting was being held to make a point on safety of the building.They also quoted low quality materials, lack of maintenance budget, and no strict enforcement of quality control as the primary reason for unsafe buildings.

4.3.4. Mocks drills conducted in school

More than 95 percent of teachers as well as students reported that the school conducts mock drills on earthquake, whereas on fire and windstorm about 30 percent to 7 percent of teachers and students said mock drills are conducted (Figure 12).

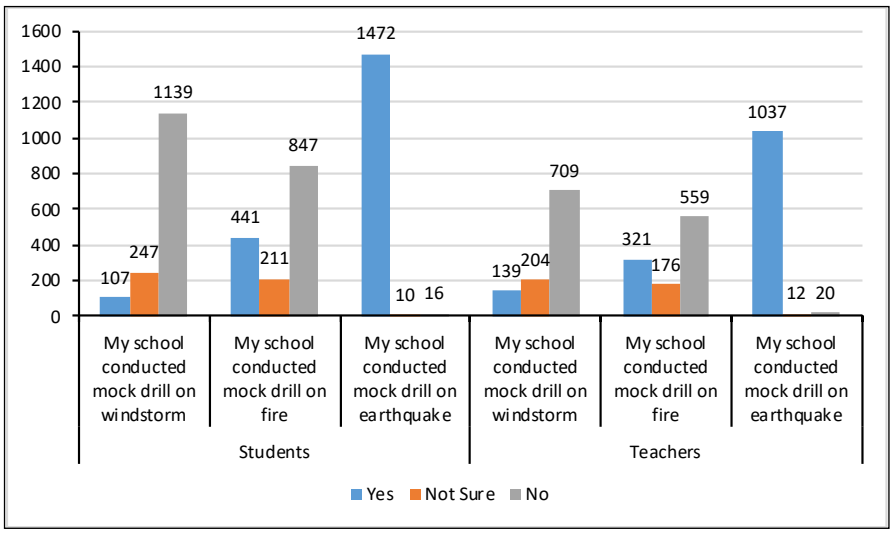


Figure 12. Mock drills conducted in schools

4.3.5. DRR awareness programmes

65 percent of teachers and 50 percent of students agreed that DRR awareness programmes are conducted at School. 17 percent of teachers and 27 percent of students indicated guest speakers are invited to the school to talk on DRR. 63 percent of teachers and 50 percent of students indicated to have contributed to spreading awareness on DRR to the family while 31 percent of teachers and 23 percent of students participated in spreading awareness on DRR to the local community.

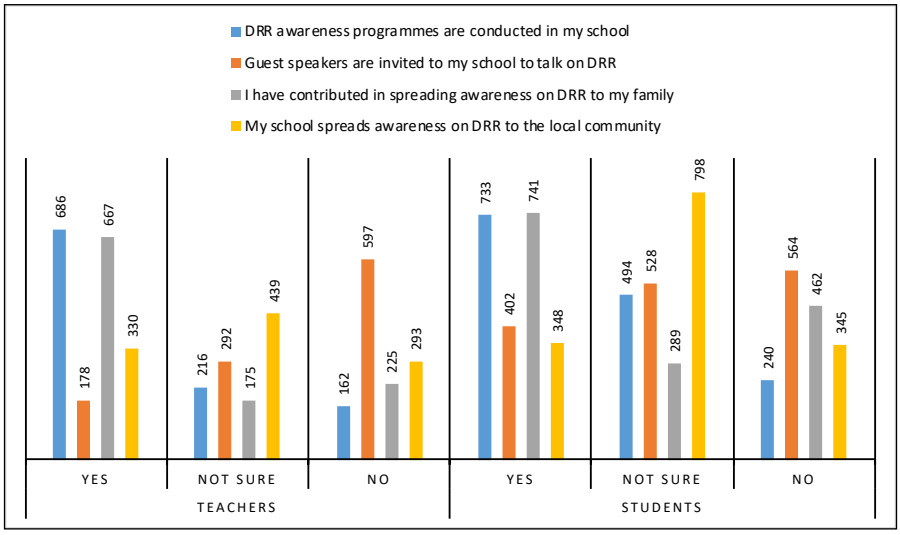


Figure 13. DRR awareness programmes

4.3.6. Feedback on existing curriculum

About 30 percent of teachers and 50 percent of students stated DRR components were in the subject that they study or learn respectively. Further, 18 percent of teachers and 25 percent of students have heard of DRR Emergency Curriculum, while about 10 percent of teachers and 13 percent of students knew what the DRR Emergency Curriculum covers.

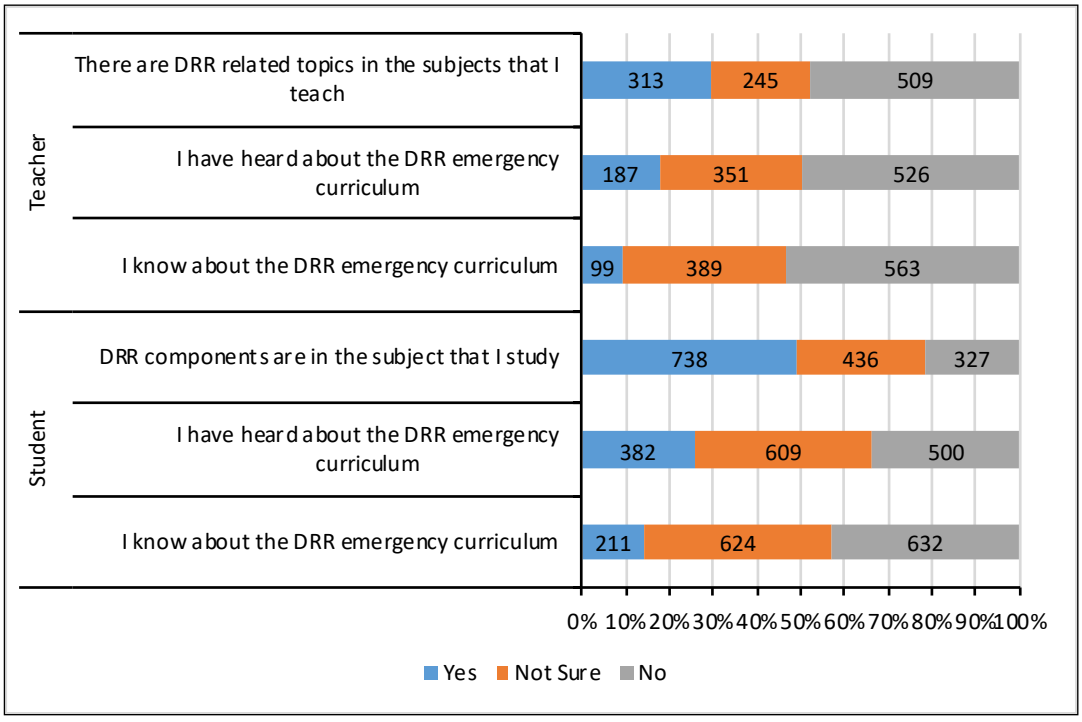


Figure 14. Feedback on the curriculum

4.3.7. Feedback on media coverage

59 percent of the teachers and 42 percent of students said media advocates on disaster. However, 33 percent of teachers and 47 percent of students rated not sure to media coverage.

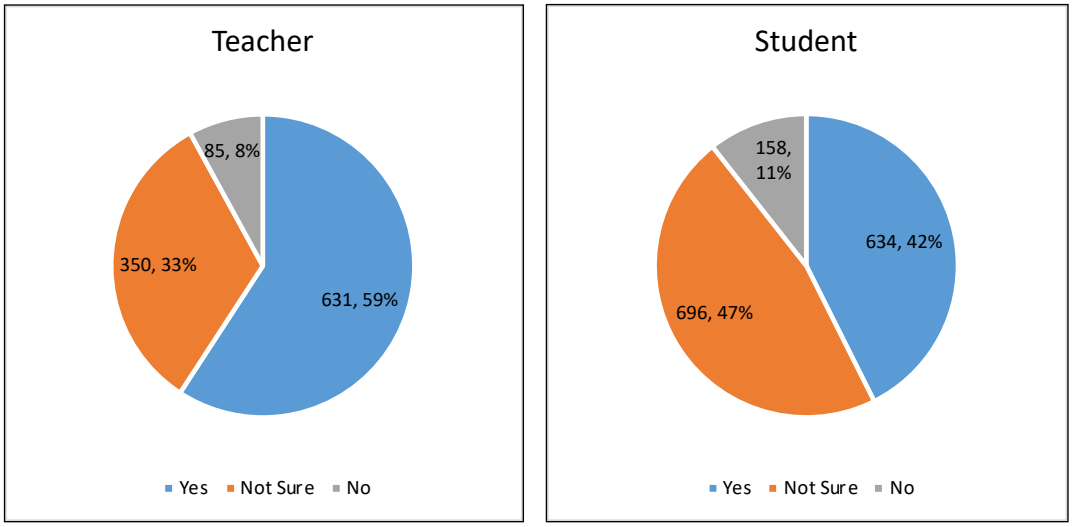


Figure 15. Feedback on media coverage

4.3.8. DRR information in school library

19 percent of teachers and 49 percent of students reported school library house information or books on DRR. Whereas, 61 percent of teachers and 45 percent of students were not sure. During the focus group discussion, many of the teachers and students who rated not sure honestly confessed to not actively using the school library given its unattractive collection of books.

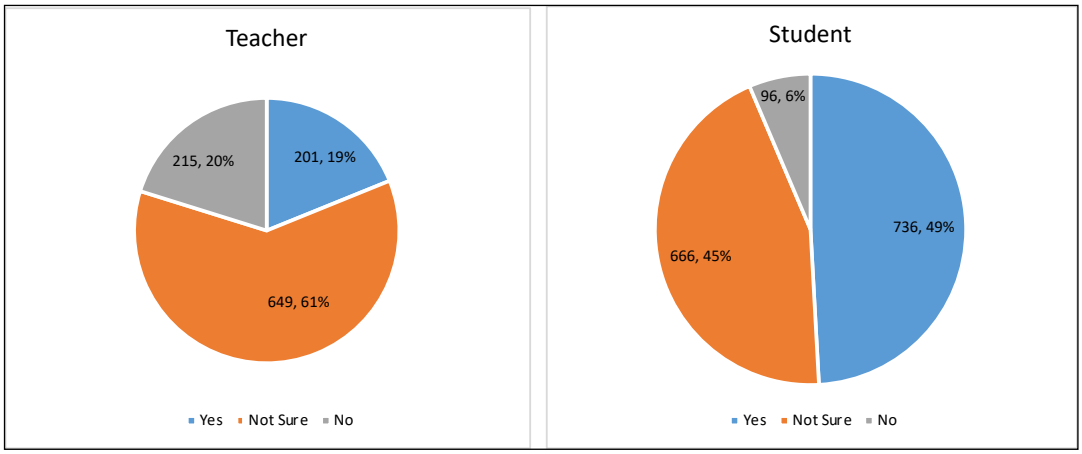


Figure 16. DRR information in school library

4.3.9. Training on DRR

22 percent of teachers reported to have received training on disaster risk reduction either through SBIP, DBIP or NBIP, however, 72 percent of teachers indicated not having received any training.

Teacher professional development in DRR needs to be systematized, reinforced and sustained, almost all teachers who attended the training stated the training to be of short duration and usually a one-off even with no evident follow up and reinforcement.

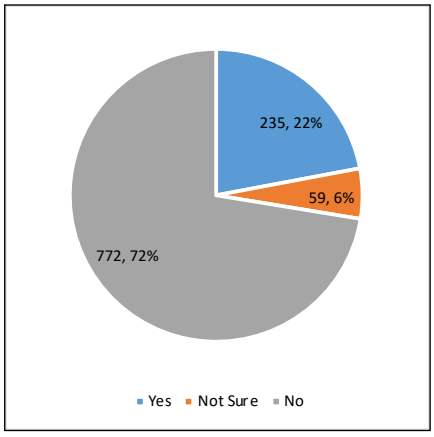


Figure 17. Training on DRR by teachers

4.3.10. Awareness of local community on disaster contingency plan

20 percent of teachers stated the local community to be aware of the disaster contingency plan, while 71 percent were not sure and 9 percent did not think so.

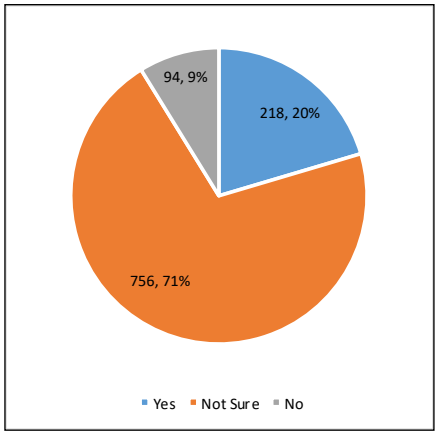


Figure 18. Awareness of local community on disaster contingency plan

4.4. Access to DRR Teacher Handbook 2016

27 percent of teachers stated that they had access to DRR Teacher Handbook, 2016, and 24 percent of teachers indicated to have read it.

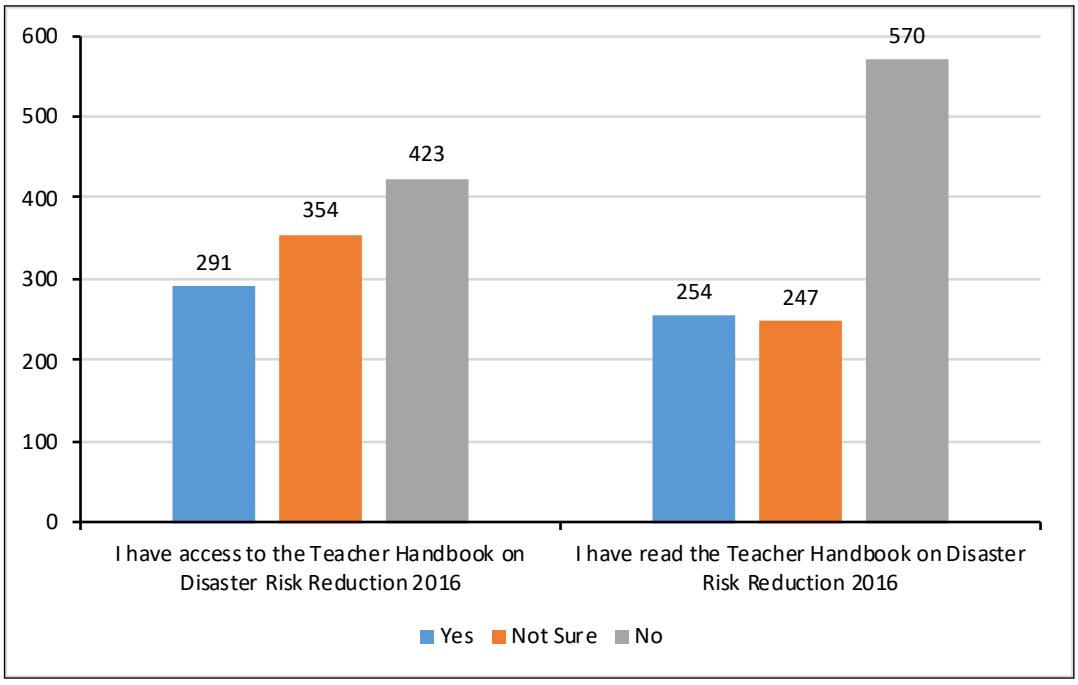


Figure 19. Feedback on DRR Teacher Handbook 2016

4.5. Awareness of DRR documents and roles of various agencies

4.5.1. Awareness of DRR documents

- 17 percent of teachers and 13 percent of students were aware of the Disaster Management Act of Bhutan, 2013.
- 12 percent of teachers and 6 percent of students were aware of the National Disaster Risk Management Framework, 2006.
- 23 percent of teachers and 16 percent of students were aware of the Disaster Management and Contingency Plan, 2016, developed by Ministry of Education.
- 72 percent of teachers and 57 percent of students were aware of the School Contingency Plan.

