

Effectiveness of a Disaster Preparedness Programme For Pre-Service Teachers

A Dissertation Submitted to the Sardar Patel University,
Vallabh Vidyanagar in Partial Fulfillment of the
requirement for the degree of

Master of Education

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March-2013

Certificate

This is to certify that the work incorporated in the dissertation bearing the title “*Effectiveness of a Disaster Preparedness Programme For Pre-Service Teachers*” submitted by **Ms. Akanksha Singh** comprises the result of independent and original investigations carried out. The materials that have been obtained (and used) from other sources have been acknowledge in the dissertation.

Vallabh Vidyanagar

March , 2013

Signature of the Researcher

Certified that the work mentioned above is carried out under my guidance.

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Certificate of Approval

This dissertation directed and supervised by the candidate's guide has been accepted by the Waymade College of Education, Sardar Patel University, Vallabh Vidyanagar in partial fulfillment of the requirement for the degree of

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Acknowledgement

I am particularly indebted to my guide **Dr. Shamsha Emanuel** for her valuable criticism, unfailing guidance, untiring guidance, untiring supervision and interest in the successful completion of my dissertation.

I would like to thank **Dr Sulabha Natraj**, Professor & Head, Waymade College of Education, for giving me the opportunity to do my dissertation work at Waymade College of Education, Anand, Gujarat.

I express my sincere thanks to all faculty members of Waymade College of Education for their valuable suggestions. With all due respect and gratitude I would humbly like to thank **Dr. Nandita Nagar, Dr. Bharti Rathore, Ms. Dipali Gandhi, Keval Thakar** and **Bhavin Prajapati** of Waymade College of Education, for their unreserved help provided, keen interest to be on my side whenever I was in need of their rich ,experienced technical know-how, unflinching support and guidance.

My deep thanks to student teachers of B.Ed (Advanced), Waymade College of Education for their excellent support during my dissertation period.

I would like to thank all my college friends for their support and encouragement.

I would like to thank my brother Mr.Anurag Singh, my sister Ms. Swechcha Singh for their valuable support and suggestion.

My sincere thanks to my husband Mr.Ashish Singh for his invaluable and continuous support in accomplishment of my dissertation works. It would not have been possible without his active and continuous support.

I am grateful to the almighty and my parents Mrs. Maya Singh & Mr. Santosh Singh for their blessing and moral support which I received throughout my strenuous schedule.

Akanksha Singh

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Civilizations have advanced and the quality of life has improved with the development of science and technology. In countries like India, development has been a tedious and difficult process because fruits of development are getting negated by the pressure of population explosion. Moreover, this also has adverse effects on the resources available on the earth. Therefore, protection of our temples from natural disaster or manmade disaster is of prime importance. Hard earned development gains are often lost when a disaster strikes, bringing losses to life, property and livelihood. India is one of the most disaster prone countries of the world. Its unique geo-physical characteristics make different areas vulnerable to various disasters. Around 59% of the land area falls under seismic zone III, IV and V. In addition, approximately 68% of the cultivable land is prone to drought, 12% to floods and 8% to cyclones. The socio-economic backwardness of the majority of our population, coupled with the lack of skills in preparing and responding to disasters increases their vulnerability, negatively affecting their ability to respond and recover from periodic and intense disasters. ‘Prevention is better than cure’ is an old saying which is very apt in the context of disaster preparedness. Every year colossal amount of resources are used by our Government as well as other agencies to carry out relief and rehabilitation measures. It has now become increasingly evident that an investment in disaster preparedness can save thousands of lives, vital economic assets, livelihoods and reduce the cost of overall relief assistance. Further, disaster preparedness is a step to converse development gains before a disaster strikes. Disaster preparedness refers to a set of activities that help us to protect ourselves from the harmful effects of disasters and respond to them efficiently and quickly.

The present study focuses on Disaster Preparedness. It aims at preparing a Disaster Preparedness Programme for student teachers (Pre-service B.Ed students) and evaluating its effectiveness.

1.2 Statement of the Problem

Effectiveness of a Disaster Preparedness Programme For Pre-Service Teachers

1.3 Identification of Variables

The variables that are normally related to a study are independent variable, dependent variable, intervening variable and confounding variable. The variables that are identified by the researcher with respect to the present study are mentioned below.

Table 1 Variables with respect to the present study

Independent Variables	Dependent Variables	Intervening Variables	Confounding Variables
Prepared activities and tasks for disaster preparedness programme is independent variable	The academic achievement is taken as dependent variable which depends on the prepared disaster preparedness programme	Previous knowledge of students Some students might have faced disasters Some students might have been a part of NCC / NSS activities.	Difference in age level of students Some students might have high Intelligent Quotient (I.Q) Emotional Quotient (E.Q) of the students Educational qualifications of the students Male and female students

The researcher has made attempts to explain and operationalise the terms related to the present study. The same are mentioned below.

1.4 Explanation of Terms

Terms related to the study are Disaster Preparedness Programme and Pre-service teachers. The same are explained below keeping in mind the present research.

1.4.1 Disaster Preparedness Programme (DPP)

It is a set of activities and precautions that a community takes before a disaster occurs. These activities are consciously practiced and learnt in order to be prepared for a disaster, to reduce the impact of a disaster and to cope with it efficiently. In the present research, DPP refers to a set of activities and information that is prepared by the researcher for training the pre-service teachers *vis-à-vis* disaster preparedness.

1.4.2 Pre-Service Teachers

Pre-service teachers are students studying in the various teacher education programmes namely B.Ed., PTC or other teacher training courses. In the present study, the pre-service teachers are B.Ed. students undergoing the one year B.Ed. Advanced course.

The aim of the present study was to prepare a programme a set of materials and activities to educate the pre-service teachers about disasters and prepare them for managing disaster situations in schools, society and in their own lives. Accordingly, the objectives of the study are mentioned below.

1.5 Objectives of the Study

The research objectives of the study are mentioned below.

1. To prepare a Disaster Preparedness Programme for pre-service teachers
2. To implement the prepared Disaster Preparedness Programme on pre-service teachers
3. To evaluate the effectiveness of the prepared Disaster Preparedness Programme

The present study being experimental in nature attempts to test the following hypothesis.

1.6 Hypothesis

The researcher formulated a null hypothesis.

There will be no significant difference between the mean achievement scores of the pre test and post test of the pre-service teachers.

1.7 Limitations of the Study

The sample of the study comprises 37 pre-service teachers of the Waymade College of Education which is an English medium college affiliated to the Sardar Patel University. Convenient sampling technique was used by the researcher to select the sample due to constraints of time.

1.8 Delimitations of the Study

The researcher has identified the following limitations and delimitations of the study.

- The study is delimited to the pre-service teachers of the Waymade College of Education.
- The study includes and confirms itself to only selected disasters such as Earthquake, Floods which are natural disasters and Fire, Bomb blast, Leakage of chemical gas and Stampede which are Man-Made disasters.

The rationale of the study is mentioned in the following section.

1.9 Rationale of the Study

India is one of the most disaster prone countries in the world. Its unique geo-physical characteristics make different areas vulnerable to various disasters. Around 59% of the land area lies in the seismic zone III, IV and V, 68% of the cultivate land is prone to drought, 12% to floods and 8% to cyclones. Disaster is defined as a crisis situation causing wide spread damage which far exceeds our ability to recover. Disaster management is an integral part of education. It makes the students aware of various disasters that India is vulnerable to. It not only brings out the various causes of disasters but also suggests the means of do's and don'ts during disasters. At the same time, it also makes students aware of environmental issues at the global level. Moreover, in the present time and observations of the past decades indicate that

human beings have been over using the natural resources and have not been able to sustain resources for the subsequent generations. Industrialization, urbanization, deforestation, mining and other human activities have also increased the frequency of disasters. Thus, there is a need for disaster preparedness. Disaster preparedness makes students understand the concept of types of disaster, and prepares them to face disasters. This will develop the survival skills among students. Students start taking a note of different man-made activities that cause man-made disasters and natural disasters namely earthquakes, tsunami, riots, bomb blasts etc. Such activities pose many threats to the health of people, economic losses and property losses. In India, there is need for disaster preparedness.

The diverse geographical features of India make it prone to a variety of disasters. This compels the young generation of India to comprehend the need of living in harmony with nature. It is a developing country where rocketing population growth has resulted in over-urbanization. People start moving from rural to urban areas. Growth of slums, lowering water level, shortage of power, traffic jams and many other poor living conditions demand an immediate solution to these problems. Government is taking several steps but is not successful everywhere. Participation of people is, therefore, of utmost importance in planning and management of disasters. All such concerns have led to the framing of a new subject in education so that the students can face the new challenges. The current research aims at creating awareness in the minds of the young learners about disasters in a concentric and orderly manner starting from the individual and going up to the community. It aims to encourage the learners to understand the importance of a healthy environment and their roles in protecting it. It also aims to help learner to function effectively as a member of different social group i.e. the family and community. Further, it targets to help to develop in the learner the skills, attitudes, values for improving the quality of life of self and that of community. Disaster Preparedness Programme is important to acquaint pre service teachers about various disasters that India is vulnerable to. It is important to introduce a few key concepts in disaster management, in simple terms, to orient them to those words that are used in media, discussions, analysis, etc. The programme is important to introduce the concept of being prepared for disasters through simple do's and don'ts that pre-service teachers can imbibe and spread to families and community. It is necessary to develop an interest in the subject through interactive activities so that pre-service teachers seek more information on disasters. The programme will give hands on

experience to the pre-service teachers on various survival skills which would save precious lives in an emergency. Disasters can happen to anybody, anytime, anywhere. Therefore, preparedness is necessary. As we all know that disasters bring along with them heavy loss of life, property and livelihood. If there is no preparedness then a number of casualties and damage will be more. So it is time to make disaster management a way of life and an essential life skill. We should be prepared for the safety of our near and dear ones than merely be a victim and repent it. Keeping all the above perspectives in mind, the researcher strongly feels that there is need for disaster preparedness. This is mainly because occurrence and frequency of disaster is increasing day by day. It is very important to train young minds, for that the teacher needs to be trained first. Disaster management has been taught in colleges but as theory rather than preparing people to face disasters. Keeping this in mind, the researcher strongly feels that there is need to prepare teachers and trainee teachers for disaster. Through this experiment researcher has made an attempt to consciously train pre- service teachers to face disasters. It is intended that this will percolate to the society in future. The researcher has focused on the following aspects

1. Introduction- Disaster, The difference between a hazard and a disaster
2. Various kinds of disasters
3. Overview of natural disasters in India
4. Overview of Manmade disasters in India
5. Impact of disasters and the importance of being prepared to face disasters
6. Meaning and steps in disaster preparedness
7. Importance of sanitation and hygiene during emergency situations
8. How to protect oneself from earthquakes, floods, and some manmade disasters like Bomb blast, stampede, Leakage of chemical gas and fire through simple do's and don'ts.

1.10 Research Method

The present study is experimental in nature.

1.11 Research Type

The research design type is one group pre test and post test design.

1.12 Population and Sample of the Study

- The population of the study comprises pre-service teachers of 1 year B.Ed. programme colleges affiliated to the Sardar Patel University.
- The sample of the study comprises the pre-service teachers of Waymade College of Education which is an English medium college and affiliated to the Sardar Patel University. Convenient sampling technique was used by the researcher to select the sample.

1.13 Tools and Techniques

The following tools and techniques were used to collect data from the sample.

- **Questionnaire:** It was prepared to know the level of awareness of pre-service teachers with regard to the concept of disaster and disaster preparedness. It also enabled the researcher to understand the exposure that the students have vis-à-vis disasters.
- **Reaction scale:** It was prepared to know the reaction of the pre-service teachers towards the prepared disaster preparedness module.
- **Achievement test:** It was prepared to evaluate the effectiveness of the Disaster Preparedness Programme.

1.14 Procedure and Data Collection

Table 2 Data Collection Procedure

Data Collection Procedure	
Stage and its purpose	Description of the data collection
Stage1: Preparatory stage /Pre-test/ module / post test	Questionnaire and Pre test was prepared to determine the level of awareness of pre-service teachers towards concept of disaster, disaster preparedness and training details related to disaster management. The researcher discussed the same with the guide and according to the suggestions prepared a questionnaire and pre-test. Then the researcher showed the questionnaire and pre

	test to the experts, made modifications as per their suggestions and validated the tools. A post test was prepared to evaluate the effectiveness of the prepared module. The post test contained the same instructions as the pre test and items were changed. Then, the researcher showed the test to the experts and validated the tool. According to their suggestions the modifications were made. Reaction scale was also prepared and validated in a similar manner.
Implementation stage	A Disaster Preparedness module was prepared by the researcher. The major concepts were disaster, difference between hazard and disaster, various kinds of disaster, overview of natural disaster in India, overview of manmade disasters in India, impact of disaster and the importance of being prepared for disaster, meaning and steps of disaster preparedness, importance of sanitation and hygiene during emergency situations, Mock drill and simulations of natural disasters like earthquakes, floods and manmade disasters like Bomb blast, stampede, Leakage of chemical gas and fire through simple do's and don'ts. Different tasks were prepared by the researcher on disaster preparedness programme for pre-service teachers. Different tasks comprised activities like group discussion, lecture cum discussion, mock drills, real life situation analysis, case study, preparing disaster preparedness plan, preparing list of First-Aid kits, presentations etc. The researcher implemented pre test on 24-12-12. Pre test included objective type questions and a questionnaire. The researcher conducted the sessions from 24-12-12 to 7-1-13. During the session different activities were conducted by the researcher to increase their level of awareness related to disaster preparedness.
Evaluation stage	The researcher administered the post test on 8-1-13 to evaluate the effectiveness of prepared Disaster Preparedness module. The post test included objective type questions. Reaction scale was used by the researcher to know the reaction of pre-service teachers towards Disaster Preparedness module. The collected data was analyzed by the researcher using content analysis, t-test and chi square.

1.15 Scheme of Chapterisation

- **Chapter1** Introduction i.e. the present chapter focuses on the overview of the study, objectives and hypothesis and significance of the study.
- **Chapter2** Conceptual Framework discusses the concepts related to the research and conceptual framework.
- **Chapter 3** includes the Review of Related Literature and its implications to the present study.
- **Chapter 4** aims at listing the Procedure of the Study and its Research Methodology.
- **Chapter 5** presents Data Analysis and Interpretation.
- **Chapter 6** focuses on Discussion, Conclusion and Suggestions of the Study.

The following chapter presents the Conceptual Framework and includes the terms and Concepts Related to the Study.

CHAPTER 2

CONCEPTUAL FRAMEWORK

2.1 Introduction

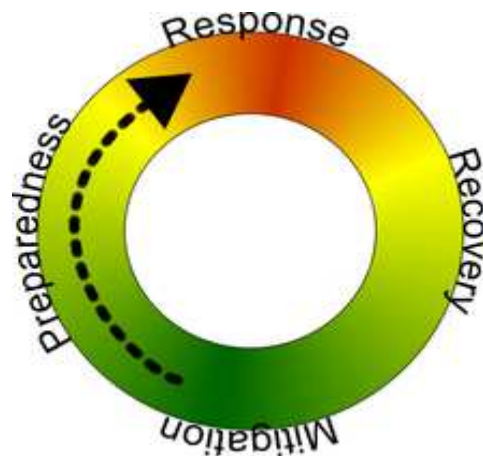
India with its vast population and unique geo-physical characteristics is one of the world's most 'disaster-prone' countries. Natural hazards such as cyclones, earthquakes, drought, floods or landslides occur in different parts of India in varying intensity. The east and the south-east part of India are frequently affected by cyclones. In the interior of the plateau or in the Himalayas earthquakes, and in the Ganga-Brahmaputra plain, floods are most common. Rajasthan and western Orissa often experience severe drought, as do others areas in South India. This means that we are all 'vulnerable' in different degrees to these hazards. People living in an area may be vulnerable to more than one hazard. For instance, people residing in coastal area may face floods and cyclones frequently, while being located in an earthquake zone. Such an area is called a multi-hazard zone. The damage caused due to a hazard increases when people are not adequately prepared to face the 'disaster'. For instance, a flood is a hazard. When it occurs and if people are not prepared to face it, it may wash away persons, homes, cattle and valuables. Then, the flood becomes a disaster. But if people are evacuated along with valuables to a safe shelter, cattle is herded on to a higher area such as a mound, and houses are built with adequate features to make them flood-resistant, the flood remain a hazard and does not becomes a disaster. Thus, a disaster whether natural or human-induced, is an event which results in widespread human loss. It is accompanied by loss of livelihood, property causing suffering and loss in a definite area. It results in the disruption of normal functioning of the society, thereby affecting a large number of people, and also affecting the community which requires external aid to cope up with the losses. In order to protect ourselves from the harmful effects of a disaster, we have to prepare ourselves in advance, to face them better. Thus, disaster preparedness is necessary. Disaster preparedness involves the activities and measures taken before a hazard event to ensure effective response to the impact of hazards. It involves measures that enable governments, community and it individuals to respond rapidly to disaster situations and cope with them effectively. The present chapter presents a detailed description of the terms and content that is of prime importance to the study.