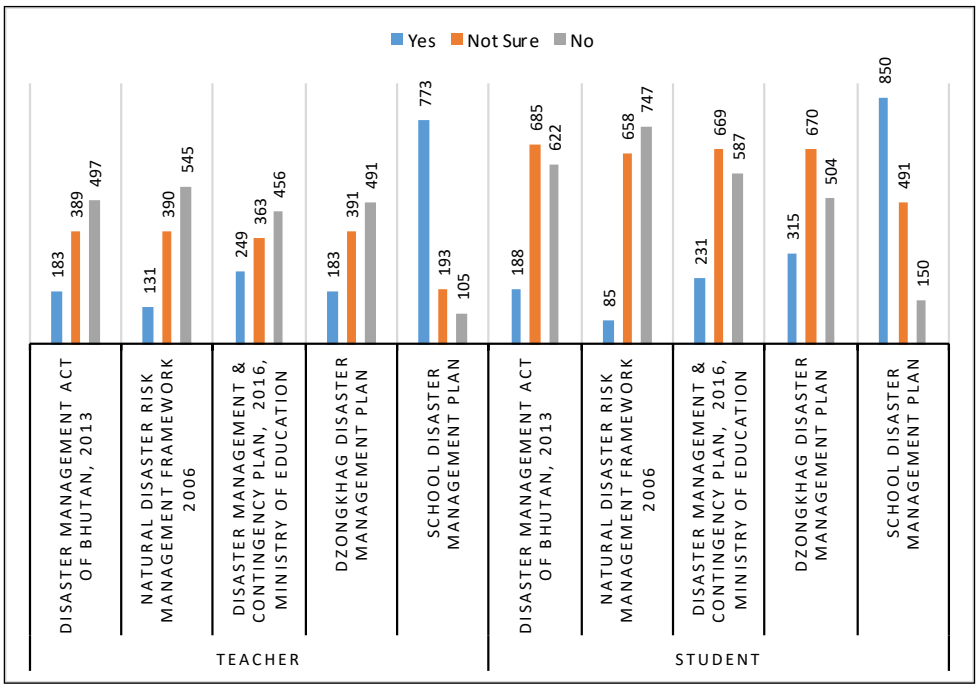


Figure 20. Awareness of DRR documents

4.5.2. Awareness of DRR Roles

- 83 percent of teachers and 71 percent of students were self-aware of their own role in the event of disaster.
- 86 percent of teachers and 69 percent of students knew the role of School Disaster Focal Person.
- 28 percent of teachers and 18 percent of students knew the role of Dzongkhag Disaster Management Focal Person.
- 15 percent of teachers and 19 percent of students knew the role of Dungkhag/Gewog/Thromde Disaster Management Committee.
- About 20 percent of teachers and students knew the role of Dzongkhag Disaster Management Office.
- 25 percent of the teachers 11 percent of students knew the role of Disaster Management Unit, DSE, MoE, almost the same percentage of teachers and students knew the role of Disaster Management Unit, DDM, MoHCA.
- 12 percent of the teachers and 5 percent of students knew the role of Inter-Ministerial Task Force.
- 19 percent of teachers and 23 percent of students knew the role of

National Emergency Operation Centre.

- 32 percent of teachers and 22 percent of students knew the role of National Disaster Management Authority.

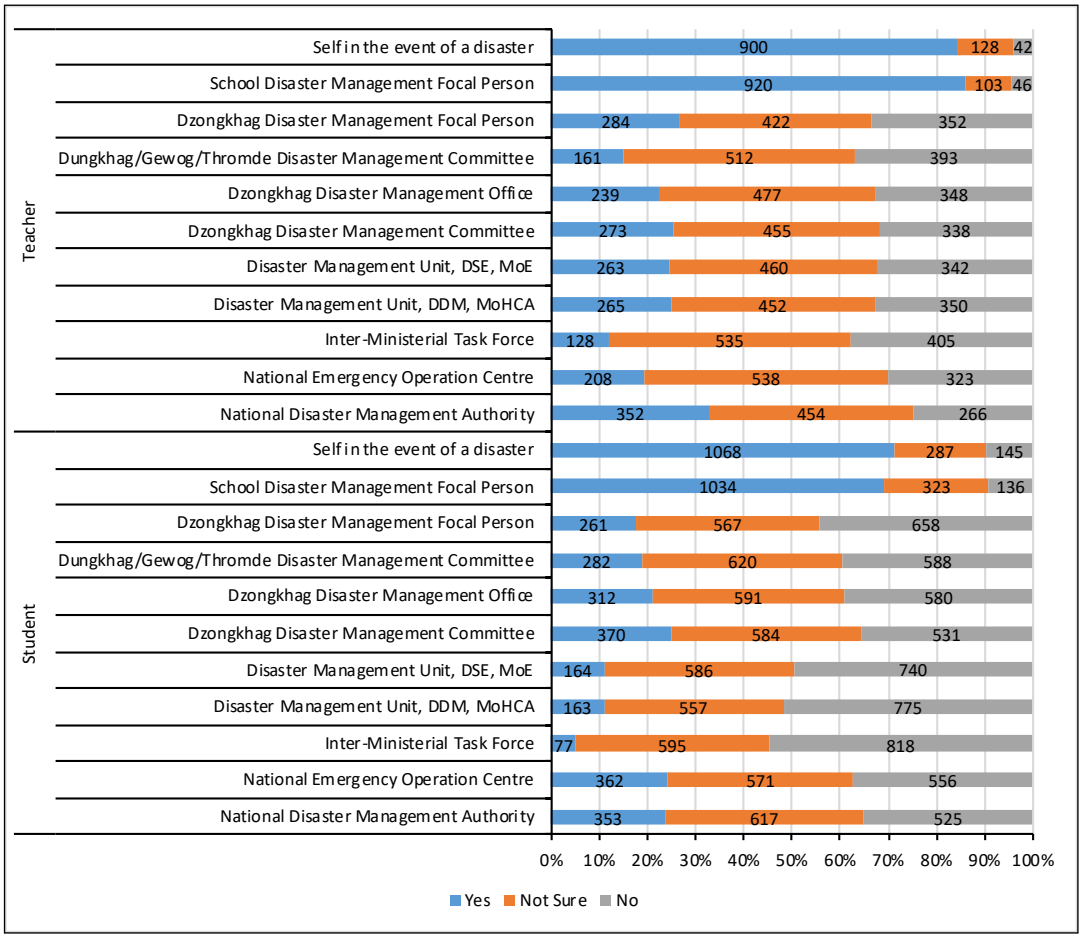


Figure 21. Awareness on roles of various agencies

4.6. Ranking of perceived hazards

4.6.1. Teachers ranking of hazards

When teachers were asked to rank hazards according to the degree of threat faced by the community, Earthquake was ranked as the highest threat, followed by Thunder Storm, Glacial Lake Outburst Flood, Flood, Landslide, Wild-Fire, Water Borne Disease, Wind Storm, Wild Animal Attack and Electrical Shocks, respectively. There was no significant difference in the ranking of most hazards and it was noted that location of the school had a direct bearing on ranking.

For example, schools located at lower elevation beside the river, ranking Glacial Lake Outburst Flood and Floods are the most dangerous to them.

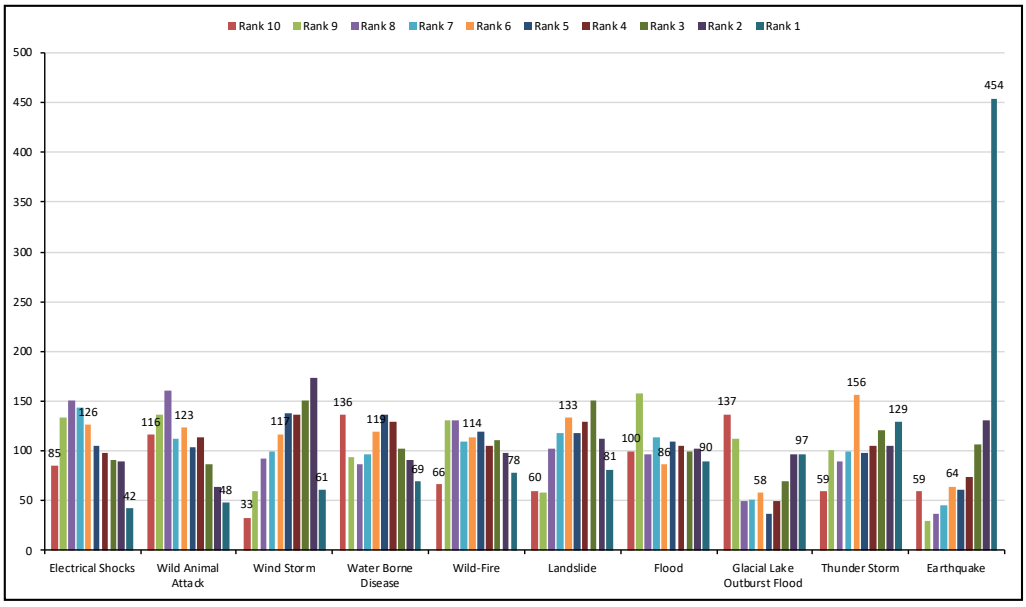


Figure 22. Ranking of hazards by teachers

4.6.2. Students ranking of hazards

Similar to teachers, students ranked Earthquake as the most dangerous and likely to happen. The second most perceived threat was Water Borne Disease, followed by Thunder Storm, Landslide, Wind Storm, Flood, Wild-Fire, Electrical Shocks, Wild Animal Attack and Glacial Lake Outburst Flood, respectively.

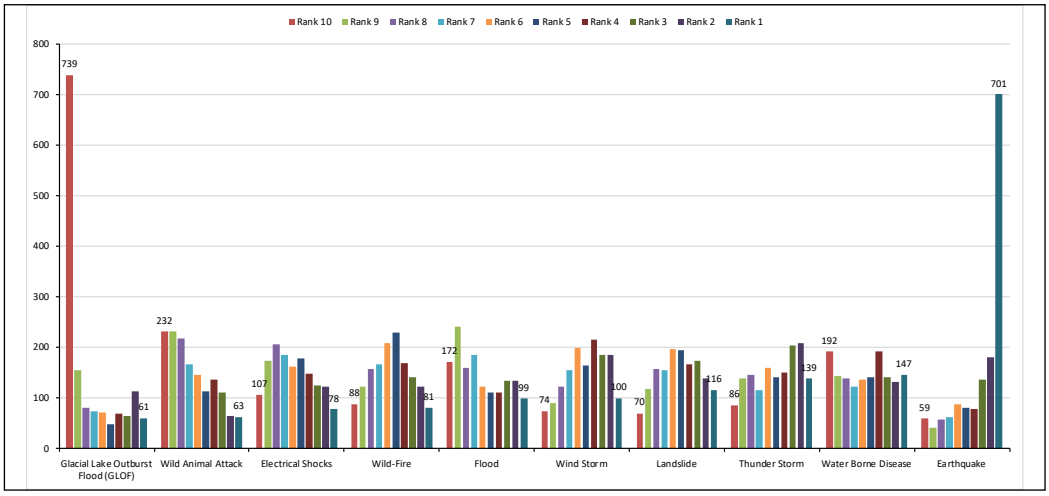


Figure 23. Ranking of hazards by students

4.7. Expectation of what students should know

4.7.1. Expectation of what students should know (by students)

When students were asked their own expectation of what the student should know by the end of schooling relating to disaster, 70 to 95 percent of students agreed that a student should know the following:

- how to help others during disaster,
- areas in the community that are likely to face disaster,
- where the safe places in school, home and community are located and how to get there,
- different types of hazards, its cause and effect,
- how to contact people who can help before, during and after a disaster,
- how and where to evacuate in case of a disaster,
- warning signs and signals of different hazards at home, school and community,
- climate change, its cause and effect, and
- man-made hazards and its effect.

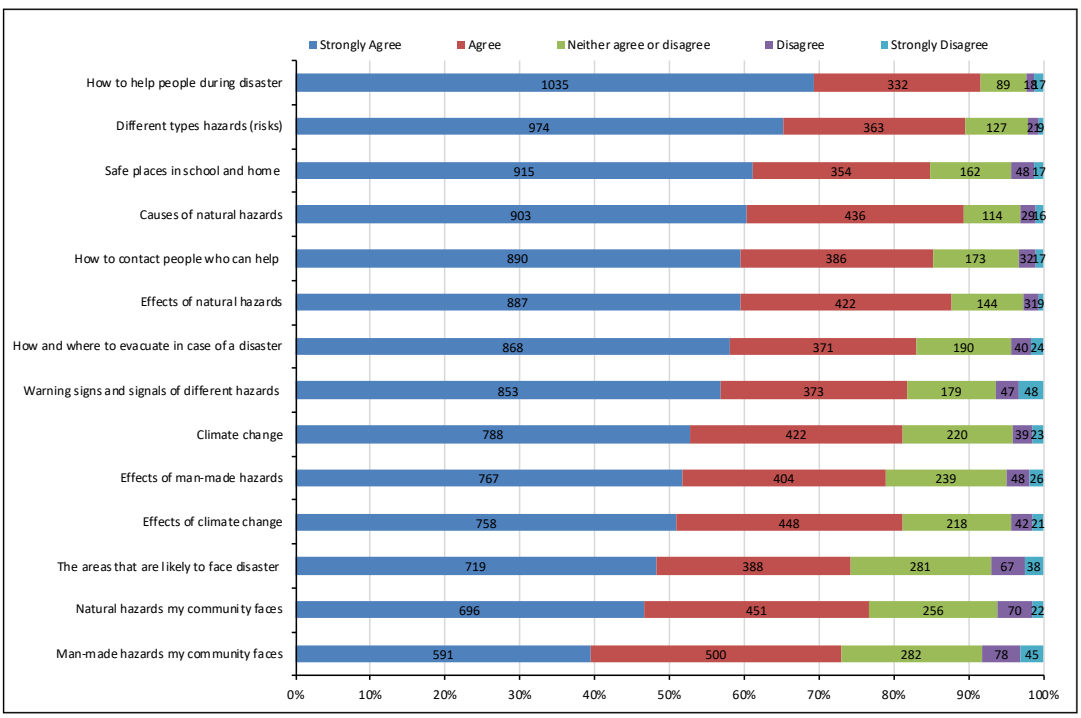


Figure 24. Expectation on what students should know (by students)

4.7.2. Expectation of what students should know (by teachers)

When teachers were asked what they expected the students to know by the end of schooling related to disaster. About 90 percent and above teachers expressed the following:

- how and where to evacuate in the event of a disaster,
- the location of safe places in school, home and community and how to get there,
- different types of hazards, its cause and effect,
- how to help people who are more vulnerable when a disaster happens,
- know climate change, its cause and effect,
- how to contact people who can help before, during and after a disaster,
- warning signs and signals of different hazards at home, school and community,
- natural hazards the community faces,
- vulnerable area to disaster in the community, and
- man-made hazards and its effect.