The following section focuses on the aspect of disaster management.

2.2 Disaster Management

The Disaster Management refers to a range of activities designed to mitigate the effects of disasters and emergency situations and to provide a framework for helping people at-risk to avoid or recover from the impact of the disaster. Managing disasters includes steps to be taken prior to, during, and after the disaster, and involve preparedness, mitigation, response and recovery. It involves the organization and management of resources and responsibilities for dealing with all humanitarian aspects of emergency, in particular preparedness, response and recovery in order to lessen the impact of disaster. There are different phases of Disaster Management. These phases are normally carried out simultaneously after a disaster. The following figure shows the different phases of disaster Management.

Figure 1 Phases of Disaster Management



From the above figure, it is evident that disaster management is a cyclic process. Normally, the training for preparedness is given to the people. This in turn helps them be aware during a disaster and enables them to be prepared for response stage, followed by recovery and mitigation.

The details of the stages are mentioned below.

2.2.1 Response

The response refers to the mobilization of the necessary emergency services and first responders in the disaster area. This is likely to include a first wave of core emergency

services, such as firefighters, police and ambulance crews. They may be supported by a number of secondary emergency services, such as specialist rescue teams, Non Governmental organizations, various religious bodies etc. This includes search and rescue of those affected, first aid, provision of food, clothing, shelter, medicines to those affected.

2.2.2 Recovery/ Rehabilitation and Reconstruction

The aim of the recovery phase is to restore the affected area to its previous state. Rehabilitation and reconstruction initiatives are taken up by the Government, NGOs and various other agencies which would help the affected community to come back to normalcy. Roads, permanent houses, power and communication networks are restored. It also includes economic rehabilitation for those who have lost their livelihood.

2.2.3 Mitigation

Mitigation efforts are attempts to prevent hazards from developing into disasters altogether or to reduce the effects of disasters. Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters. This is achieved through risk analysis, which results in information that provides a foundation for mitigation activities that reduce risk, and flood insurance that protects financial investment. The mitigation phase differs from the other phases in that it focuses on long-term measures for reducing or eliminating risk. Mitigation measures can be structural or non-structural. Structural measures include construction of disaster resistant buildings, raising the river embankments etc and some non-structural measures include raising awareness and preparation of plans at the community level for better preparedness.

2.2.4 Preparedness

Disaster preparedness refers to measures taken to prepare for and reduce the effects of disasters. That is, to predict and where possible prevent them, mitigates their impact on vulnerable populations, and responds to and effectively copes with their consequences. It includes set of activities and precautions that a community collectively takes before a disaster occurs, in order to reduce the impact of a disaster,

and to cope with it efficiently. It involves planning, managing, organizing, training, equipping, exercising, creating, evaluating, monitoring and improving activities to ensure effective coordination and the enhancement of capabilities of concerned organizations to prevent, protect against, respond to, recover from, create resources and mitigate the effects of natural disasters, acts of terrorism, and other man-made disasters.

In the preparedness phase, emergency managers develop plans of action carefully to manage and counter their risks and take action to build the necessary capabilities needed to implement such plans. Common preparedness measures include:

- Development of communication plans with easily understandable terminology and methods.
- Proper maintenance and training of emergency services, including mass human resources such as community emergency response teams.
- Development and exercise of emergency population warning methods combined with emergency shelters and evacuation plans.
- Implementation and maintenance of an emergency communication system that can help to identify the nature of an emergency and provide instructions when needed.
- Maintenance of disaster supplies and equipment.
- Development of organizations of trained volunteers among civilian populations. Professional emergency workers are rapidly overwhelmed in mass emergencies so trained; organized, responsible volunteers are extremely valuable. Organizations like Community Emergency Response Teams and the Red Cross are ready sources of trained volunteers.

The present research focuses on one of the stages of disaster management i.e. Disaster Preparedness.

2.3 Objectives of Disaster Preparedness

Disaster preparedness encompasses the following objectives.

- To increase the efficiency, effectiveness and impact of disaster emergency response mechanisms at the community, national and Federation level. This includes the development and regular testing of warning systems (linked to

forecasting systems) and plans for evacuation or other measures to be taken during a disaster alert period to minimize potential loss of life and physical damage, the education and training of officials and the population at risk, training of first aid and emergency response teams, the establishment of emergency response policies, standards, organizational arrangements and operational plans that is to be followed after a disaster.

- To strengthen community-based disaster preparedness through National Society programmes for the community or through direct support of the community's own activity. This could include educating, preparing and supporting local populations and communities in their everyday efforts to reduce risks and prepare their own local response mechanisms to address disaster emergency situations.
- To develop activities that are useful for both addressing everyday risks that communities face and for responding to disaster situations—for example, health, first aid or social welfare programmes that have components useful for disaster reduction and response.

Disaster can be classified on the basis of different types. The subsequent section deals with the same.

2.4 Types of Disasters

Disasters can be categorized into various types based on the speed and origin/ cause

a) Based on the speed, a disaster can be termed as slow or rapid

- **Slow- onset disaster:** a disaster that prevails for many days, months or even years like drought, environmental degradation, pest infestation, famine are some examples of a slow onset disaster.
- **Rapid- onset disaster:** A disaster that is triggered by an instantaneous shock. The impact of this disaster is short-lived or long-term. Earthquake, cyclone, flash flood, volcanic eruptions are some examples of rapid onset disasters.

b) Based on the cause, disasters can be natural or human-induced

- **Natural disasters:** A natural disaster is an event that is caused by a natural hazard and leads to human, material, economic and environmental losses, which exceeds the ability of those affected to cope. Some examples of natural disasters are the 2004 Indian Ocean tsunami, the 2008 earthquake in China,

the 2007 cyclone in Myanmar, the recurrent droughts in Rajasthan and the annual floods in both rural and urban areas of northern and western India.

- **Human-induced disasters:** A serious disruption of normal life triggered by a human-induced hazard causing human, material, economic and environmental losses, which exceeds the ability of those affected to cope. Some examples are the 1984 Bhopal Gas tragedy, the 1997 Uphaar Cinema fire in Delhi, Rajdhani Express derailment in 2002, Jaipur serial blasts in 2008 etc.

Thus, above mentioned are some major types of disasters. The following section describes the different types of disasters that have occurred in India.

2.5 Natural Disasters in India

The Indian sub- continent is prone to a large number of natural hazards namely floods, cyclones, earthquakes, tsunami and landslides bringing in a huge loss to life, livelihood, property and infrastructure. The following table shows the list of natural disasters that has been taken place in India during the past years

Table 3 List of Natural Disasters in India

Sr.No.	Death toll (estimate)	Event	Location	Date
1.	2,000,000	Deccan Famine of 1630–32	India	1630–1632
2.	300,000	1737 Calcutta cyclone	India (Calcutta)	October 7, 1737
3.	15,000,000	Bengal famine of 1770, incl. Bihar & Orissa	India	1769–1771
4.	300,000	1839 India Cyclone	India (North India)	November 25, 1839
5.	60,000	1864 Calcutta Cyclone	India	October 5, 1864
6.	10,000,000	Indian Great Famine of 1876–78	India	1876–1879
7.	100,000	1882 Bombay cyclone	Bombay, India	1882
8.	19,000,000	Indian Famine	British India	1896–1902
9.	1,500,000–4,000,000	Bengal Famine of	India	1943

		1943		
10.	20,000	1993 Latur earthquake	India	September 30, 1993
11.	1004	1988 Bihar Nepal Border earthquake	India / Nepal	August 21,1988
12.	768	1991 Uttarkasi earthquake	Uttarkasi, Uttar Pradesh	October 20,1991
11.	242	1996 Amarnath Yatra tragedy	India	1996
13.	39	1997 Madhya Pradesh earthquake	Jabalpur , Madhya Pradesh	May 22 1997
14.	100	1999 Chamoli	Chamoli ,Uttar Pradesh	March 29 1999
15.	19,727	2001 Gujarat earthquake	India	January 26, 2001
16.	1,500	2003 Southern India heat wave	India	2003
17.	230,210–310,000	2004 Indian Ocean Tsunami	Sumatra, Indonesia and also affected India, Sri Lanka, Maldives, Thailand	December 26, 2004
18.	79,000	2005 Kashmir earthquake	Pakistan (Azad Kashmir)	October 8, 2005

2.6 Man-made Disasters in India

Man-made disasters are caused due to human negligence or deliberately by an individual or group. Man-made disasters cost the most in terms of human suffering, loss of life and long term damage to a country's economy and productive capacity. Road, rail, air accidents, war, fire and violence are some of the man- made disasters. The following table shows the list of man-made disasters that has been taken place in India during the past years

Table 4 List of Man-made Disasters in India

S.No.	Death toll (estimate)	Event	Location	Date
1	400	Man Eater- Leopard of Panar	Almora, Kumaon, Northern India	1905-1910
2	349	1996 Charkhi Dadri mid-air collision	Over the village of Charkhi Dadri, Haryana, India	November 12, 1996
3	213	Crash of Air India Flight no. 855	India	1978
4	152	Yemenia Flight 626	Indian Ocean	30 June 2009
5	130	Indian Airlines Flight 113	Ahemdabad, India	October 1988
6	94	Alitalia Flight 514	Mumbai, India	7 July 1962
7	60	Alliance Air Flight 7412	Patna, Bihar, India	2000
8	372	Chasnala mining disaster	Sudamdih Colliery Dhanbad, India	1975
9	800	Bombay Docks Explosion		1944
10	110	A tanker truck carrying petrol exploded	Chennai, India	March 12, 1995.
11	12,000	Bhopal Gas disaster	Bhopal, India	1984
12	625	1947 Ramdas Ship Disaster	Bombay, India	1947
13	438	Baccha Singh Boat Disaster	Manihari Ghat, Bihar, River Ganges	6 August 1988
14	800	1954 Kumbh Mela stampede, crowd crush at religious festival	Allahabad, India	1954

S.No.	Death toll (estimate)	Event	Location	Date
15	285	crowd crush at religious festival	(Wai, Maharashtra, India,)	2005
16	224	Jodhpur stampede disaster	Chamunda Devi temple, Rajasthan, India, 2008	September 30,2008
17	200	Stampede in the central place of Nagpur	Maharashtra, India,	1992)
18	162	Naina Devi Temple stampede disaster	Bilaspur, Himachal Pradesh	August 3,2008.
19	130	Gowari stampede in Maharashtra State Legislature building	Nagpur, India	November 23, 1994
20	102	Sabarimala stampede, broken out during an annual pilgrimage	Sabarimala, Kerala, India	January 14, 2011.
21	60	a tent fire after stampede, during local festival parade	Jamshedpur, Bihar, India on	March 3, 1989
22	50	Mahamaham Stampede disaster	Kumbakonam, Tamil Nadu, India	February 18, 1992.
23	45	Qutab Minar Tower stampede disaster by electric power failure	Delhi, India,	December 4, 1981

S.No	Death toll (estimate)	Event	Location	Date
24	33	Kumbh Mela bathing festival stampede disaster	Nasik, Maharashtra, India	, August 26, 2003.
25	25	a stampede by building collapse, during Shivratri festival	Patna, Bihar ,India	March 6, 1989.
26	125	a wire rope style bridge collapsed over a swollen stream	Munnar, Kerala, India	November 8, 1984.
27	70	a three-story house collapsed at Lal Bazaar	Srinagar, Jammu and Kasjhhimir, India .	May 4, 1992
28	89	AMRI hospital fire	India	December 9, 2011
29	59	Uphaar Cinema fire	Delhi, India	Friday, June 13, 1997
30	500-800	Bihar train disaster	Bihar,India	1981
31	358	Firozabad rail disaster	Firozabad,India	1995
32	285	Gaisal train disaster	Gauhati, Assam	1999
33	212	Khanna rail disaster	Khanna,Punjab	1998
34	130	Rafiganj train disaster	Gaya,Bihar	2002
35	120	Bilaspur train disaster	Bilaspur, Chhattisgarh	1997
36	114	Veligonda train disaster	Hyderabad, Andhra Pradesh	2005
37	107	Patna train derailed,	Bihar,India	1937
38	107	Ashtamudi Lake train disaster	Kerela, India	1988

Hence from the above tables it is evident that natural disasters in India are mainly earthquake, tsunami, famine and cyclone and man-made disasters are mainly train accidents, air accidents, chemical gas leakage and stampede. Hence it is evident that India is a disaster prone land. It is important to concentrate on disaster management at specific as well as mass levels. The status of disaster management is depicted below.

2.7 Status of Disaster Management in India

India has been traditionally vulnerable to natural disasters on account of its unique geo climatic conditions. Floods, droughts, cyclones, earthquakes and landslides have been recurrent phenomena. About 60% of the landmass is prone to earthquakes of various intensities; over 40 million hectares is prone to floods; about 8% of the total area is prone to cyclones and 68% of the area is susceptible to drought. In the decade 1990-2000, an average of about 4344 people lost their lives and about 30 million people were affected by disasters every year. The loss in terms of private, community and public assets has been astronomical. At the global level, there has been considerable concern over natural disasters. Even as substantial scientific and material progress is made, the loss of lives and property due to disasters has not decreased. In fact, the human toll and economic losses have mounted. The super cyclone in Orissa in October, 1999 and the Bhuj earthquake in Gujarat in January, 2001 underscored the need to adopt a multi dimensional Endeavour involving diverse scientific, engineering, financial and social processes; the need to adopt multi disciplinary and multi sectoral approach and incorporation of risk reduction in the developmental plans and strategies.

Over the past couple of years, the Government of India has brought about a paradigm shift in the approach to disaster management. The new approach proceeds from the conviction that development cannot be sustainable unless disaster mitigation is built into the development process. Another corner stone of the approach is that mitigation has to be multi-disciplinary spanning across all sectors of development. The new policy also emanates from the belief that investments in mitigation are much more cost effective than expenditure on relief and rehabilitation. Disaster management occupies an important place in this country's policy framework as it is the poor and the under-privileged who are worst affected on account of calamities/disasters. The approach has been translated into a National Disaster Framework covering

institutional mechanisms, disaster prevention strategy, early warning system, disaster mitigation, preparedness and response and human resource development. The expected inputs, areas of intervention and agencies to be involved at the National, State and district levels have been identified and listed in the roadmap. This roadmap has been shared with all the State Governments and Union Territory Administrations. Ministries and Departments of Government of India, and the State Governments have been advised to develop their respective roadmaps taking the national roadmap as a broad guideline.