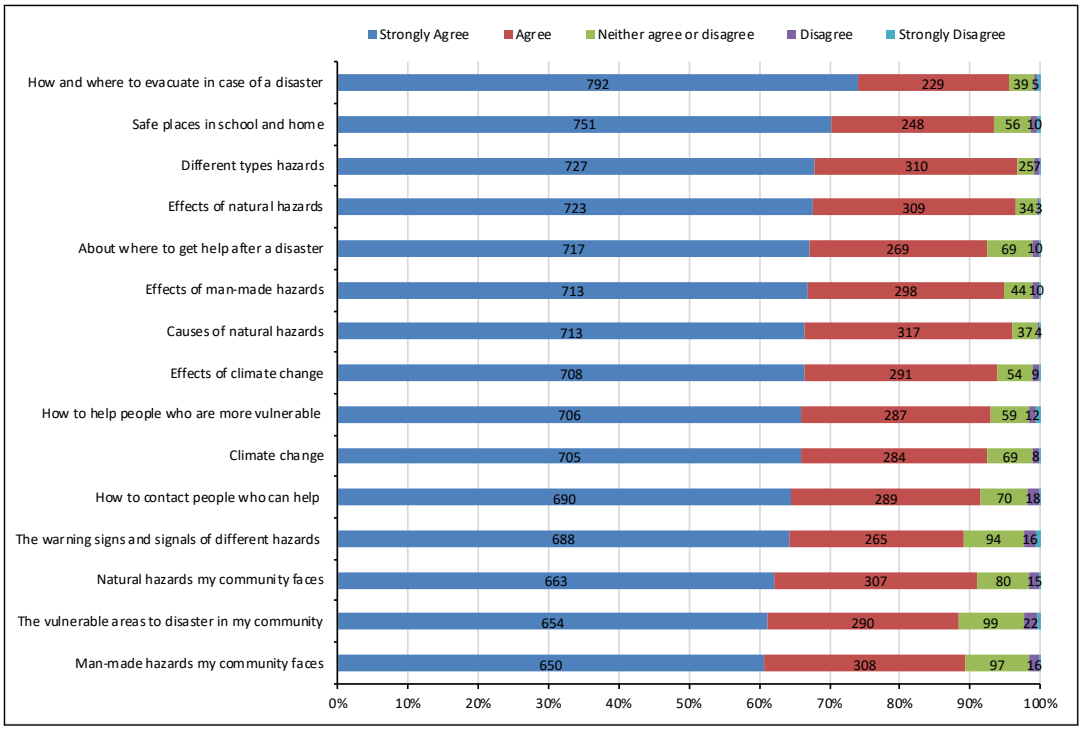


Figure 25. Teachers expectation on what students should know

4.8. Expectation on what students should be able to do

- 81 percent of students and 93 percent of teachers expect student to perform first aid;
- 70 percent of students and 82 percent of teachers expect student to purify water in an emergency;
- 82 percent of students and 85 percent of teachers expect student to create a family preparedness plan;
- 76 percent of students and 85 percent of teachers expect student to create a disaster risk map;
- 69 percent of students and 94 percent of teachers expect student to protect themselves first then only assist others in the event of disaster; and
- 88 percent of students and 95 percent of teachers expect student to stay calm and alert when disaster happens.

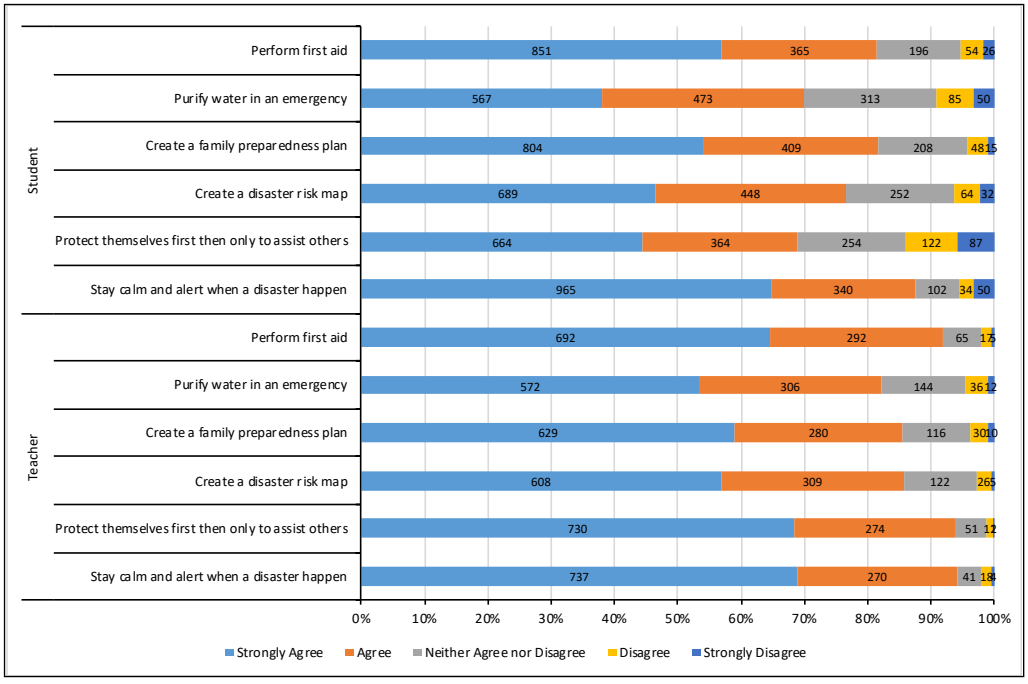


Figure 26. Teachers and students expectation of what students should do

4.9. Opinion on preparedness to mitigate disaster

When teachers were asked on the preparedness to mitigate disaster, significantly more number of teachers felt the government was better prepared to mitigate

natural hazards than the local community. During the FGD, teachers cited resource to be the main deciding factor and they strongly felt that the local community is lacking in necessary resources.

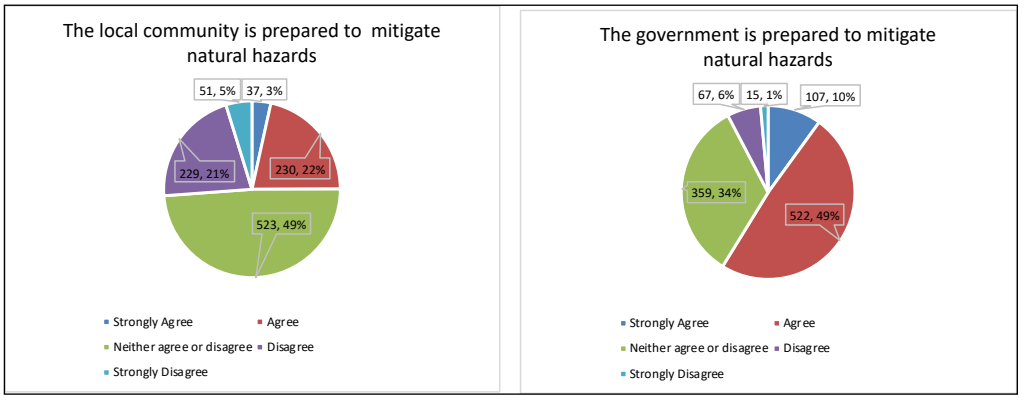


Figure 27. Opinion on the preparedness to mitigate disaster

4.10. Recommendations by teachers and students

During the survey, 72 percent of students and 58 percent of teachers recommended that there be a separate DRR curriculum. While, 81 percent of students and 83 percent of teachers recommended integration of DRR with existing curriculum.

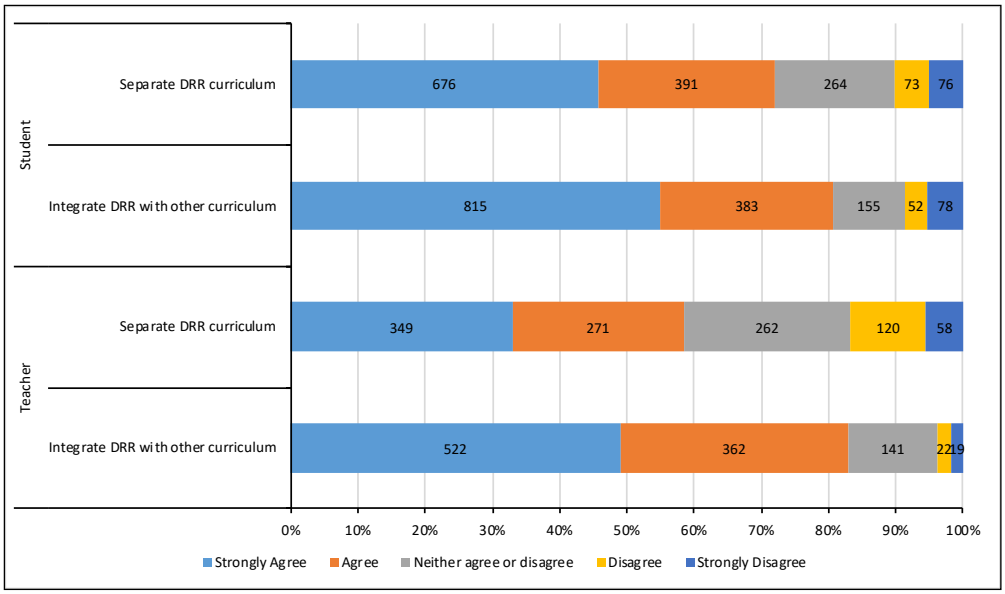


Figure 28. Recommendation on DRR curriculum (by students and teachers)

5. RECOMMENDATION

5.1. Integrate DRR into relevant subject

Countries such as Bangladesh, Cambodia, India, Indonesia, Iran, Maldives, Lao People's Democratic Republic (PDR), Nepal, Pakistan, Malaysia, Philippines, and Sri Lanka, have either integrated DRR into the school curriculum or are in process of integration (UNICEF, 2009). The method of integration differed, either as a separate subject at a specific level or integration with existing curriculum.

The recommendation made by the respondents of the study suggests integration. Further, the success stories of best practices across the globe advise integration with existing curriculum. Therefore, as a way forward for Bhutan, it is recommended that the integration approach be adopted.

5.2. Adopt region specific DRR strategies based the vulnerability and risk assessments

Risk of hazards differ from place to place due to the geographical setting of the country. Hence, to effectively prepare students for disaster it is imperative that region specific DRR strategies and activities be applied.

5.3. Institute inclusive approach to provide awareness and capacity building programmes

No human is immune to disaster, hence, there is a need to institute an inclusive approach to providing awareness and capacity building programmes so as to build a resilient society.

5.4. Ensure strict compliance of building codes for school construction and/or retrofit and maintain existing structures

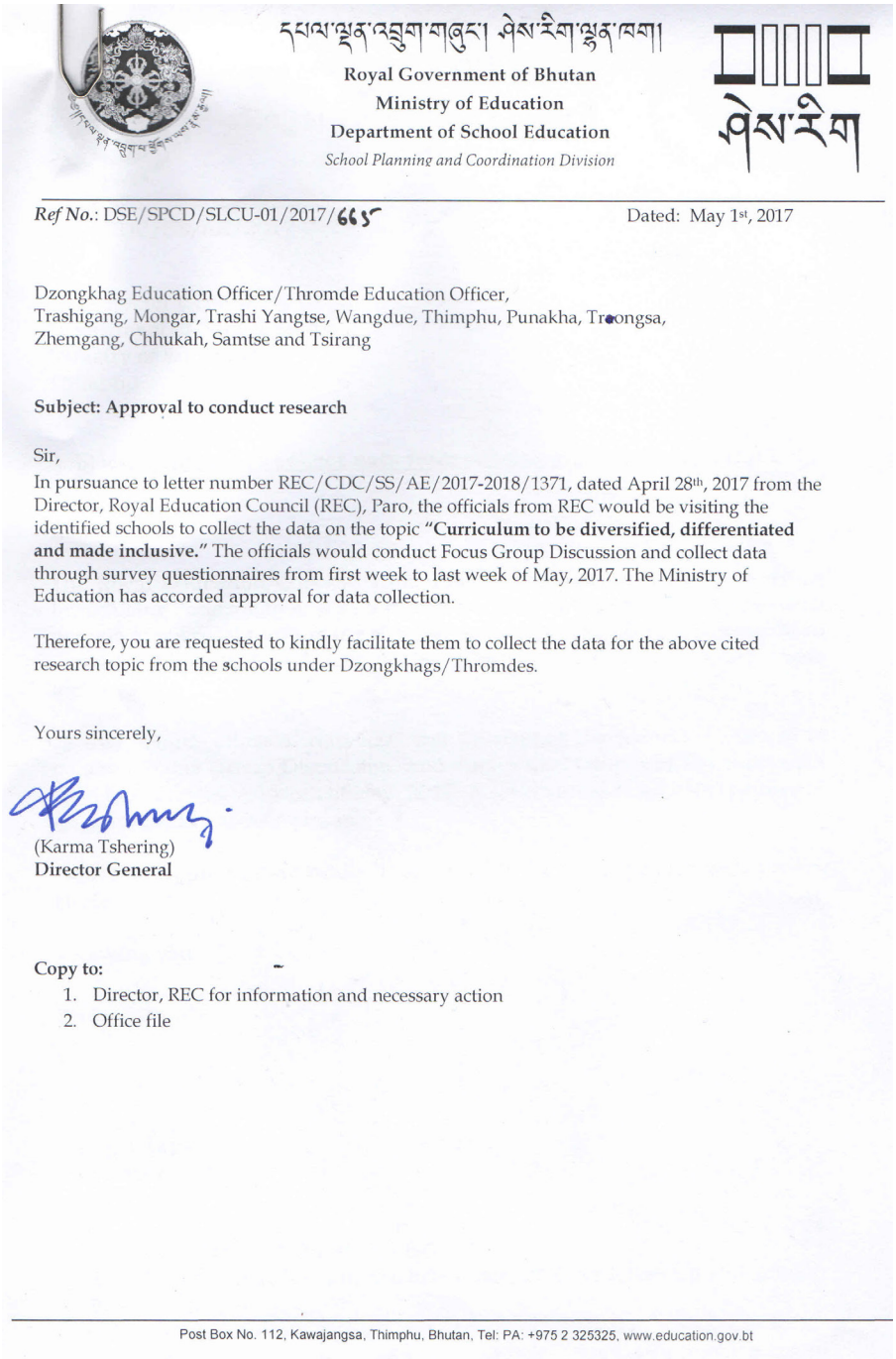
It is the sovereign responsibility of the State to protect its citizens. About 28 percent of the population, consisting of students and teachers, spend most of their time in schools. Therefore, it is of utmost importance that the school structures be disaster resilient. This demands for strict compliance of building codes and retrofitting and maintaining of existing structures.

5.5. Strengthen linkage between the Central, Dzongkhag and Local Level

The study highlighted poor coordination between the Central, Dzongkhag and Local Level in the DRR activities and programmes. Significant number of teachers and students were not aware of the existing DRR policies and role of agencies. There is a need to strengthen the linkage between the Central, Dzongkhag and Local Level for effective coordination and implementation of DRR activities and programmes.

6. ANNEXURE

6.1. Data collection consent and approval



དཔལ་ལྡན་འབྲུག་གཞུང་། ཤེས་རིག་ལྷན་ཐག།

Royal Government of Bhutan
Ministry of Education
Department of School Education
School Planning and Coordination Division

ཤེས་རིག

Ref No.: DSE/SPCD/SLCU-01/2017/665 Dated: May 1st, 2017

Dzongkhag Education Officer/Thromde Education Officer,
Trashigang, Mongar, Trashi Yangtse, Wangdue, Thimphu, Punakha, Trongsa,
Zhemgang, Chhukah, Samtse and Tsirang

Subject: Approval to conduct research

Sir,

In pursuance to letter number REC/CDC/SS/AE/2017-2018/1371, dated April 28th, 2017 from the Director, Royal Education Council (REC), Paro, the officials from REC would be visiting the identified schools to collect the data on the topic **"Curriculum to be diversified, differentiated and made inclusive."** The officials would conduct Focus Group Discussion and collect data through survey questionnaires from first week to last week of May, 2017. The Ministry of Education has accorded approval for data collection.

Therefore, you are requested to kindly facilitate them to collect the data for the above cited research topic from the schools under Dzongkhags/Thromdes.

Yours sincerely,

(Karma Tshering)
Director General

Copy to:

1. Director, REC for information and necessary action
2. Office file

Post Box No. 112, Kawajangsa, Thimphu, Bhutan, Tel: PA: +975 2 325325, www.education.gov.bt

6.2. Student Questionnaire

Dear Student,

The Royal Education Council in collaboration with the Save the Children is conducting a study on Disaster Risk Reduction. This attached survey questionnaire is **not a test** and there is **no right or wrong answer**. **Participation is on an anonymous and voluntary basis**. Do not write your name or your school name anywhere on the questionnaire. Submission of the completed questionnaires will be considered written content from your side.

This questionnaire has been designed as a survey tool to assist in the **need assessment of introducing DRR curriculum.** Note that by **participating in this study there will be no implication,** however, if you decide to take part then we request you to **complete the questionnaire honestly and sincerely** as your response will affect the interpretation and analysis of the collected data.

Instructions on completing the questionnaires are provided. Should there be any clarification to be made, contact the survey administrator.

Your kind cooperation and participation will be highly appreciated.

Thanking you.

Kind Regards,

-sd-

Kinga Dakpa

(Director)

A. Demographic Information (Circle your response)

1. Gender

(1) Male (2) Female

2. Age (in years)

(1) Below 9	(2)10-12	(3) 13-15	(4) 16-17	(5) 18+

3. Class

(1) IV-VI	(2) VII-VIII	(3) IX-X	(4) XI-XII

4. Location

(1) Urban	(2) Semi-Urban	(3) Semi-Remote	(4) Remote	(5) Very Remote

5. Dzongkhag/Thromde _____

6. Type of School

(1) PS	(2) LSS	(3) MSS	(4) HSS

B. Current Status of the DR Management in Schools

		Yes	Not Sure	No
7	I know what Disaster means	3	2	1
8	I know what Disaster Risk Reduction (DRR) means	3	2	1
9	I think Disaster Risk Reduction (DRR) is important	3	2	1
10	My school has a disaster focal person	3	2	1
11	My school has the School Disaster Management Committee (SDMC)	3	2	1
12	My school has a Disaster Plan	3	2	1
13	I know about the disaster plan	3	2	1
14	My school has disaster evacuation map displayed	3	2	1
15	My school has identified a search and rescue team	3	2	1
16	My school has early warning system	3	2	1

		Yes	Not Sure	No
17	My school buildings are safe from disaster	3	2	1
18	I know what to do during disaster	3	2	1
19	I know about the hazards (risks) that might occur in my locality	3	2	1
20	My school has disaster supply kits	3	2	1
21	I have emergency contact numbers to be used during disaster	3	2	1

C. DRR Awareness

I know about:		Yes	Not Sure	No
22	Disaster Management Act of Bhutan, 2013	3	2	1
23	National Disaster Risk Management Framework 2006	3	2	1
24	Disaster Management & Contingency Plan, 2016, Ministry of Education	3	2	1
25	Dzongkhag Disaster Management Plan	3	2	1
26	School Disaster Contingency Plan	3	2	1

I know roles of the following:		Yes	Not Sure	No
27	National Disaster Management Authority	3	2	1
28	National Emergency Operation Centre	3	2	1
29	Inter-Ministerial Task Force	3	2	1
30	Disaster Management Unit, DDM, MoHCA	3	2	1
31	Disaster Management Unit, DSE, MoE	3	2	1
32	Dzongkhag Disaster Management Committee	3	2	1
33	Dzongkhag Disaster Management Office	3	2	1
34	Dungkhag/Gewog/Thromde Disaster Management Committee	3	2	1
35	Dzongkhag Disaster Management Focal Person	3	2	1
36	School Disaster Management Focal Person	3	2	1
37	Student, in the event of a disaster	3	2	1

D. Hazards

39. Rank the following hazards according to the degree of threat faced by your community. **Rank 10** represents the highest/greatest threat and **Rank 1** represent the lowest/least threat. Use each number once only.

Hazards	Rank
a. Earthquake	
b. Glacial Lake Outburst Flood (GLOF)	
c. Thunder Storm (including lighting and hail)	
d. Wind Storm	
e. Wild-Fire	
f. Landslide	
g. Flood	
h. Wild Animal Attack	
i. Electrical Shocks	
j. Water Borne Disease	

E. DRR Activities in School

		Yes	Not Sure	No
40	My school conducted mock drill on earthquake	3	2	1
41	My school conducted mock drill on fire	3	2	1
42	My school conducted mock drill on windstorm	3	2	1
43	DRR programmes are conducted in my school	3	2	1
44	Guest speakers are invited to my school to talk on DRR	3	2	1
45	There are DRR related topics in the subjects that I studied	3	2	1
46	I have heard about the DRR emergency curriculum	3	2	1
47	I know about the DRR emergency curriculum	3	2	1
48	Information on DRR can be found in the school library	3	2	1
49	The media covers stories on DRR	3	2	1
50	I have spread information on DRR to my family	3	2	1
51	My school spreads information on DRR to the local community	3	2	1

F. Expectation

I aspire to know:		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
52	different types hazards (risks)	5	4	3	2	1
53	causes of natural hazards	5	4	3	2	1
54	effects of natural hazards	5	4	3	2	1
55	effects of man-made hazards	5	4	3	2	1
56	natural hazards my community faces	5	4	3	2	1
57	man-made hazards my community faces	5	4	3	2	1
58	climate change	5	4	3	2	1
59	effects of climate change	5	4	3	2	1
60	the areas that are likely to face disaster in my community	5	4	3	2	1
61	safe places in school, home and other places are located, and how to get there	5	4	3	2	1
62	how and where to evacuate in case of a disaster	5	4	3	2	1
63	how to help people during disaster	5	4	3	2	1
64	the warning signs and signals of different hazards at home, school and community	5	4	3	2	1
65	how to contact people who can help before, during and after a disaster	5	4	3	2	1

I aspire to (do):		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
66	stay calm and alert when a disaster happen	5	4	3	2	1
67	protect myself first then only to assist others	5	4	3	2	1
68	create a disaster risk map	5	4	3	2	1
69	create a family preparedness plan	5	4	3	2	1
70	purify water in an emergency	5	4	3	2	1
71	perform first aid	5	4	3	2	1

G. Recommendation

I recommend that:		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
72	DRR information should be integrated with other curriculum	5	4	3	2	1
73	There be a separate DRR curriculum	5	4	3	2	1

You have completed the survey
Thank you for your participation

To be filled by the Enumerator

Name of Enumerator: _____

Designation: _____

Place of survey: _____

Signature: _____

Date: _____

6.3. Teacher Questionnaire

Dear Teacher,

The Royal Education Council in collaboration with the Save the Children is conducting a study on Disaster Risk Reduction. This attached survey questionnaire is not a test and there is no right or wrong answer. Participation is on an anonymous and voluntary basis. Do not write your name or your school name anywhere on the questionnaire. Submission of the completed questionnaires will be considered written content from your side.

This questionnaire has been designed as a survey tool to assist in the need assessment of introducing DRR curriculum. Note that by participating in this study there will be no implication, however, if you decide to take part then we request you to complete the questionnaire honestly and sincerely as your response will affect the interpretation and analysis of the collected data.

Instructions on completing the questionnaires are provided. Should there be any clarification to be made, contact the survey administrator.

Your kind cooperation and participation will be highly appreciated.

Thanking you.

Kind Regards,

-sd-

Kinga Dakpa

(Director)

A. Demographic Information (Circle your response)

1. Gender

(1) Male	(2) Female

2. Age (in years)

(1) 20-29	(2) 30-39	(3) 40-49	(4) 50+

3. Location

(1) Urban	(2) Semi-Urban	(3) Semi-Remote	(4) Remote	(5) Very Remote

4. Dzongkhag/Thromde _____

5. Marital Status

(1) Single	(2) Married	(3) Living Together	(4) Separated	(5) Divorced	(6) Widowed

6. Educational Background

(1) Class X	(2) Class XII	(3) Bachelor Degree	(4) Master Degree	(5) Others _____

7. Target Respondent

(1) Teacher	(2) Principal	(3) DEO/TEO

8. Are you a disaster focal person?

(1) Yes	(2) No

9. Subject taught:

(1) Dzongkha	(2) English	(3) Mathematics	(4) Integrated Science	(5) Social Studies
(6) History	(7) Geography	(8) Economics	(9) Biology	(10) Chemistry
(11) Physics	(12) Commerce	(13) Account	(14) ICT	(15) AgFS

(16) Media Studies	(17) Vocational	(18) EVS	(19) Rigzhung	(20) Others _____

10. What class level do you teach?

(1) PP	(2) I	(3) II	(4) III	(5) IV	(6) V	(7) VI
(8) VII	(9) VIII	(10) IX	(11) X	(12) XI	(13) XII	(14)Non-teaching

B. Current Status of the DR Management in Schools

		Yes	Not Sure	No
11	I think Disaster Risk Reduction (DRR) is important	3	2	1
12	Schools have a significant role to play in DRR	3	2	1
13	My school has a disaster focal person	3	2	1
14	My school has the School Disaster Management Committee (SDMC)	3	2	1
15	In my school, SDMC takes lead role in Disaster Risk Reduction	3	2	1
16	My school has a Disaster Contingency Plan	3	2	1
17	My school staffs (teaching and non-teaching) are aware of the disaster contingency plan	3	2	1
18	My school students are aware of the disaster contingency plan	3	2	1
19	The local community is aware of the disaster contingency plan	3	2	1
20	My school has disaster evacuation map prominently displayed	3	2	1
21	My school has identified a search and rescue team	3	2	1
22	My school has early warning system	3	2	1
23	The structures of my school are disaster resilient	3	2	1
24	I am aware of my role in the event of a disaster	3	2	1
25	I am aware of the probable hazards that might occur in my locality	3	2	1
26	I have access to the Teacher Handbook on Disaster Risk Reduction 2016	3	2	1

		Yes	Not Sure	No
27	I have read the Teacher Handbook on Disaster Risk Reduction 2016	3	2	1
28	My school has disaster supply kits	3	2	1
29	I have received training on disaster management	3	2	1
30	I have emergency contact numbers to be used in the event of a disaster	3	2	1

C. DRR Awareness

I am aware of the:		Yes	Not Sure	No
31	Disaster Management Act of Bhutan, 2013	3	2	1
32	Natural Disaster Risk Management Framework 2006	3	2	1
33	Disaster Management & Contingency Plan, 2016, Ministry of Education	3	2	1
34	Dzongkhag Disaster Management Plan	3	2	1
35	School Disaster Contingency Plan	3	2	1

I am aware of the roles played by the following:		Yes	Not Sure	No
36	National Disaster Management Authority	3	2	1
37	National Emergency Operation Centre	3	2	1
38	Inter-Ministerial Task Force	3	2	1
39	Disaster Management Unit, DDM, MoHCA	3	2	1
40	Disaster Management Unit, DSE, MoE	3	2	1
41	Dzongkhag Disaster Management Committee	3	2	1
42	Dzongkhag Disaster Management Office	3	2	1
43	Dungkhag/Gewog/Thromde Disaster Management Committee	3	2	1
44	Dzongkhag Disaster Management Focal Person	3	2	1
45	School Disaster Management Focal Person	3	2	1
46	Teacher, in the event of a disaster	3	2	1

D. Hazards

In my opinion:		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
47	The public have a clear understanding on the risks of natural hazards in the country	5	4	3	2	1
48	The local community is prepared to mitigate natural hazards	5	4	3	2	1
49	The government is prepared to mitigate natural hazards	5	4	3	2	1

50. Rank the following hazards according to the degree of threat faced by your community. **Rank 10** represents the highest/greatest threat and **Rank 1** represent the lowest/least threat. Use each number once only.

Hazards		Rank
a)	Earthquake	
b)	Glacial Lake Outburst Flood (GLOF)	
c)	Thunder Storm (including lighting and hail)	
d)	Wind Storm	
e)	Wild-Fire	
f)	Landslide	
g)	Flood	
h)	Wild Animal Attack	
i)	Electrical Shocks	
j)	Water Borne Disease	

E. DRR Activities in School

		Yes	Not Sure	No
51	I received training on DRR	3	2	1
52	My school conducted mock drill on earthquake	3	2	1
53	My school conducted mock drill on fire	3	2	1
54	My school conducted mock drill on windstorm	3	2	1

55	DRR awareness programmes are conducted in my school	3	2	1
56	Guest speakers are invited to my school to talk on DRR	3	2	1
57	DRR components are in the subject that I teach	3	2	1
58	I have heard about the DRR emergency curriculum	3	2	1
59	I know about the DRR emergency curriculum	3	2	1
60	Information on DRR are easily accessible in the school library	3	2	1
61	The media advocates on DRR	3	2	1
62	I have contributed in spreading awareness on DRR to my family	3	2	1
63	My school spreads awareness on DRR to the local community	3	2	1

F. Expectation

I expect my students to know:		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
64	different types hazards	5	4	3	2	1
65	causes of natural hazards	5	4	3	2	1
66	effects of natural hazards	5	4	3	2	1
67	effects of man-made hazards	5	4	3	2	1
68	natural hazards my community faces	5	4	3	2	1
69	man-made hazards my community faces	5	4	3	2	1
70	climate change	5	4	3	2	1
71	effects of climate change	5	4	3	2	1
72	the vulnerable areas to disaster in my community	5	4	3	2	1

73	safe places in school, home and other places are located, and how to get there	5	4	3	2	1
74	how and where to evacuate in case of a disaster	5	4	3	2	1
75	how to help people who are more vulnerable when a disaster happens	5	4	3	2	1
76	the warning signs and signals of different hazards at home, school and community	5	4	3	2	1
77	how to contact people who can help before, during and after a disaster	5	4	3	2	1
78	about where to get help after a disaster	5	4	3	2	1

I expect my students to (do):		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
79	stay calm and alert when a disaster happen	5	4	3	2	1
80	protect themselves first then only to assist others	5	4	3	2	1
81	create a disaster risk map	5	4	3	2	1
82	create a family preparedness plan	5	4	3	2	1
83	purify water in an emergency	5	4	3	2	1
84	perform first aid	5	4	3	2	1

G. Recommendation

I recommend that:		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
85	DRR concepts be infused in the curriculum	5	4	3	2	1
86	DRR concepts be integrated into the curriculum	5	4	3	2	1
87	There be a separate DRR curriculum	5	4	3	2	1

You have completed the survey

Thank you for your participation

To be filled by the Enumerator

Name of Enumerator: _____

Designation: _____

Place of survey: _____

Signature: _____

Date: _____

6.4. FGD Questions

Semi-structured questions to be used for the FGD and Interview

1. What do we expect our learners to know about disaster?
2. What do we expect our learners to understand about disaster and disaster risk reduction?
3. How do we expect our learners to respond in the event of disaster?
4. What are some of the DRR aspects in our existing policies?
5. What are the gaps in the policies and curriculum?
6. What do you expect the DRR curriculum framework to look like?