2.8 Status of Disaster Preparedness in Gujarat

Mitigation and preparedness measures go hand in hand for vulnerability reduction and rapid professional response to disasters. The Bhuj earthquake in January, 2001 brought out several inadequacies in the system. The search and rescue teams had not been trained professionally; specialized dog squad to look for live bodies under the debris were not available; and there was no centralized resource inventory for emergency response. Although army played a pivotal role in search and rescue and also set up their hospital after the collapse of Government hospital at Bhuj, the need for fully equipped mobile hospitals with trained personnel was felt acutely. Despite these constraints, the response was fairly well organized. However, had these constraints been taken care of beforehand, the response would have been even more professional and rapid which may have reduced the loss of lives. The Central Government is now in the process of training and equipping 96 specialist search and rescue teams, with each team consisting of 45 personnel including doctors, paramedics, structural engineers etc. Ten teams have already been trained. These teams will be located at various centers around the country for specialized response. These teams will have the latest equipment as also dog squads for locating survivors in the debris. Training was also imparted to personnel of Central Police Organizations in search and rescue so that they can be requisitioned to the site of incident without loss of time. For this purpose, a curriculum has been drawn up and integrated into the training curriculum of CPMFs. The States have also been advised to set up their own specialist teams for responding to disasters. Assistance will be provided to the State Governments for training their trainers at the national institutes already designated for this purpose. The State Governments' search and rescue teams to be constituted from the State Police will be equipped to meet the requirement. For

this purpose, the State Governments have been authorized to utilize 10% of the annual allocation made under the Contingency Relief Fund for purchase of equipments. Fourteen Regional Response Centers are being set up in different parts of the country. These centers will have response teams and equipment and resources for being able to respond to any hazard/calamity in the neighbouring States. A Steering Committee has been constituted in the Ministry to oversee the creation of capabilities for emergency response. A 200 bedded mobile hospital, fully trained and equipped is being set up by the Ministry of Health and attached to a leading Government hospital in Delhi. Three additional mobile hospitals with all medical and emergency equipments are proposed to be located in different parts of the country. These mobile hospitals will also be attached to the leading Government hospitals in the country. This will enable the mobile hospitals to extend assistance to the hospitals with which they are attached in normal time. They will be airlifted during emergencies with additional doctors/paramedics taken from the hospitals with which the mobile hospitals are attached to the site of disaster. It is proposed to purchase dedicated aircraft and helicopters with a view to reducing the response time. The issue is pending for consideration and approval of Empowered Group of Ministers on Disaster Management. Once the airlift facilities are developed for exclusive use for disaster management, it will be possible to provide airlift facilities to specialist search and rescue teams, mobile hospitals and equipments. In order to professionalize the response, it is proposed to introduce the Incident Command System in the country. This system provides for specialist incident command teams with an Incident Commander and officers trained in different aspects of incident management – logistics, operations, planning, safety, media management etc. The incident Command System has been finalized keeping in view the systems and procedures prevalent in our country by dovetailing it in the existing governmental machinery already in position. The training of trainers in the Incident Command System has already commenced at Lal Bahadur Shastri National Academy of Administration at Mussoori which has been designated as the nodal training institutes for this purpose. A web-enabled centralized data base for the India Disaster Resource Network has been operationalized. The network will ensure quick access to resources to minimize response time in emergencies. The list of resources to be updated in the system has been finalized. It has 226 items. About 60,000 records in 481 districts throughout the country have already been uploaded since 1st September, 2003 when the India

Disaster Resource Network was formally inaugurated. The system will give, at the touch of the button, location of specific equipments/specialist resources as well as the Controlling authority for that resource so that it can be mobilized for response in the shortest possible time. The data base will be available simultaneously at the district, state and national levels. The States are being persuaded to set up control rooms/emergency operations centers at the state and district level. Assistance for construction and purchase of equipments for control rooms is being provided. The control rooms, which will function round the clock, will be composite control rooms to look after law and order issues as well as disaster management. Equipments are also being provided for these control rooms under the disaster risk management programme. Communication is a major bottleneck in case of any major disaster particularly when the traditional network system already in force brakes down. In order to strengthen communications, it has been decided that police network (POLNET) will also be used for disaster management. For this purpose POLNET communication facility will be extended to District Magistrates, Sub Divisional Magistrates as well as the Control Rooms. For emergency communication, mobile satellite based units which can be transported to the site of the disaster are being procured. A group was constituted to draw a comprehensive communication plan for disaster management and the report has since been received. This provides for a dedicated communication system for disaster management with built in redundancies. The Geographical Information System (GIS) data base is an effective tool for emergency responders to access information in terms of crucial parameters for the disaster affected areas. The crucial parameters include location of the public facilities, communication links and transportation network at national, state and district levels. The GIS data base already available with different agencies of the Government is being upgraded and the gaps are proposed to be bridged. A project for this purpose is being drawn up with a view to institutionalizing the arrangements. The data base will provide multi layered maps on district wise basis. Three maps taken in conjunction with the satellite images available for a particular area will enable the district administration as well as State Governments to carry out hazard zonation and vulnerability assessment, as well as coordinate response after a disaster. In order to further strengthen the capacity for response, the fire services are proposed to be developed into multi hazard response units as is the normal practice in several other countries. It is proposed to provide rescue tenders in addition to fire tenders to each

fire unit and fill up all gaps up to sub-divisional level. Hazmat vans will be provided to State capitals and metropolitan cities. This will necessitate recruitment of additional fire men and drivers and intensive training required to be provided to enable them to function as efficient of all purpose response units. A project for development of fire service into all hazard response units has also been finalized and submitted for obtaining necessary financial approval. India has a large network of Civil Defense and Home Guards volunteers. The existing strength is about 1.2 million. However, this organization has not so far been associated with disaster mitigation, preparedness and response functions. It is proposed to revamp the Civil Defense organization to enable them to discharge a key responsibility in all the facets of disaster management including preparedness. A proposal in this regard has been finalized and is under consideration of the Government. Standard Operating Procedures are being laid down to ensure all the steps required to be taken for disaster management are put in place. The Standard Operating Procedure will also encompass response, besides preparedness. With the development of disaster management committees and disaster management teams at all levels including village/urban local body/ward level, the stage will be set for comprehensive preparedness measures to be taken with active participation of the community and non-governmental organizations.

2.9 Gujarat State Disaster Management Authority

On 26th January, the state of Gujarat was hit by an earthquake of magnitude 6.9 on the Richter scale causing colossal damage to life and property. The State Government has taken up the task of rehabilitation and reconstruction to facilitate resettlement and provision of shelter to the severely affected population. The GSDMA has been constituted by the Government of Gujarat by the GAD's Resolution dated 8th February 2001. The Authority has been created as a permanent arrangement to handle the natural calamities. GSDMA provide relief to the people for the loss occurred due to natural calamities and undertake rehabilitation and reconstruction. They make efforts to minimize the impact of natural calamities through precautionary programmes and schemes. GSDMA analyze and study the reasons of natural calamities and suggest the remedies to avoid or minimize the effects of such natural calamities. The objectives of GSDMA are mentioned below

- To prepare programme and plans to mitigate the losses on account of disasters as a strategy for long terms disaster preparedness.
- To undertake research and study regarding causes for losses on account of natural disaster and to suggest remedial measures for minimizing the same.
- To obtain funds for rehabilitation and resettlement and to ensure optimum utilization of these funds obtained in the form of grant, aid, assistance or loan from Government of Gujarat, Government of India, World Bank and ADB, USAID, DFID, IFRC, and donors, NGOs, and from financial institutions, Public and private trusts or any other organizations.
- To manage Gujarat Earthquake Rehabilitation and Reconstruction Fund.
- To act as a nodal agency and to co-ordinate various issues relating to the deserving victims out of the funds, either directly or through a common fund created for these purpose in any other feasible mode.
- To provide to arrange financial assistance so as to achieve the objects of the society.
- To raise money through financial instruments, bonds, deposits.
- To develop approach, philosophy, policy guidelines and action plan and other relevance aspects for meeting out disaster of any kind.
- To act as a nodal agency and to coordinate various issues related to the maintenance of hygienic living conditions, welfare of victims, environmental maintenance and such other welfare measures, as may be assigned to the deserving authority.