6.5. Descriptive Statistics

6.5.1. Student Questionnaire

Table 1. I know what Disaster Risk Reduction (DRR) means

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	117	7.8	7.8	7.8
	Not Sure	572	38.0	38.2	46.1
	Yes	807	53.6	53.9	100.0
	Total	1496	99.3	100.0	
Missing	99	10	.7		
Total		1506	100.0		

Table 2. I think Disaster Risk Reduction (DRR) is important

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	27	1.8	1.8	1.8
	Not Sure	165	11.0	11.1	12.9
	Yes	1292	85.8	87.1	100.0
	Total	1484	98.5	100.0	
Missing	99	22	1.5		
Total		1506	100.0		

Table 3. My school has a disaster focal person

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	25	1.7	1.7	1.7
	Not Sure	220	14.6	14.8	16.5
	Yes	1243	82.5	83.5	100.0
	Total	1488	98.8	100.0	
Missing	99	18	1.2		
Total		1506	100.0		

Table 4. My school has the School Disaster Management Committee (SDMC)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	35	2.3	2.3	2.3
	Not Sure	201	13.3	13.4	15.7
	Yes	1264	83.9	84.3	100.0
	Total	1500	99.6	100.0	
Missing	99	6	.4		
Total		1506	100.0		

Table 5. My school has a Disaster Plan

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	22	1.5	1.5	1.5
	Not Sure	238	15.8	15.9	17.4
	Yes	1238	82.2	82.6	100.0
	Total	1498	99.5	100.0	
Missing	99	8	.5		
Total		1506	100.0		

Table 6. I know about the disaster plan

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	116	7.7	7.8	7.8
	Not Sure	637	42.3	42.6	50.4
	Yes	741	49.2	49.6	100.0
	Total	1494	99.2	100.0	
Missing	99	12	.8		
Total		1506	100.0		

Table 7. My school has disaster evacuation map displayed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	180	12.0	12.1	12.1
	Not Sure	369	24.5	24.7	36.8
	Yes	943	62.6	63.2	100.0
	Total	1492	99.1	100.0	
Missing	99	14	.9		
Total		1506	100.0		

Table 8. My school has identified a search and rescue team

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	34	2.3	2.3	2.3
	Not Sure	185	12.3	12.4	14.6
	Yes	1276	84.7	85.4	100.0
	Total	1495	99.3	100.0	
Missing	99	11	.7		
Total		1506	100.0		

Table 9. My school has early warning system

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	192	12.7	12.9	12.9
	Not Sure	391	26.0	26.2	39.1
	Yes	908	60.3	60.9	100.0
	Total	1491	99.0	100.0	
Missing	99	15	1.0		
Total		1506	100.0		

Table 10. My school buildings are safe from disaster

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	204	13.5	13.7	13.7
	Not Sure	874	58.0	58.5	72.2
	Yes	416	27.6	27.8	100.0
	Total	1494	99.2	100.0	
Missing	99	12	.8		
Total		1506	100.0		

Table 11. I know what to do during disaster

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	12	.8	.8	.8
	Not Sure	126	8.4	8.4	9.2
	Yes	1355	90.0	90.8	100.0
	Total	1493	99.1	100.0	
Missing	99	13	.9		
Total		1506	100.0		

Table 12. I know about the hazards (risks) that might occur in my locality

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	81	5.4	5.4	5.4
	Not Sure	637	42.3	42.6	48.0
	Yes	778	51.7	52.0	100.0
	Total	1496	99.3	100.0	
Missing	99	10	.7		
Total		1506	100.0		

Table 13. My school has disaster supply kits

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	123	8.2	8.3	8.3
	Not Sure	733	48.7	49.2	57.5
	Yes	633	42.0	42.5	100.0
	Total	1489	98.9	100.0	
Missing	99	17	1.1		
Total		1506	100.0		

Table 14. I have emergency contact numbers to be used during disaster

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	349	23.2	23.3	23.3
	Not Sure	349	23.2	23.3	46.7
	Yes	798	53.0	53.3	100.0
	Total	1496	99.3	100.0	
Missing	99	10	.7		
Total		1506	100.0		

Table 15. I know about Disaster Management Act of Bhutan, 2013

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	622	41.3	41.6	41.6
	Not Sure	685	45.5	45.8	87.4
	Yes	188	12.5	12.6	100.0
	Total	1495	99.3	100.0	
Missing	99	11	.7		
Total		1506	100.0		

Table 16. I know about National Disaster Risk Management Framework 2006

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	747	49.6	50.1	50.1
	Not Sure	658	43.7	44.2	94.3
	Yes	85	5.6	5.7	100.0
	Total	1490	98.9	100.0	
Missing	99	16	1.1		
Total		1506	100.0		

Table 17. I know about Disaster Management & Contingency Plan, 2016, Ministry of Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	587	39.0	39.5	39.5
	Not Sure	669	44.4	45.0	84.5
	Yes	231	15.3	15.5	100.0
	Total	1487	98.7	100.0	
Missing	99	19	1.3		
Total		1506	100.0		

Table 18. I know about Dzongkhag Disaster Management Plan

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	504	33.5	33.8	33.8
	Not Sure	670	44.5	45.0	78.8
	Yes	315	20.9	21.2	100.0
	Total	1489	98.9	100.0	
Missing	99	17	1.1		
Total		1506	100.0		

Table 19. I know about School Disaster Contingency Plan

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	150	10.0	10.1	10.1
	Not Sure	491	32.6	32.9	43.0
	Yes	850	56.4	57.0	100.0
	Total	1491	99.0	100.0	
Missing	99	15	1.0		
Total		1506	100.0		

Table 20. I know roles of National Disaster Management Authority

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	525	34.9	35.1	35.1
	Not Sure	617	41.0	41.3	76.4
	Yes	353	23.4	23.6	100.0
	Total	1495	99.3	100.0	
Missing	99	11	.7		
Total		1506	100.0		

Table 21. I know roles of National Emergency Operation Centre

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	556	36.9	37.3	37.3
	Not Sure	571	37.9	38.3	75.7
	Yes	362	24.0	24.3	100.0
	Total	1489	98.9	100.0	
Missing	99	17	1.1		
Total		1506	100.0		

Table 22. Table 22.1 know roles of National Emergency Operation Centre

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	818	54.3	54.9	54.9
	Not Sure	595	39.5	39.9	94.8
	Yes	77	5.1	5.2	100.0
	Total	1490	98.9	100.0	
Missing	99	16	1.1		
Total		1506	100.0		

Table 23. I know roles of National Emergency Operation Centre

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	775	51.5	51.8	51.8
	Not Sure	557	37.0	37.3	89.1
	Yes	163	10.8	10.9	100.0
	Total	1495	99.3	100.0	
Missing	99	11	.7		
Total		1506	100.0		

Table 24. I know roles of Disaster Management Unit, DSE, MoE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	740	49.1	49.7	49.7
	Not Sure	586	38.9	39.3	89.0
	Yes	164	10.9	11.0	100.0
	Total	1490	98.9	100.0	
Missing	99	16	1.1		
Total		1506	100.0		

Table 25. I know roles of Dzongkhag Disaster Management Committee

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	531	35.3	35.8	35.8
	Not Sure	584	38.8	39.3	75.1
	Yes	370	24.6	24.9	100.0
	Total	1485	98.6	100.0	
Missing	99	21	1.4		
Total		1506	100.0		

Table 26. I know roles of Dzongkhag Disaster Management Office

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	580	38.5	39.1	39.1
	Not Sure	591	39.2	39.9	79.0
	Yes	312	20.7	21.0	100.0
	Total	1483	98.5	100.0	
Missing	99	23	1.5		
Total		1506	100.0		

Table 27. I know roles of Dungkhag/Gewog/Thromde Disaster Management Committee

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	588	39.0	39.5	39.5
	Not Sure	620	41.2	41.6	81.1
	Yes	282	18.7	18.9	100.0
	Total	1490	98.9	100.0	
Missing	99	16	1.1		
Total		1506	100.0		

Table 28. I know roles of Dzongkhag Disaster Management Focal Person

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	658	43.7	44.3	44.3
	Not Sure	567	37.6	38.2	82.4
	Yes	261	17.3	17.6	100.0
	Total	1486	98.7	100.0	
Missing	99	20	1.3		
Total		1506	100.0		

Table 29. I know roles of School Disaster Management Focal Person

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	136	9.0	9.1	9.1
	Not Sure	323	21.4	21.6	30.7
	Yes	1034	68.7	69.3	100.0
	Total	1493	99.1	100.0	
Missing	99	13	.9		
Total		1506	100.0		

Table 30. I know roles of Student, in the event of a disaster

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	145	9.6	9.7	9.7
	Not Sure	287	19.1	19.1	28.8
	Yes	1068	70.9	71.2	100.0
	Total	1500	99.6	100.0	
Missing	99	6	.4		
Total		1506	100.0		

Table 31. Ranking of hazards according to the degree of threat faced by your community: Earthquake

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	60	4.0	4.0	4.0
	2	42	2.8	2.8	6.8
	3	58	3.9	3.9	10.7
	4	62	4.1	4.2	14.9
	5	89	5.9	6.0	20.8
	6	83	5.5	5.6	26.4
	7	79	5.2	5.3	31.7
	8	137	9.1	9.2	40.9
	9	182	12.1	12.2	53.0
	10	701	46.5	47.0	100.0
	Total	1493	99.1	100.0	
Missing	99	13	.9		
Total		1506	100.0		

Table 32. Glacial Lake Outburst Flood (GLOF)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	6	.4	.4	.4
	1	739	49.1	49.9	50.3
	2	155	10.3	10.5	60.7
	3	81	5.4	5.5	66.2
	4	73	4.8	4.9	71.1
	5	71	4.7	4.8	75.9
	6	49	3.3	3.3	79.2
	7	69	4.6	4.7	83.9
	8	65	4.3	4.4	88.3
	9	113	7.5	7.6	95.9
	10	61	4.1	4.1	100.0
	Total	1482	98.4	100.0	
Missing	99	24	1.6		
Total		1506	100.0		

Table 33. Thunder Storm (including lighting and hail)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	4	.3	.3	.3
	1	86	5.7	5.8	6.0
	2	139	9.2	9.3	15.3
	3	145	9.6	9.7	25.0
	4	116	7.7	7.8	32.8
	5	159	10.6	10.6	43.4
	6	141	9.4	9.4	52.9
	7	151	10.0	10.1	63.0
	8	205	13.6	13.7	76.7
	9	209	13.9	14.0	90.7
	10	139	9.2	9.3	100.0
	Total	1494	99.2	100.0	
Missing	99	12	.8		
Total		1506	100.0		

Table 34. Wind Storm

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	5	.3	.3	.3
	1	74	4.9	4.9	5.3
	2	90	6.0	6.0	11.3
	3	122	8.1	8.1	19.4
	4	155	10.3	10.4	29.8
	5	200	13.3	13.4	43.2
	6	165	11.0	11.0	54.2
	7	215	14.3	14.4	68.5
	8	186	12.4	12.4	81.0
	9	185	12.3	12.4	93.3
	10	100	6.6	6.7	100.0
	Total	1497	99.4	100.0	
Missing	99	9	.6		
Total		1506	100.0		

Table 35. Wild-Fire

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	7	.5	.5	.5
	1	88	5.8	5.9	6.4
	2	122	8.1	8.2	14.5
	3	157	10.4	10.5	25.1
	4	167	11.1	11.2	36.2
	5	208	13.8	13.9	50.2
	6	229	15.2	15.3	65.5
	7	169	11.2	11.3	76.8
	8	142	9.4	9.5	86.3
	9	123	8.2	8.2	94.6
	10	81	5.4	5.4	100.0
	Total	1493	99.1	100.0	
Missing	99	13	.9		
Total		1506	100.0		

Table 36. Landslide

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	5	.3	.3	.3
	1	70	4.6	4.7	5.0
	2	119	7.9	8.0	13.0
	3	157	10.4	10.5	23.5
	4	155	10.3	10.4	33.8
	5	197	13.1	13.2	47.0
	6	196	13.0	13.1	60.1
	7	168	11.2	11.2	71.4
	8	173	11.5	11.6	82.9
	9	139	9.2	9.3	92.2
	10	116	7.7	7.8	100.0
	Total	1495	99.3	100.0	
Missing	99	11	.7		
Total		1506	100.0		

Table 37. Flood

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	16	1.1	1.1	1.1
	1	172	11.4	11.6	12.6
	2	242	16.1	16.3	28.9
	3	161	10.7	10.8	39.7
	4	185	12.3	12.4	52.2
	5	122	8.1	8.2	60.3
	6	112	7.4	7.5	67.9
	7	110	7.3	7.4	75.3
	8	135	9.0	9.1	84.3
	9	134	8.9	9.0	93.3
	10	99	6.6	6.7	100.0
	Total	1488	98.8	100.0	
Missing	99	18	1.2		
Total		1506	100.0		

Table 38. Wild Animal Attack

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	9	.6	.6	.6
	1	232	15.4	15.5	16.1
	2	231	15.3	15.5	31.6
	3	218	14.5	14.6	46.2
	4	168	11.2	11.3	57.5
	5	147	9.8	9.8	67.3
	6	113	7.5	7.6	74.9
	7	136	9.0	9.1	84.0
	8	111	7.4	7.4	91.4
	9	65	4.3	4.4	95.8
	10	63	4.2	4.2	100.0
	Total	1493	99.1	100.0	
Missing	99	13	.9		
Total		1506	100.0		

Table 39. Electrical Shocks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	6	.4	.4	.4
	1	107	7.1	7.2	7.6
	2	173	11.5	11.6	19.1
	3	206	13.7	13.8	32.9
	4	185	12.3	12.4	45.3
	5	162	10.8	10.8	56.2
	6	179	11.9	12.0	68.1
	7	149	9.9	10.0	78.1
	8	126	8.4	8.4	86.5
	9	123	8.2	8.2	94.8
	10	78	5.2	5.2	100.0
	Total	1494	99.2	100.0	
Missing	99	12	.8		
Total		1506	100.0		

Table 40. Water Borne Disease

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	8	.5	.5	.5
	1	192	12.7	12.8	13.4
	2	144	9.6	9.6	23.0
	3	139	9.2	9.3	32.3
	4	123	8.2	8.2	40.5
	5	136	9.0	9.1	49.6
	6	142	9.4	9.5	59.1
	7	192	12.7	12.8	71.9
	8	141	9.4	9.4	81.3
	9	133	8.8	8.9	90.2
	10	147	9.8	9.8	100.0
	Total	1497	99.4	100.0	
Missing	99	9	.6		
Total		1506	100.0		