2.10 Conclusion

Thus from the above conceptual framework it is evident that Disaster Preparedness is a matter of great concern. The following chapter devotes itself to the researches and theoretical details vis-à-vis environmental issues, disasters and disaster management education.

Chapter 3

Review of Related Literature

3.1 Introduction

Review of Related Literature is systematic identification, location, analysis and report of documents containing information related to research topic. Theoretical and research based reviews provides the researcher valuable guidance and suggestions for conducting the research. It also serves as a solid foundation for the study. The researcher has reviewed articles, thesis and researches on following topics

- a) Environmental Education at Primary Level
- b) Environmental Awareness and attitude among students
- c) Environmental Awareness and attitude among Teachers
- d) Environmental Awareness and attitude among students and Teachers
- e) Impact of Disasters on Society
- f) Disaster Preparedness

The researcher has reviewed articles, thesis and researches in the area of Environmental education, Environmental awareness among students and teachers, Impact of disasters, Disaster management and Disaster Preparedness. Researcher has selected these studies because disaster management is an integral part of education which makes the students and teachers aware of various disasters. At the same time, it also makes students aware of environmental issues at global level. Hence, the researcher felt a need to study the importance of environmental education, environmental awareness among teachers and students, impacts of disaster and disaster preparedness.

3.2 Studies related to Environmental Education at Primary Level

Disaster Management is an Environmental Concern. Natural Disasters as well as Man Made disasters are closely knit with the environmental factors. In this direction, there is a need to study the environmental education aspects. Before the Stockholm Conference on Human Environment by the United Nations Organization (1973), even in developed countries few attempts were made to develop suitable curriculum for Environmental Education in schools. Among those attempts, the national board of education in Sweden in 1968 had appointed a special committee to examine and revise the national curriculum with a view to increase the scope of environment studies in schools. These resulted in development of an Environmental curriculum which initiated activities in environment problem. Likewise in India also awareness and education are important tools in creating the culture of prevention and preparedness. Government of India has been stressing the need to sensitize the young learners to the basic elements of the management of disasters. Accordingly, the Central Board of Education has decided to introduce Disaster Management as part of its front line curriculum from the academic year 2003-2004.

Joshi (1981) developed a science education programme for upper primary classes based on the environmental approach. The study was experimental in nature and data collected was qualitative as well as quantitative in nature. The findings of the study revealed that Environmental education at the upper primary level was essential and vital to develop insights and skills needed to influence not only the environmental attitudes and behavior in the studies, but also to stimulate them orientation of values regarding the importance of environmental studies. Children at the primary stage were interested in and learnt from experience with real things that they could manipulate in some way.

Rajput (1988) identified teaching skills and training strategies for implementing the environmental approach at primary level. The objectives of the study were to prepare a programme to impart environmental concepts at primary level and evaluate its effectiveness. A pre test and post test were used to get the achievement scores of the students. The findings of the study revealed that the mean scores of Environmental awareness for the experimental and the control groups at pre test and post test levels indicated that out of 14 comparison group in seven schools nine groups had no

significant difference and the remaining five groups had a significant difference as a result of treatment.

Shih (1993) studied the status of Environmental education in elementary schools. The study was a qualitative survey. The tools used were questionnaire and interview schedule. The findings revealed that teachers perceived outdoor education, audio visual presentation and inquiry approaches to be the most important instructional strategies for effective elementary education teaching. The major difficulty which teachers perceived concerning the implementation of elementary education is the lack of appropriate instructional materials, appropriate indoor facilities, in-service opportunities, preparation time, funding, outdoor facilities and related resources.

Devi, S. J. and Singaravelu, G. (2011) conducted a study ‘Impact of Eclectic Method in Learning Environmental Education at Primary Level’. The objectives of the study were (1) To identify the learning impediments of learner in learning environmental science through conventional method in Panchayat Union Primary School, Thudiyalur (2) To find out whether there is any significant difference between the post-test of controlled group and post-test of experimental group in achievement of primary level learners in learning Science through Eclectic approach (3) To find out impact of eclectic method on learning environmental science. The sample of the study consist of (1) 88 people were studying in StdV in Thudiyalur Panchayat Union Primary schools were taken as sample (2) 30 students were taken as the experimental group and other thirty students were taken as the controlled group. Researcher self-made question paper was used as a tool for the study. The major findings of the study were (1) Researcher found that learners of StdV studying in Thudiyalur Panchayat Union School were assessed to have problems in learning environmental science (2) There is significant difference between the post-test of the controlled group and the post-test of experimental group in Achievement Mean Scores in learning environmental science through Eclectic method (3) eclectic approach is more effective than traditional method in teaching environmental science in StdV. This method is taught through some of the important methods like activity-based learning, play-way, joyful learning and audio-video learning.

Implications of the above studies to the present research

From the above review of researches it is evident that environmental education is an important subject and is an important part of the curriculum at all levels. Moreover, the review of related literature from different researches suggested a range of teaching learning skills and strategies for implementing environmental education at primary level. The studies were experimental as well as survey type of research in nature. The data was analyzed qualitatively as well as quantitatively. The tools used for the studies were questionnaire, interview schedule and researcher's self-made question paper. The findings of the studies revealed that Environmental education at the upper primary level was essential and vital to develop insights and skills needed to influence not only the environmental attitudes and behavior in the studies, but also to stimulate them orientation of values regarding the importance of environmental studies and the teachers perceived outdoor education, audio visual presentation, eclectic method and inquiry approaches to be the most important instructional strategies for effective elementary education teaching. **Likewise, researcher has also used different activities like lecture cum discussion, presentations, mock drills, simulations, case studies and group discussion in her research to explain the theoretical as well as practical aspects of disaster preparedness to students.**

3.3 Studies related to Environmental Awareness and Attitude among Students

The present section includes studies related to environmental awareness and attitude of students towards environment.

Kimyai (1978) conducted an experimental research (1) to measure the knowledge and attitude scores of the students after completion of a nine-week environmental education programme to determine if occupation of a father is a contributing factor in the degree of effectiveness (2) to determine if sex difference is a variable that affects cognitive/ attitude scores (3) to inquire whether an Environmental education programme may result in a positive correlation between the scores of knowledge about the environment and the attitude towards the environment (4) to determine the extent that cognitive/attitude scores relate to positive environmental actions. The Environmental Knowledge and Opinion Survey (EKOS) by Paul B. Hournsheel of the

University of North Carolina, Chapel Hill and North Carolina were used as a pre-test and the post-test to measure knowledge and attitude. Seventh grade students of the Tehran, Iran were used as subjects. Classroom groups were randomly assigned to the treatment group receiving the environmental educational programme and the alternative, which was the regular science programme. Prior to the beginning of the study conducted for teachers. Two weeks after the programme for youngsters was completed, a voluntary environmental action activity was offered to all subjects on an optional basis to determine the extent to which an environmental education programme influences “positive” action for the environment.

Chaudhari (2004) studied environmental knowledge and environmental attitude of students of secondary schools of Vadodara. The objectives of the study were (1) To study the environmental knowledge of students (2) to study environmental attitude of students (3) to find out relationship between environmental knowledge and environmental attitude. The tools used were interview schedule and questionnaire. The study was a survey type of research. The findings were the factual, conceptual and total environmental knowledge as well as environmental attitude of secondary school students was average.

Willis (1999) studied the environmental literacy of upper-level high school science students. The Secondary School Environmental Literacy Instrument (SSELI), an instrument designed to ascertain environmental literacy among high schools students, was used to address research questions concerning students, knowledge of ecology and environmental science, attitudes towards the environment, beliefs about the most critical environmental problems, abilities to apply a number of issue-related skills within a particular environmental issue-oriented scenario, perceived knowledge of and skills in the use of action strategies, and behaviours in environmental actions over a six month period. The subject population surveyed consisted of 125 high schools-junior and senior science students from a Southeast Texas School district. The findings were limited knowledge of ecological principles and environmental science, a slightly positive attitude towards the environment, limited awareness of the environmental problems, moderate level of perceived knowledge and abilities in using environmental action strategies.

Gopalkrishnan (1992) studied the impact of environmental education on primary school children. One thousand four hundred and fifteen children studying in standard V, selected randomly from 30 primary schools, 10 each from Madras, Coimbatore and Nilgiris were given the EET (Environmental Education Test) constructed by the investigator. The scores were analyzed under 3 heads, viz correlational studies and experimental studies. The findings were (1) The distribution of the total Environmental Education Test Scores of the entire sample approached the normal form which implied that studying environmental education had a very good impact on the children (2) The children of Madras scored better when compared to that of Coimbatore and the Nilgiris, and this could be due to better exposure of the Madras children (3) The study showed that the participatory learning approach could bring about a better impact (4) Teacher, in general, felt that there was not sufficient time to give importance to learner-centered activities.

Vellaisamy (2010) conducted a study of environmental achievement in IX Standard Students through Environmental Awareness The objectives of the study were (1) To study the environmental achievement as awareness of class IXth students.(2) To study the role of students in strengthening environmental education. (3) To find relation between achievement scores in environmental education and environment awareness ability. The normative survey method was used for this study to examine the role of students in strengthening environmental education of secondary school students. Here environmental awareness ability and learning achievement are dependent variable. The hypothesis of the study is (1) there will be no relation between learning achievement of students in environmental education and environmental awareness ability. The sample of the study comprised of 100 students from four different schools at Vedaranyam block of Nagapatnam district. The sample of students was selected using simple random sampling technique. All the students of one section from IXth standard were taken for the study. The questionnaire was used to collect data on the role responses of students. Environmental awareness ability measure is also used as a tool. It measures the extent and degree of awareness of students about environmental pollution and consists of five components, viz. (1) Causes of pollution (2) Conservation of soil, forest, air, etc (3) Energy conservation (4) Conservation of wildlife and animal husbandry. The relationship between environment achievement and awareness ability was analyzed by finding the co-efficient of correlation between

them. The findings of the study were (1) Role of students to achieve the basic knowledge of environmental education is 58.2% and only 28% of students performing at high level (2) Role to protect the natural resources is 49.2% of students and only 32% of students is performing at high level (3) Role of students in protecting the environmental pollution is 60.9% of students involving and 54% of students performing at high level (4) The role of students in keeping the relation between environment and social issues is that 58% and 34% of students performing at high level. The conclusion is that students are not performing their role properly and systematically at high level in strengthening environmental education. Therefore student's involvement is needed in optimum level in strengthening the environmental

Shivkumara, K. and Savitri, B.M. (2011) examined the influence of education and domicile on the Locus of Control and Environmental Attitudes of the individuals. It was hypothesized that educated and especially urban postgraduate students have higher level of internal locus of control and lower level of external locus of control and highly favorable attitude towards the environment than uneducated and rural postgraduate students. To verify the hypothesis, a sample of 236 uneducated and postgraduate students was selected for research. Levenson's Scale for locus of control standardized for Indian sample group by Vohra (1992) and Environmental Pollution Attitude Scale (1998) constructed by Rajamanickam were administered on the subjects. The data was analyzed using 't' test. The findings of the study revealed that the postgraduate students have higher level of internal Locus of Control and lower level of external locus of Control than the uneducated individuals. The findings of the study was (1) The postgraduate students have highly favorable attitude towards environmental pollution than the uneducated individuals (2) The present study revealed that among the postgraduate students, there is no significant difference on Locus of Control and environmental pollution attitude in relation to their domicile.

Abraham, Mercy, Arjun, N.K. (2005) studied the Environmental Interest of Secondary School Students in relation to their Environmental Attitude. The objective of the study is (1) the present investigation is intended to environmental interest of secondary school students in relation to their Environmental Attitude. The environmental interest inventory and the environmental attitude scale were constructed and standardized for the purpose of the present investigation was used for collecting data from a sample of 624 secondary school students of Kerala, selected on

the basis of 'stratified random sampling technique'. The sample consisted of 306 boys and 318 girls, the rural and the urban students' representation being 339 and 285 respectively. The findings of the study were (1) Result showed that secondary school students did not have a high level environmental interest. A differential effect of gender and locale were observed in their environmental interest. The boys and urban subjects were found to have more interest in environmental matters compared to their rural counterparts. A high level positive and significant correlation was found to exist between environmental attitudes in all the sample groups studied.

Raju, G. (2007) studied the Environmental Ethics of Higher Secondary Students. The objectives of the study were (1) To study the environmental ethics of the entire higher secondary school students (2) To study whether there is any significant difference in environmental ethics of male and female higher secondary student's (3) To study whether there is any significant difference in the environmental ethics among the student's studying in government, aided and matriculation schools; and (4) To study whether there is any significant difference in the environmental ethics of rural and urban higher secondary student's. Normative survey method has been used in the study and cluster sampling technique has been adopted. 560 higher secondary students studying in higher secondary schools of Cuddalore educational district of Tamilnadu have been chosen for the sample. The findings of the study were (1) Environmental ethics of the higher secondary students of Cuddalore educational district is high (2) Girls students has more environmental ethics than the boys students (3) The communities of students do not have any influence on their environmental ethics (5) Rural higher secondary students have more environmental ethics than the urban higher secondary students.

Shastri, C. Manojkumar (2010) studied environmental awareness of secondary school students. The objectives of the study were (1) To study the environmental awareness of secondary school students (2) To determine the environmental awareness of secondary school students (3) To study the environmental awareness of secondary school students in the context of their standards (4) To study the environmental awareness of the secondary school students in the context of the gender (5) To study the environmental awareness of the secondary school students in the context of the categories (6) To study the environmental awareness of the secondary school students in the context of their parents occupation. The hypothesis of the study

were (1) There will not be any significant difference between the mean scores of environmental awareness of secondary school students (2) There will not be any significant difference between the mean scores of environmental awareness of boys and girls of secondary school (3) There will not be any significant difference between the mean scores of environmental awareness of the students of reserved and unreserved categories (4) There will not be any significant difference between the mean scores of environmental awareness of the students whose parents occupation is agriculture or job. The Environmental Awareness questionnaire was selected as a tool for the measurement of environmental awareness of the students. Statistical technique was used for analysis of the data. 'T' was used for examining the total score, mean, SD and null hypothesis. The findings of the study were (1) Most of the students have bigger level of environmental awareness (2) The strength of the students having higher level of environmental awareness is more than strength of the students having lower level of environmental awareness.

Implications of the above researches to the present research

The above review of articles and researches is related with environmental awareness and attitude among students. The studies indicated that environmental education is important for self fulfillment and social development. In most of the studies Normative Survey method was used, while only some of the above studies were experimental in nature. Environmental Awareness questionnaire, Environmental Education test, Environmental interest inventory, Environmental attitude scale and Levenson's scale for locus of control were used as a tool to collect data. The data obtained in the above studies were analyzed using statistical technique like t-test, ANNOVA and statistical regression. The findings of the studies revealed that students are not performing their role properly and systematically at high level in strengthening environmental education and students did not have a high level of environmental interest. Thus, the function of education is not only to impact knowledge but to contribute more and more in making the students aware in national and international values and in their conservation and promotion also. It is also through education that the students can be familiarized with current and future problems of Environment and their seriousness. Facing to disaster is a major challenging problem before the world. So, there is an utmost need for disaster preparedness. The government of each and

every country is trying to make steps to eradicate this problem. It is necessary that every citizen should be made conscious about the disaster management and disaster preparedness which is part of our environment. **Today's student is tomorrow's citizen. Therefore, it is necessary to bring awareness among students towards disaster preparedness. Hence, researcher has tried to bring awareness among students towards disaster preparedness through her module.**

3.4 Studies related to Environmental Awareness and Attitude among Teachers

The present section has studies related to environmental awareness and attitude of teachers towards environmental aspects.

Ehrlich (1979) studied an energy awareness questionnaire and attitude survey was administered to 287 Oklahoma teachers to assess the level of awareness and attitudes concerning energy sources, use and conservation. Analyses were made of total group scores as well as of comparison between response of male and female teachers, elementary and secondary teachers, and science and non-science teachers. The result of this study seemed to indicate a general lack of knowledge concerning the production of energy, and the use of energy, and the conservation of energy among the teachers participating in the study.