Table 41. My school conducted mock drill on earthquake

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	16	1.1	1.1	1.1
	Not Sure	10	.7	.7	1.7
	Yes	1472	97.7	98.3	100.0
	Total	1498	99.5	100.0	
Missing	99	8	.5		
Total		1506	100.0		

Table 42. Table 42. My school conducted mock drill on fire

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	847	56.2	56.5	56.5
	Not Sure	211	14.0	14.1	70.6
	Yes	441	29.3	29.4	100.0
	Total	1499	99.5	100.0	
Missing	99	7	.5		
Total		1506	100.0		

Table 43. My school conducted mock drill on windstorm

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	1139	75.6	76.3	76.3
	Not Sure	247	16.4	16.5	92.8
	Yes	107	7.1	7.2	100.0
	Total	1493	99.1	100.0	
Missing	99	13	.9		
Total		1506	100.0		

Table 44. DRR programmes are conducted in my school

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	240	15.9	16.4	16.4
	Not Sure	494	32.8	33.7	50.0
	Yes	733	48.7	50.0	100.0
	Total	1467	97.4	100.0	
Missing	99	39	2.6		
Total		1506	100.0		

Table 45. Guest speakers are invited to my school to talk on DRR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	564	37.5	37.8	37.8
	Not Sure	528	35.1	35.3	73.1
	Yes	402	26.7	26.9	100.0
	Total	1494	99.2	100.0	
Missing	99	12	.8		
Total		1506	100.0		

Table 46. There are DRR related topics in the subjects that I studied

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	327	21.7	21.8	21.8
	Not Sure	436	29.0	29.0	50.8
	Yes	738	49.0	49.2	100.0
	Total	1501	99.7	100.0	
Missing	99	5	.3		
Total		1506	100.0		

Table 47. I have heard about the DRR emergency curriculum

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	500	33.2	33.5	33.5
	Not Sure	609	40.4	40.8	74.4
	Yes	382	25.4	25.6	100.0
	Total	1491	99.0	100.0	
Missing	99	15	1.0		
Total		1506	100.0		

Table 48. I know about the DRR emergency curriculum

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	632	42.0	43.1	43.1
	Not Sure	624	41.4	42.5	85.6
	Yes	211	14.0	14.4	100.0
	Total	1467	97.4	100.0	
Missing	99	39	2.6		
Total		1506	100.0		

Table 49. Information on DRR can be found in the school library

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	96	6.4	6.4	6.4
	Not Sure	666	44.2	44.5	50.9
	Yes	736	48.9	49.1	100.0
	Total	1498	99.5	100.0	
Missing	99	8	.5		
Total		1506	100.0		

Table 50. The media covers stories on DRR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	158	10.5	10.6	10.6
	Not Sure	696	46.2	46.8	57.4
	Yes	634	42.1	42.6	100.0
	Total	1488	98.8	100.0	
Missing	99	18	1.2		
Total		1506	100.0		

Table 51. I have spread information on DRR to my family

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	462	30.7	31.0	31.0
	Not Sure	289	19.2	19.4	50.3
	Yes	741	49.2	49.7	100.0
	Total	1492	99.1	100.0	
Missing	99	14	.9		
Total		1506	100.0		

Table 52. My school spreads information on DRR to the local community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	345	22.9	23.1	23.1
	Not Sure	798	53.0	53.5	76.7
	Yes	348	23.1	23.3	100.0
	Total	1491	99.0	100.0	
Missing	99	15	1.0		
Total		1506	100.0		

Table 53. I aspire to know different types hazards (risks)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	9	.6	.6	.6
	Disagree	21	1.4	1.4	2.0
	Neither agree or disagree	127	8.4	8.5	10.5
	Agree	363	24.1	24.3	34.8
	Strongly Agree	974	64.7	65.2	100.0
	Total	1494	99.2	100.0	
Missing	99	12	.8		
Total		1506	100.0		

Table 54. I aspire to know causes of natural hazards

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	16	1.1	1.1	1.1
	Disagree	29	1.9	1.9	3.0
	Neither agree or disagree	114	7.6	7.6	10.6
	Agree	436	29.0	29.1	39.7
	Strongly Agree	903	60.0	60.3	100.0
	Total	1498	99.5	100.0	
Missing	99	8	.5		
Total		1506	100.0		

Table 55. I aspire to know effects of natural hazards

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	9	.6	.6	.6
	Disagree	31	2.1	2.1	2.7
	Neither agree or disagree	144	9.6	9.6	12.3
	Agree	422	28.0	28.3	40.6
	Strongly Agree	887	58.9	59.4	100.0
	Total	1493	99.1	100.0	
Missing	99	13	.9		
Total		1506	100.0		

Table 56. I aspire to know effects of man-made hazards

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	26	1.7	1.8	1.8
	Disagree	48	3.2	3.2	5.0
	Neither agree or disagree	239	15.9	16.1	21.1
	Agree	404	26.8	27.2	48.3
	Strongly Agree	767	50.9	51.7	100.0
	Total	1484	98.5	100.0	
Missing	99	22	1.5		
Total		1506	100.0		

Table 57. I aspire to know natural hazards my community faces

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	22	1.5	1.5	1.5
	Disagree	70	4.6	4.7	6.2
	Neither agree or disagree	256	17.0	17.1	23.3
	Agree	451	29.9	30.2	53.4
	Strongly Agree	696	46.2	46.6	100.0
	Total	1495	99.3	100.0	
Missing	99	11	.7		
Total		1506	100.0		

Table 58. I aspire to know man-made hazards my community faces

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	45	3.0	3.0	3.0
	Disagree	78	5.2	5.2	8.2
	Neither agree or disagree	282	18.7	18.9	27.1
	Agree	500	33.2	33.4	60.5
	Strongly Agree	591	39.2	39.5	100.0
	Total	1496	99.3	100.0	
Missing	99	10	.7		
Total		1506	100.0		

Table 59. I aspire to know climate change

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	23	1.5	1.5	1.5
	Disagree	39	2.6	2.6	4.2
	Neither agree or disagree	220	14.6	14.7	18.9
	Agree	422	28.0	28.3	47.2
	Strongly Agree	788	52.3	52.8	100.0
	Total	1492	99.1	100.0	
Missing	99	14	.9		
Total		1506	100.0		

Table 60. I aspire to know effects of climate change

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	21	1.4	1.4	1.4
	Disagree	42	2.8	2.8	4.2
	Neither agree or disagree	218	14.5	14.7	18.9
	Agree	448	29.7	30.1	49.0
	Strongly Agree	758	50.3	51.0	100.0
	Total	1487	98.7	100.0	
Missing	99	14	.9		
Total		1506	100.0		

Table 61. I aspire to know the areas that are likely to face disaster in my community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	38	2.5	2.5	2.5
	Disagree	67	4.4	4.5	7.0
	Neither agree or disagree	281	18.7	18.8	25.9
	Agree	388	25.8	26.0	51.8
	Strongly Agree	719	47.7	48.2	100.0
	Total	1493	99.1	100.0	
Missing	99	13	.9		
Total		1506	100.0		

Table 62. I aspire to know safe places in school, home and other places are located, and how to get there

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	17	1.1	1.1	1.1
	Disagree	48	3.2	3.2	4.3
	Neither agree or disagree	162	10.8	10.8	15.2
	Agree	354	23.5	23.7	38.8
	Strongly Agree	915	60.8	61.2	100.0
	Total	1496	99.3	100.0	
Missing	99	10	.7		
Total		1506	100.0		

Table 63. I aspire to know how and where to evacuate in case of a disaster

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	24	1.6	1.6	1.6
	Disagree	40	2.7	2.7	4.3
	Neither agree or disagree	190	12.6	12.7	17.0
	Agree	371	24.6	24.8	41.9
	Strongly Agree	868	57.6	58.1	100.0
	Total	1493	99.1	100.0	
Missing	99	13	.9		
Total		1506	100.0		

Table 64. I aspire to know how to help people during disaster

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	17	1.1	1.1	1.1
	Disagree	18	1.2	1.2	2.3
	Neither agree or disagree	89	5.9	6.0	8.3
	Agree	332	22.0	22.3	30.6
	Strongly Agree	1035	68.7	69.4	100.0
	Total	1491	99.0	100.0	
Missing	99	15	1.0		
Total		1506	100.0		

Table 65. I aspire to know the warning signs and signals of different hazards at home, school and community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	48	3.2	3.2	3.2
	Disagree	47	3.1	3.1	6.3
	Neither agree or disagree	179	11.9	11.9	18.3
	Agree	373	24.8	24.9	43.1
	Strongly Agree	853	56.6	56.9	100.0
	Total	1500	99.6	100.0	
Missing	99	6	.4		
Total		1506	100.0		

Table 66. I aspire to know how to contact people who can help before, during and after a disaster

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	17	1.1	1.1	1.1
	Disagree	32	2.1	2.1	3.3
	Neither agree or disagree	173	11.5	11.5	14.8
	Agree	386	25.6	25.8	40.6
	Strongly Agree	890	59.1	59.4	100.0
	Total	1498	99.5	100.0	
Missing	99	8	.5		
Total		1506	100.0		

Table 67. I aspire to stay calm and alert when a disaster happen

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	50	3.3	3.4	3.4
	Disagree	34	2.3	2.3	5.6
	Neither agree or disagree	102	6.8	6.8	12.5
	Agree	340	22.6	22.8	35.3
	Strongly Agree	965	64.1	64.7	100.0
	Total	1491	99.0	100.0	
Missing	99	15	1.0		
Total		1506	100.0		

Table 68. I aspire to protect myself first then only to assist others

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	87	5.8	5.8	5.8
	Disagree	122	8.1	8.2	14.0
	Neither agree or disagree	254	16.9	17.0	31.1
	Agree	364	24.2	24.4	55.5
	Strongly Agree	664	44.1	44.5	100.0
	Total	1491	99.0	100.0	
Missing	99	15	1.0		
Total		1506	100.0		

Table 69. I aspire to create a disaster risk map

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	32	2.1	2.2	2.2
	Disagree	64	4.2	4.3	6.5
	Neither agree or disagree	252	16.7	17.0	23.4
	Agree	448	29.7	30.2	53.6
	Strongly Agree	689	45.8	46.4	100.0
	Total	1485	98.6	100.0	
Missing	99	21	1.4		
Total		1506	100.0		

Table 70. Table 70. I aspire to create a family preparedness plan

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	15	1.0	1.0	1.0
	Disagree	48	3.2	3.2	4.2
	Neither agree or disagree	208	13.8	14.0	18.3
	Agree	409	27.2	27.6	45.8
	Strongly Agree	804	53.4	54.2	100.0
	Total	1484	98.5	100.0	
Missing	99	22	1.5		
Total		1506	100.0		

Table 71. I aspire to purify water in an emergency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	50	3.3	3.4	3.4
	Disagree	85	5.6	5.7	9.1
	Neither agree or disagree	313	20.8	21.0	30.1
	Agree	473	31.4	31.8	61.9
	Strongly Agree	567	37.6	38.1	100.0
	Total	1488	98.8	100.0	
Missing	99	18	1.2		
Total		1506	100.0		

Table 72. I aspire to perform first aid

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	26	1.7	1.7	1.7
	Disagree	54	3.6	3.6	5.4
	Neither agree or disagree	196	13.0	13.1	18.5
	Agree	365	24.2	24.5	43.0
	Strongly Agree	851	56.5	57.0	100.0
	Total	1492	99.1	100.0	
Missing	99	14	.9		
Total		1506	100.0		

Table 73. I recommend that DRR information should be integrated with other curriculum

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	78	5.2	5.3	5.3
	Disagree	52	3.5	3.5	8.8
	Neither agree or disagree	155	10.3	10.5	19.2
	Agree	383	25.4	25.8	45.0
	Strongly Agree	815	54.1	55.0	100.0
	Total	1483	98.5	100.0	
Missing	99	23	1.5		
Total		1506	100.0		

Table 74. I recommend that there be a separate DRR curriculum

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	76	5.0	5.1	5.1
	Disagree	73	4.8	4.9	10.1
	Neither agree or disagree	264	17.5	17.8	27.9
	Agree	391	26.0	26.4	54.3
	Strongly Agree	676	44.9	45.7	100.0
	Total	1480	98.3	100.0	
Missing	99	26	1.7		
Total		1506	100.0		

6.5.2. Teacher Questionnaire

Table 75. Are you a disaster focal person?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	63	5.9	6.0	6.0
	No	995	92.6	94.0	100.0
	Total	1058	98.4	100.0	
Missing	99	17	1.6		
Total		1075	100.0		

Table 76. I think Disaster Risk Reduction (DRR) is important

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	1	.1	.1	.1
	Not Sure	6	.6	.6	.7
	Yes	1061	98.7	99.3	100.0
	Total	1068	99.3	100.0	
Missing	99	7	.7		
Total		1075	100.0		

Table 77. Schools have a significant role to play in DRR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	3	.3	.3	.3
	Not Sure	68	6.3	6.3	6.6
	Yes	1001	93.1	93.4	100.0
	Total	1072	99.7	100.0	
Missing	99	3	.3		
Total		1075	100.0		

Table 78. My school has a disaster focal person

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	5	.5	.5	.5
	Not Sure	25	2.3	2.3	2.8
	Yes	1040	96.7	97.2	100.0
	Total	1070	99.5	100.0	
Missing	99	5	.5		
Total		1075	100.0		

Table 79. In my school, SDMC takes lead role in Disaster Risk Reduction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	12	1.1	1.1	1.1
	Not Sure	129	12.0	12.0	13.2
	Yes	930	86.5	86.8	100.0
	Total	1071	99.6	100.0	
Missing	99	4	.4		
Total		1075	100.0		

Table 80. My school has a Disaster Contingency Plan

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	6	.6	.6	.6
	Not Sure	142	13.2	13.3	13.9
	Yes	917	85.3	86.1	100.0
	Total	1065	99.1	100.0	
Missing	99	10	.9		
Total		1075	100.0		

Table 81. My school staffs (teaching and non-teaching) are aware of the disaster contingency plan

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	13	1.2	1.2	1.2
	Not Sure	283	26.3	26.4	27.7
	Yes	774	72.0	72.3	100.0
	Total	1070	99.5	100.0	
Missing	99	5	.5		
Total		1075	100.0		

Table 82. My school students are aware of the disaster contingency plan

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	20	1.9	1.9	1.9
	Not Sure	376	35.0	35.2	37.1
	Yes	671	62.4	62.9	100.0
	Total	1067	99.3	100.0	
Missing	99	8	.7		
Total		1075	100.0		

Table 83. The local community is aware of the disaster contingency plan

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	94	8.7	8.8	8.8
	Not Sure	756	70.3	70.8	79.6
	Yes	218	20.3	20.4	100.0
	Total	1068	99.3	100.0	
Missing	99	7	.7		
Total		1075	100.0		

Table 84. My school has disaster evacuation map prominently displayed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	103	9.6	9.7	9.7
	Not Sure	172	16.0	16.2	25.8
	Yes	790	73.5	74.2	100.0
	Total	1065	99.1	100.0	
Missing	99	10	.9		
Total		1075	100.0		

Table 85. My school has identified a search and rescue team

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	12	1.1	1.1	1.1
	Not Sure	74	6.9	6.9	8.0
	Yes	987	91.8	92.0	100.0
	Total	1073	99.8	100.0	
Missing	99	2	.2		
Total		1075	100.0		

Table 86. Table 86. My school has early warning system

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	222	20.7	20.8	20.8
	Not Sure	318	29.6	29.9	50.7
	Yes	525	48.8	49.3	100.0
	Total	1065	99.1	100.0	
Missing	99	10	.9		
Total		1075	100.0		

Table 87. The structures of my school are disaster resilient

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	204	19.0	19.3	19.3
	Not Sure	558	51.9	52.8	72.2
	Yes	294	27.3	27.8	100.0
	Total	1056	98.2	100.0	
Missing	99	19	1.8		
Total		1075	100.0		

Table 88. I am aware of my role in the event of a disaster

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	25	2.3	2.4	2.4
	Not Sure	93	8.7	8.8	11.1
	Yes	942	87.6	88.9	100.0
	Total	1060	98.6	100.0	
Missing	99	15	1.4		
Total		1075	100.0		

Table 89. I am aware of the probable hazards that might occur in my locality

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	34	3.2	3.2	3.2
	Not Sure	275	25.6	25.7	28.9
	Yes	760	70.7	71.1	100.0
	Total	1069	99.4	100.0	
Missing	99	6	.6		
Total		1075	100.0		

Table 90. I have access to the Teacher Handbook on Disaster Risk Reduction 2016

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	423	39.3	39.6	39.6
	Not Sure	354	32.9	33.1	72.8
	Yes	291	27.1	27.2	100.0
	Total	1068	99.3	100.0	
Missing	99	7	.7		
Total		1075	100.0		

Table 91. I have read the Teacher Handbook on Disaster Risk Reduction 2016

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	570	53.0	53.2	53.2
	Not Sure	247	23.0	23.1	76.3
	Yes	254	23.6	23.7	100.0
	Total	1071	99.6	100.0	
Missing	99	4	.4		
Total		1075	100.0		

Table 92. My school has disaster supply kits

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	249	23.2	23.5	23.5
	Not Sure	342	31.8	32.2	55.7
	Yes	470	43.7	44.3	100.0
	Total	1061	98.7	100.0	
Missing	99	14	1.3		
Total		1075	100.0		

Table 93. I have received training on disaster management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	772	71.8	72.4	72.4
	Not Sure	59	5.5	5.5	78.0
	Yes	235	21.9	22.0	100.0
	Total	1066	99.2	100.0	
Missing	99	9	.8		
Total		1075	100.0		

Table 94. I have emergency contact numbers to be used in the event of a disaster

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	352	32.7	32.8	32.8
	Not Sure	156	14.5	14.5	47.3
	Yes	565	52.6	52.7	100.0
	Total	1073	99.8	100.0	
Missing	99	2	.2		
Total		1075	100.0		

Table 95. I am aware of the: Disaster Management Act of Bhutan, 2013

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	497	46.2	46.5	46.5
	Not Sure	389	36.2	36.4	82.9
	Yes	183	17.0	17.1	100.0
	Total	1069	99.4	100.0	
Missing	99	6	.6		
Total		1075	100.0		

Table 96. I am aware of the: Natural Disaster Risk Management Framework 2006

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	545	50.7	51.1	51.1
	Not Sure	390	36.3	36.6	87.7
	Yes	131	12.2	12.3	100.0
	Total	1066	99.2	100.0	
Missing	99	9	.8		
Total		1075	100.0		

Table 97. I am aware of the: Disaster Management & Contingency Plan, 2016, Ministry of Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	456	42.4	42.7	42.7
	Not Sure	363	33.8	34.0	76.7
	Yes	249	23.2	23.3	100.0
	Total	1068	99.3	100.0	
Missing	99	7	.7		
Total		1075	100.0		

Table 98. I am aware of the: Dzongkhag Disaster Management Plan

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	491	45.7	46.1	46.1
	Not Sure	391	36.4	36.7	82.8
	Yes	183	17.0	17.2	100.0
	Total	1065	99.1	100.0	
Missing	99	10	.9		
Total		1075	100.0		

Table 99. I am aware of the: Dzongkhag Disaster Management Plan

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	105	9.8	9.8	9.8
	Not Sure	193	18.0	18.0	27.8
	Yes	773	71.9	72.2	100.0
	Total	1071	99.6	100.0	
Missing	99	4	.4		
Total		1075	100.0		

Table 100. I am aware of the roles played by National Disaster Management Authority

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	266	24.7	24.8	24.8
	Not Sure	454	42.2	42.4	67.2
	Yes	352	32.7	32.8	100.0
	Total	1072	99.7	100.0	
Missing	99	3	.3		
Total		1075	100.0		

Table 101. I am aware of the roles played by National Emergency Operation Centre

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	323	30.0	30.2	30.2
	Not Sure	538	50.0	50.3	80.5
	Yes	208	19.3	19.5	100.0
	Total	1069	99.4	100.0	
Missing	99	6	.6		
Total		1075	100.0		

Table 102. Table 102.I am aware of the roles played by Inter-Ministerial Task Force

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	405	37.7	37.9	37.9
	Not Sure	535	49.8	50.1	88.0
	Yes	128	11.9	12.0	100.0
	Total	1068	99.3	100.0	
Missing	99	7	.7		
Total		1075	100.0		

Table 103. I am aware of the roles played by Disaster Management Unit, DDM, MoHCA

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	350	32.6	32.8	32.8
	Not Sure	452	42.0	42.4	75.2
	Yes	265	24.7	24.8	100.0
	Total	1067	99.3	100.0	
Missing	99	8	.7		
Total		1075	100.0		

Table 104. I am aware of the roles played by Disaster Management Unit, DSE, MoE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	342	31.8	32.1	32.1
	Not Sure	460	42.8	43.2	75.3
	Yes	263	24.5	24.7	100.0
	Total	1065	99.1	100.0	
Missing	99	10	.9		
Total		1075	100.0		

Table 105. I am aware of the roles played by Dzongkhag Disaster Management Committee

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	338	31.4	31.7	31.7
	Not Sure	455	42.3	42.7	74.4
	Yes	273	25.4	25.6	100.0
	Total	1066	99.2	100.0	
Missing	99	9	.8		
Total		1075	100.0		

Table 106. I am aware of the roles played by Dzongkhag Disaster Management Office

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	348	32.4	32.7	32.7
	Not Sure	477	44.4	44.8	77.5
	Yes	239	22.2	22.5	100.0
	Total	1064	99.0	100.0	
Missing	99	11	1.0		
Total		1075	100.0		

Table 107. I am aware of the roles played by Dungkhag/Gewog/Thromde Disaster Management Committee

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	393	36.6	36.9	36.9
	Not Sure	512	47.6	48.0	84.9
	Yes	161	15.0	15.1	100.0
	Total	1066	99.2	100.0	
Missing	99	9	.8		
Total		1075	100.0		

Table 108. I am aware of the roles played by Dzongkhag Disaster Management Focal Person

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	352	32.7	33.3	33.3
	Not Sure	422	39.3	39.9	73.2
	Yes	284	26.4	26.8	100.0
	Total	1058	98.4	100.0	
Missing	99	17	1.6		
Total		1075	100.0		

Table 109. I am aware of the roles played by School Disaster Management Focal Person

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	46	4.3	4.3	4.3
	Not Sure	103	9.6	9.6	13.9
	Yes	920	85.6	86.1	100.0
	Total	1069	99.4	100.0	
Missing	99	6	.6		
Total		1075	100.0		

Table 110. I am aware of the roles played by Teacher, in the event of a disaster

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	42	3.9	3.9	3.9
	Not Sure	128	11.9	12.0	15.9
	Yes	900	83.7	84.1	100.0
	Total	1070	99.5	100.0	
Missing	99	5	.5		
Total		1075	100.0		

Table 111. The public have a clear understanding on the risks of natural hazards in the country

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	37	3.4	3.5	3.5
	Disagree	151	14.0	14.1	17.6
	Neither agree or disagree	388	36.1	36.2	53.8
	Agree	409	38.0	38.2	92.0
	Strongly Agree	86	8.0	8.0	100.0
	Total	1071	99.6	100.0	
Missing	99	4	.4		
Total		1075	100.0		

Table 112. The local community is prepared to mitigate natural hazards

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	51	4.7	4.8	4.8
	Disagree	229	21.3	21.4	26.2
	Neither agree or disagree	523	48.7	48.9	75.0
	Agree	230	21.4	21.5	96.5
	Strongly Agree	37	3.4	3.5	100.0
	Total	1070	99.5	100.0	
Missing	99	5	.5		
Total		1075	100.0		

Table 113. The government is prepared to mitigate natural hazards

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	15	1.4	1.4	1.4
	Disagree	67	6.2	6.3	7.7
	Neither agree or disagree	359	33.4	33.6	41.2
	Agree	522	48.6	48.8	90.0
	Strongly Agree	107	10.0	10.0	100.0
	Total	1070	99.5	100.0	
Missing	99	5	.5		
Total		1075	100.0		

Table 114. Earthquake

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	3	.3	.3	.3
	1	59	5.5	5.5	5.8
	2	30	2.8	2.8	8.6
	3	37	3.4	3.5	12.1
	4	45	4.2	4.2	16.3
	5	64	6.0	6.0	22.3
	6	61	5.7	5.7	28.1
	7	74	6.9	6.9	35.0
	8	107	10.0	10.0	45.1
	9	131	12.2	12.3	57.4
	10	454	42.2	42.6	100.0
	Total	1065	99.1	100.0	
Missing	99	10	.9		
Total		1075	100.0		

Table 115. Glacial Lake Outburst Flood (GLOF)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	8	.7	.8	.8
	1	437	40.7	41.1	41.8
	2	112	10.4	10.5	52.3
	3	50	4.7	4.7	57.0
	4	51	4.7	4.8	61.8
	5	58	5.4	5.5	67.3
	6	37	3.4	3.5	70.8
	7	49	4.6	4.6	75.4
	8	69	6.4	6.5	81.9
	9	96	8.9	9.0	90.9
	10	97	9.0	9.1	100.0
	Total	1064	99.0	100.0	
Missing	99	11	1.0		
Total		1075	100.0		

Table 116. Thunder Storm (including lighting and hail)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	3	.3	.3	.3
	1	59	5.5	5.5	5.8
	2	101	9.4	9.5	15.3
	3	90	8.4	8.4	23.7
	4	99	9.2	9.3	33.0
	5	156	14.5	14.6	47.6
	6	98	9.1	9.2	56.8
	7	105	9.8	9.8	66.6
	8	121	11.3	11.3	78.0
	9	105	9.8	9.8	87.8
	10	129	12.0	12.1	99.9
	110	1	.1	.1	100.0
	Total	1067	99.3	100.0	
Missing	99	8	.7		
Total		1075	100.0		

Table 117. Table 117.Wind Storm

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	3	.3	.3	.3
	1	33	3.1	3.1	3.4
	2	60	5.6	5.6	9.0
	3	93	8.7	8.7	17.7
	4	100	9.3	9.4	27.1
	5	117	10.9	11.0	38.1
	6	138	12.8	13.0	51.1
	7	136	12.7	12.8	63.8
	8	151	14.0	14.2	78.0
	9	173	16.1	16.2	94.3
	10	61	5.7	5.7	100.0
	Total	1065	99.1	100.0	
Missing	99	10	.9		
Total		1075	100.0		

Table 118. Wild-Fire

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	3	.3	.3	.3
	1	66	6.1	6.2	6.5
	2	131	12.2	12.3	18.8
	3	131	12.2	12.3	31.1
	4	109	10.1	10.2	41.3
	5	114	10.6	10.7	52.0
	6	119	11.1	11.2	63.2
	7	105	9.8	9.9	73.1
	8	111	10.3	10.4	83.5
	9	98	9.1	9.2	92.7
	10	78	7.3	7.3	100.0
	Total	1065	99.1	100.0	
Missing	99	10	.9		
Total		1075	100.0		

Table 119. Landslide

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	3	.3	.3	.3
	1	60	5.6	5.6	5.9
	2	58	5.4	5.4	11.4
	3	102	9.5	9.6	20.9
	4	118	11.0	11.1	32.0
	5	133	12.4	12.5	44.5
	6	118	11.0	11.1	55.6
	7	130	12.1	12.2	67.8
	8	150	14.0	14.1	81.9
	9	112	10.4	10.5	92.4
	10	81	7.5	7.6	100.0
	Total	1065	99.1	100.0	
Missing	99	10	.9		
Total		1075	100.0		

Table 120. Flood

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	4	.4	.4	.4
	1	100	9.3	9.4	9.8
	2	158	14.7	14.9	24.6
	3	96	8.9	9.0	33.7
	4	114	10.6	10.7	44.4
	5	86	8.0	8.1	52.5
	6	109	10.1	10.3	62.7
	7	105	9.8	9.9	72.6
	8	99	9.2	9.3	81.9
	9	102	9.5	9.6	91.5
	10	90	8.4	8.5	100.0
	Total	1063	98.9	100.0	
Missing	99	12	1.1		
Total		1075	100.0		

Table 121. Wild Animal Attack

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	5	.5	.5	.5
	1	116	10.8	10.9	11.3
	2	137	12.7	12.8	24.2
	3	160	14.9	15.0	39.2
	4	112	10.4	10.5	49.7
	5	123	11.4	11.5	61.2
	6	103	9.6	9.7	70.9
	7	113	10.5	10.6	81.4
	8	86	8.0	8.1	89.5
	9	64	6.0	6.0	95.5
	10	48	4.5	4.5	100.0
	Total	1067	99.3	100.0	
Missing	99	8	.7		
Total		1075	100.0		

Table 122. Electrical Shocks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	3	.3	.3	.3
	1	85	7.9	8.0	8.3
	2	134	12.5	12.6	20.8
	3	150	14.0	14.1	34.9
	4	143	13.3	13.4	48.3
	5	126	11.7	11.8	60.1
	6	105	9.8	9.8	70.0
	7	98	9.1	9.2	79.2
	8	91	8.5	8.5	87.7
	9	89	8.3	8.3	96.1
	10	42	3.9	3.9	100.0
	Total	1066	99.2	100.0	
Missing	99	9	.8		
Total		1075	100.0		

Table 123. Water Borne Disease

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	4	.4	.4	.4
	1	136	12.7	12.8	13.1
	2	94	8.7	8.8	22.0
	3	87	8.1	8.2	30.1
	4	97	9.0	9.1	39.2
	5	119	11.1	11.2	50.4
	6	137	12.7	12.9	63.2
	7	130	12.1	12.2	75.4
	8	102	9.5	9.6	85.0
	9	91	8.5	8.5	93.5
	10	69	6.4	6.5	100.0
	Total	1066	99.2	100.0	
Missing	99	9	.8		
Total		1075	100.0		

Table 124. I received training on DRR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	788	73.3	74.0	74.0
	Not Sure	63	5.9	5.9	79.9
	Yes	214	19.9	20.1	100.0
	Total	1065	99.1	100.0	
Missing	99	10	.9		
Total		1075	100.0		

Table 125. My school conducted mock drill on earthquake

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	20	1.9	1.9	1.9
	Not Sure	12	1.1	1.1	3.0
	Yes	1037	96.5	97.0	100.0
	Total	1069	99.4	100.0	
Missing	99	6	.6		
Total		1075	100.0		

Table 126. Table 126. My school conducted mock drill on fire

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	559	52.0	52.9	52.9
	Not Sure	176	16.4	16.7	69.6
	Yes	321	29.9	30.4	100.0
	Total	1056	98.2	100.0	
Missing	99	19	1.8		
Total		1075	100.0		

Table 127. Table 127. My school conducted mock drill on windstorm

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	709	66.0	67.4	67.4
	Not Sure	204	19.0	19.4	86.8
	Yes	139	12.9	13.2	100.0
	Total	1052	97.9	100.0	
Missing	99	23	2.1		
Total		1075	100.0		

Table 128. DRR awareness programmes are conducted in my school

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	162	15.1	15.2	15.2
	Not Sure	216	20.1	20.3	35.5
	Yes	686	63.8	64.5	100.0
	Total	1064	99.0	100.0	
Missing	99	11	1.0		
Total		1075	100.0		

Table 129. Guest speakers are invited to my school to talk on DRR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	597	55.5	56.0	56.0
	Not Sure	292	27.2	27.4	83.3
	Yes	178	16.6	16.7	100.0
	Total	1067	99.3	100.0	
Missing	99	8	.7		
Total		1075	100.0		

Table 130. Table 130. DRR components are in the subject that I teach

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	509	47.3	47.7	47.7
	Not Sure	245	22.8	23.0	70.7
	Yes	313	29.1	29.3	100.0
	Total	1067	99.3	100.0	
Missing	99	8	.7		
Total		1075	100.0		

Table 131. I have heard about the DRR emergency curriculum

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	526	48.9	49.4	49.4
	Not Sure	351	32.7	33.0	82.4
	Yes	187	17.4	17.6	100.0
	Total	1064	99.0	100.0	
Missing	99	11	1.0		
Total		1075	100.0		

Table 132. I know about the DRR emergency curriculum

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	563	52.4	53.6	53.6
	Not Sure	389	36.2	37.0	90.6
	Yes	99	9.2	9.4	100.0
	Total	1051	97.8	100.0	
Missing	99	24	2.2		
Total		1075	100.0		

Table 133. Information on DRR are easily accessible in the school library

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	215	20.0	20.2	20.2
	Not Sure	649	60.4	60.9	81.1
	Yes	201	18.7	18.9	100.0
	Total	1065	99.1	100.0	
Missing	99	10	.9		
Total		1075	100.0		

Table 134. The media advocates on DRR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	85	7.9	8.0	8.0
	Not Sure	350	32.6	32.8	40.8
	Yes	631	58.7	59.2	100.0
	Total	1066	99.2	100.0	
Missing	99	9	.8		
Total		1075	100.0		

Table 135. I have contributed in spreading awareness on DRR to my family

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	225	20.9	21.1	21.1
	Not Sure	175	16.3	16.4	37.5
	Yes	667	62.0	62.5	100.0
	Total	1067	99.3	100.0	
Missing	99	8	.7		
Total		1075	100.0		

Table 136. My school spreads awareness on DRR to the local community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	293	27.3	27.6	27.6
	Not Sure	439	40.8	41.3	68.9
	Yes	330	30.7	31.1	100.0
	Total	1062	98.8	100.0	
Missing	99	13	1.2		
Total		1075	100.0		

Table 137. I expect my students to know: different types hazards

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	.2	.2	.2
	Disagree	7	.7	.7	.8
	Neither agree or disagree	25	2.3	2.3	3.2
	Agree	310	28.8	28.9	32.1
	Strongly Agree	727	67.6	67.9	100.0
	Total	1071	99.6	100.0	
Missing	99	4	.4		
Total		1075	100.0		

Table 138. I expect my students to know: causes of natural hazards

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	.1	.1	.1
	Disagree	4	.4	.4	.5
	Neither agree or disagree	37	3.4	3.5	3.9
	Agree	317	29.5	29.6	33.5
	Strongly Agree	713	66.3	66.5	100.0
	Total	1072	99.7	100.0	
Missing	99	3	.3		
Total		1075	100.0		

Table 139. I expect my students to know: effects of natural hazards

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	.1	.1	.1
	Disagree	3	.3	.3	.4
	Neither agree or disagree	34	3.2	3.2	3.6
	Agree	309	28.7	28.9	32.4
	Strongly Agree	723	67.3	67.6	100.0
	Total	1070	99.5	100.0	
Missing	99	5	.5		
Total		1075	100.0		

Table 140. I expect my students to know: effects of man-made hazards

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	.1	.1	.1
	Disagree	10	.9	.9	1.0
	Neither agree or disagree	44	4.1	4.1	5.2
	Agree	298	27.7	28.0	33.1
	Strongly Agree	713	66.3	66.9	100.0
	Total	1066	99.2	100.0	
Missing	99	9	.8		
Total		1075	100.0		

Table 141. I expect my students to know: natural hazards my community faces

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	.1	.1	.1
	Disagree	15	1.4	1.4	1.5
	Neither agree or disagree	80	7.4	7.5	9.0
	Agree	307	28.6	28.8	37.8
	Strongly Agree	663	61.7	62.2	100.0
	Total	1066	99.2	100.0	
Missing	99	9	.8		
Total		1075	100.0		

Table 142. I expect my students to know: man-made hazards my community faces

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	.1	.1	.1
	Disagree	16	1.5	1.5	1.6
	Neither agree or disagree	97	9.0	9.0	10.6
	Agree	308	28.7	28.7	39.4
	Strongly Agree	650	60.5	60.6	100.0
	Total	1072	99.7	100.0	
Missing	99	3	.3		
Total		1075	100.0		

Table 143. I expect my students to know: climate change

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	.3	.3	.3
	Disagree	8	.7	.7	1.0
	Neither agree or disagree	69	6.4	6.5	7.5
	Agree	284	26.4	26.6	34.1
	Strongly Agree	705	65.6	65.9	100.0
	Total	1069	99.4	100.0	
Missing	99	6	.6		
Total		1075	100.0		

Table 144. I expect my students to know: effects of climate change

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	.3	.3	.3
	Disagree	9	.8	.8	1.1
	Neither agree or disagree	54	5.0	5.1	6.2
	Agree	291	27.1	27.3	33.5
	Strongly Agree	708	65.9	66.5	100.0
	Total	1065	99.1	100.0	
Missing	99	10	.9		
Total		1075	100.0		

Table 145. I expect my students to know: the vulnerable areas to disaster in my community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	4	.4	.4	.4
	Disagree	22	2.0	2.1	2.4
	Neither agree or disagree	99	9.2	9.3	11.7
	Agree	290	27.0	27.1	38.8
	Strongly Agree	654	60.8	61.2	100.0
	Total	1069	99.4	100.0	
Missing	99	6	.6		
Total		1075	100.0		

Table 146. I expect my students to know: safe places in school, home and other places are located, and how to get there

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	4	.4	.4	.4
	Disagree	10	.9	.9	1.3
	Neither agree or disagree	56	5.2	5.2	6.5
	Agree	248	23.1	23.2	29.7
	Strongly Agree	751	69.9	70.3	100.0
	Total	1069	99.4	100.0	
Missing	99	6	.6		
Total		1075	100.0		

Table 147. I expect my students to know: how and where to evacuate in case of a disaster

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	5	.5	.5	.5
	Disagree	5	.5	.5	.9
	Neither agree or disagree	39	3.6	3.6	4.6
	Agree	229	21.3	21.4	26.0
	Strongly Agree	792	73.7	74.0	100.0
	Total	1070	99.5	100.0	
Missing	99	5	.5		
Total		1075	100.0		

Table 148. I expect my students to know: how to help people who are more vulnerable when a disaster happens

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	.6	.6	.6
	Disagree	12	1.1	1.1	1.7
	Neither agree or disagree	59	5.5	5.5	7.2
	Agree	287	26.7	26.8	34.0
	Strongly Agree	706	65.7	66.0	100.0
	Total	1070	99.5	100.0	
Missing	99	5	.5		
Total		1075	100.0		

Table 149. I expect my students to know: the warning signs and signals of different hazards at home, school and community

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	8	.7	.7	.7
	Disagree	16	1.5	1.5	2.2
	Neither agree or disagree	94	8.7	8.8	11.0
	Agree	265	24.7	24.7	35.8
	Strongly Agree	688	64.0	64.2	100.0
	Total	1071	99.6	100.0	
Missing	99	4	.4		
Total		1075	100.0		

Table 150. I expect my students to know: how to contact people who can help before, during and after a disaster

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	.2	.2	.2
	Disagree	18	1.7	1.7	1.9
	Neither agree or disagree	70	6.5	6.5	8.4
	Agree	289	26.9	27.0	35.5
	Strongly Agree	690	64.2	64.5	100.0
	Total	1069	99.4	100.0	
Missing	99	6	.6		
Total		1075	100.0		

Table 151. I expect my students to know: about where to get help after a disaster

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	.3	.3	.3
	Disagree	10	.9	.9	1.2
	Neither agree or disagree	69	6.4	6.5	7.7
	Agree	269	25.0	25.2	32.9
	Strongly Agree	717	66.7	67.1	100.0
	Total	1068	99.3	100.0	
Missing	99	7	.7		
Total		1075	100.0		

Table 152. I expect my students to (do): stay calm and alert when a disaster happen

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	4	.4	.4	.4
	Disagree	18	1.7	1.7	2.1
	Neither agree or disagree	41	3.8	3.8	5.9
	Agree	270	25.1	25.2	31.1
	Strongly Agree	737	68.6	68.9	100.0
	Total	1070	99.5	100.0	
Missing	99	5	.5		
Total		1075	100.0		

Table 153. I expect my students to (do): protect themselves first then only to assist others

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	.2	.2	.2
	Disagree	11	1.0	1.0	1.2
	Neither agree or disagree	51	4.7	4.8	6.0
	Agree	274	25.5	25.7	31.6
	Strongly Agree	730	67.9	68.4	100.0
	Total	1068	99.3	100.0	
Missing	99	7	.7		
Total		1075	100.0		

Table 154. I expect my students to (do): create a disaster risk map

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	5	.5	.5	.5
	Disagree	26	2.4	2.4	2.9
	Neither agree or disagree	122	11.3	11.4	14.3
	Agree	309	28.7	28.9	43.2
	Strongly Agree	608	56.6	56.8	100.0
	Total	1070	99.5	100.0	
Missing	99	5	.5		
Total		1075	100.0		

Table 155. I expect my students to (do): create a family preparedness plan

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	10	.9	.9	.9
	Disagree	30	2.8	2.8	3.8
	Neither agree or disagree	116	10.8	10.9	14.6
	Agree	280	26.0	26.3	40.9
	Strongly Agree	629	58.5	59.1	100.0
	Total	1065	99.1	100.0	
Missing	99	10	.9		
Total		1075	100.0		

Table 156. expect my students to (do): purify water in an emergency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	12	1.1	1.1	1.1
	Disagree	36	3.3	3.4	4.5
	Neither agree or disagree	144	13.4	13.5	17.9
	Agree	306	28.5	28.6	46.5
	Strongly Agree	572	53.2	53.5	100.0
	Total	1070	99.5	100.0	
Missing	99	5	.5		
Total		1075	100.0		

Table 157. I expect my students to (do): perform first aid

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	5	.5	.5	.5
	Disagree	17	1.6	1.6	2.1
	Neither agree or disagree	65	6.0	6.1	8.1
	Agree	292	27.2	27.3	35.4
	Strongly Agree	692	64.4	64.6	100.0
	Total	1071	99.6	100.0	
Missing	99	4	.4		
Total		1075	100.0		

Table 158. I recommend that: DRR concepts be infused in the Curriculum

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	17	1.6	1.6	1.6
	Disagree	26	2.4	2.4	4.0
	Neither agree or disagree	119	11.1	11.2	15.2
	Agree	360	33.5	33.8	49.0
	Strongly Agree	543	50.5	51.0	100.0
	Total	1065	99.1	100.0	
Missing	99	10	.9		
Total		1075	100.0		

Table 159. I recommend that: DRR concepts be integrated into the Curriculum

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	19	1.8	1.8	1.8
	Disagree	22	2.0	2.1	3.8
	Neither agree or disagree	141	13.1	13.2	17.1
	Agree	362	33.7	34.0	51.0
	Strongly Agree	522	48.6	49.0	100.0
	Total	1066	99.2	100.0	
Missing	99	9	.8		
Total		1075	100.0		

Table 160. I recommend that:There be a separate DRR curriculum

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	58	5.4	5.5	5.5
	Disagree	120	11.2	11.3	16.8
	Neither agree or disagree	262	24.4	24.7	41.5
	Agree	271	25.2	25.6	67.1
	Strongly Agree	349	32.5	32.9	100.0
	Total	1060	98.6	100.0	
Missing	99	15	1.4		
Total		1075	100.0		

References

Al-Madhari, A. F., & Keller, A. Z. (1997). Review of disaster definitions. Prehospital and disaster medicine. 17-21.

Alexander, D. (1993). Natural Disasters. New York: Chapman and Hall.

Creswell, J. (2009). Research Design: Qualitative, quantitative and mixed methods approaches (3rd ed). Thousand Oaks, CA: Sage Publications.

Crichton, D. (1999). The Risk Triangle. CGU Insurance.

Dukpa, P. (2014). Bhutanese students' attitude towards mathematics. doi:10.13140/RG.2.2.34484.30082

Kuenza, K., Dorji, Y., & Wangda, D. (2010). Landslides in Bhutan.

Lechat, F. M. (1990). The International Decade for Natural Disaster Reduction: Background and Objectives.

Ministry of Agriculture and Forests. (2010). Bhutan Land Cover Assessment 2010. Thimphu: Ministry of Agriculture and Forests.

Ministry of Education. (2017). Annual Education Statistics. Thimphu: Ministry of Education.

Ministry of Home & Cultural Affairs. (2006). National Disaster Risk Management Framework: Reducing Disaster Risks for a Safe and Happy Bhutan. Thimphu: Royal Government of Bhutan.

Molineaux, R. (2008). Curriculum Mapping: Focus On.

National Statistics Bureau. (2017). Population and Housing Census of Bhutan. Thimphu: National Statistics Bureau.

National Statistics Bureau. (2017). Statistical Yearbook of Bhutan 2017. Thimphu: National Statistics Bureau.

Royal Education Council. (2018). Royal Education Council Operational Framework . Paro: Royal Education Council.

Royal Government of Bhutan, World Bank, United Nations. (2009). Joint Rapid Assessment for Recovery, Reconstruction and Risk Reduction. Thimphu: Royal Government of Bhutan.

Royal Government of Bhutan. (2012). Glacial Lake Outbrust Flood: Reducing risks and ensuring preparedness. Thimphu: Royal Government of Bhutan.

Royal Government of Bhutan. (2013). Disaster Management Act of Bhutan. Thimphu: Royal

Government of Bhutan.

Smith, E., Wasiak, J., Sen, A., & Archer, F. (2009). Three Decades of Disasters: A Review of Disaster-Specific Literature from 1977-2009. Prehospital and Disaster Medicine.

UNISDR. (2009). UNISDR Terminology on Disaster Risk Reduction. UNISDR.

United Nations. (1995). Yokohama strategy and plan of action for a safer world: Guidelines for natural disaster prevention, preparedness, and mitigation.

United Nations. (2005). Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters. UNISDR.

United Nations. (2015). Sendai Framework for Disaster Risk Reduction 2015-2030.