Kaur (1992) studied the relationship of population awareness and the attitude towards environmental education and population education of male and female. Professional teachers, 400 senior secondary school teachers, college and university teachers, Medical college teachers from Punjab and Chandigarh were selected for the study. The self-constructed scales, Attitude towards environmental education scale and the Population Awareness Scale (NCERT) were used in the study. Mean, standard deviation and 't' test were used for the treatment of the study. The major findings were (1) In the case of both males and females no difference existed in the population awareness of different categories of teachers. (2) Sex difference existed in the population awareness of different categories of teachers. (3) The level of population awareness was not related to the attitude towards environmental education.

Owens (2000) studied environmental literacy of 292 urban, middle school teachers using the Wisconsin Environmental Literacy Survey (WELS). The study examined

for dimensions of participant's environmental literacy attitude towards the environment, beliefs about their own power and responsibility to affect environmental change, personal behaviours and actions towards the environment, and knowledge regarding ecology and environmental issues. Difference in teacher's environmental literacy was examined relative to gender, racial/ ethnic background. Number of pre-service environment courses taken, number of in-service environment courses taken, years of teaching experience, and subject area taught. Overall teachers in the present study demonstrated nominal environmental literacy. Significant difference in scores on various subject scales were found among teachers according to racial/ethnic background, subject area taught and years of teaching experience. Taking pre-service and in-service environmental courses appears to have positive impact on environment behavior, environmental sensitivity, awareness and values but not appear to impact environmental knowledge.

Implications of the above researches to the present study

The above review of researches is related with environmental awareness and attitude among teachers. The study examined for dimensions of participant's environmental literacy attitude towards the environment, beliefs about their own power and responsibility to affect environmental change, personal behaviours and actions towards the environment, and knowledge regarding ecology and environmental issues. Survey method was used in the study. Questionnaire and self constructed scales were used as a tool to collect data. The data obtained in the above studies were analyzed using statistical techniques. The findings of the studies revealed that in case of both males and females no difference existed in the population awareness of different categories of teachers. **Overall, teachers in the present studies demonstrated nominal environmental literacy. Thus, the researcher in her researches developed a module on disaster preparedness for pre service teachers which will help them to develop preparedness and survival skills that will help pre service teachers to face disaster in future.**

3.5 Studies related to Environmental Awareness and Attitude among Students and Teachers

The following studies include researches based on the environmental awareness and attitude of students and teachers towards environmental concepts.

Shahnawaj (1990) studied the awareness and attitude of teachers and students towards the environment. The study was a survey and the tools used by the investigator to test attitudes and awareness. The findings indicated that (1) 95% teachers and 94% students possessed positive environmental attitudes (2) The environment trained and untrained teachers did not differ in their attitudes (3) Teachers had more awareness of the environment than students (4) Trained and untrained teachers did not differ on environmental awareness (5) Girls possessed significantly more awareness of the environment than boys.

Pojun (1986) studied the environmental knowledge, comprehension, responsibility and interest of the secondary level students and teachers. The findings indicated majority of the students who were aware of pollution, pesticides, typhoons, dams and volcanic areas; could explain blast fishing and its environmental effects and age characteristics of the population in the Phillippines but did not know about the effects of forest destruction, new techniques of fish culture and the total population of the Phillippines. The student's environment values were not consistent. The high section students were not as interested in learning more about the environment as the low section students were. The students had difficulty making scientifically correct cause-consequences, relationships. The teacher's knowledge, comprehension, responsibility, interest were significantly affected by community but not by school and subject taught. The teachers were aware of many events in their environment but could not explain many of them. The teachers were interested in learning about energy, population dynamics, conservation and recycling.

Implications of the above researchers to the present study

The above review of researches is related with environmental awareness and attitude among students and teachers. Survey method was used in the study. Attitude scales were used as a tool to collect data. The data obtained in the above studies were analyzed using qualitative and quantitative techniques. The findings of the studies

revealed that the high section students were not as interested in learning more about the environment as compared to the low section students. The students had difficulty making scientifically correct cause- consequences, relationships. Teachers had more awareness of the environment than students. The teachers were aware of many events in their environment but could not explain many of them. **Keeping this in mind, the researcher has made efforts to create awareness about the concepts of disaster and disaster preparedness among pre-service teachers. These pre service teachers will also help their students to develop survival skills and preparedness and will help their students to get prepare for disaster in future.**

3.6 Studies related to Impact of Disasters on Society

The present section focuses on the studies related to disasters and its impact on the society.

Edwin, S. R. and Minikumari, V.S. (2012) conducted a study on mental health status of tsunami affected students. The objectives of the study were (1) To find out the mental health status of Tsunami-affected students (2) to compare the mental health status of male and female tsunami affected students (3) To compare the mental health status of Tsunami-affected students who lost their houses and family members and those who haven't lost their houses and family members. The sample of the study consisted of 300 Tsunami-affected students of age group 12-17 years studying in different schools of Kanyakumari district in Tamilnadu. The tool used for the collection of data was a standardized 'Mental Health Status Inventory' prepared by Vidhya T.R and Dr. Krishna Prasad, B. (2006). The major findings of the study were (1) The study revealed that the Tsunami-affected students had moderate health status (2) sex and loss due to Tsunami influenced the mental health Status of Tsunami – affected students (3) Religion, caste, and the monthly family income had no influence on the mental health status of Tsunami affected students.

Gnanadevanm, R. and Muthamizhselvan, M. (2012) attempted to study the loneliness of bereaved students affected by natural disaster. The objectives of the study were (1) To find the level of loneliness of bereaved students affected by natural disaster (2) To find out whether there is any significant relationship between loneliness and academic achievement of bereaved students affected by natural disaster (3) To find out whether there is significant difference in the loneliness of bereaved

students affected by natural disaster with respect to different sub-samples of the study. The normative method was used to find out the loneliness of bereaved students affected by natural disaster. Loneliness scale standardized by the investigator had been used for the study to measure the loneliness of bereaved students. The sample included 300 bereaved students affected by natural disaster, studying in various schools of Nagappattinam and Cuddalore districts of Tamil Nadu. The study revealed that the loneliness of bereaved students affected by natural disaster is high. There is a significant inverse relationship between Loneliness and Academic Achievement of bereaved students affected by natural disaster. The students who lost their mothers felt more loneliness than the students who lost their fathers and close relatives. The students who lived with their guardians felt more loneliness than the students who lived with their parents. The bereaved students whose parents were uneducated felt more loneliness than the students whose parents were educated.

Implications of the above researches to the present study

The above review of researches is related with impact of disaster on society. Survey method was used in the study. Standardized 'Mental Health Status Inventory' and Standardized Loneliness scale were used as a tool to collect data. The data obtained in the above studies were analyzed using qualitative and quantitative techniques. The findings of the studies revealed that the disaster affected students had moderate Mental Health status. Religion, caste and the monthly family income has no influence on the mental health status of disaster affected students. **Thus, keeping in mind the impact of disaster on the society, the researcher has tried to implement prepared disaster preparedness programme on pre service teachers to develop survival skills among them that will help to reduce impact of disaster upto some extent.**

3.7 Studies related to Disaster Preparedness

Present studies focus on the area of disaster preparedness.

Seyedin, H., Zaboli, R. and Ravaghi, H. (2012) conducted a study on major Incident Experience and Preparedness in a developing country. This study shows that having the previous experience of major incidents has a positive impact on awareness and preparedness of organizations. They have investigated the effects of major incident experience on preparedness of health organizations on future disasters in Iran. A

qualitative study using a semi structured interview technique was conducted with 65 public health and therapeutic affairs managers. Analysis of the data was performed used the framework analysis technique, which was supported by qualitative research software. The study found that prior experience of major incidents result in better performance, coordination, and cooperation in response to future events. There was a positive effect on policy making and resource distribution and an increase in (1) Preparedness activities (2) Raising population awareness and (3) Improving knowledge. Findings showed that to increase system efficiency and effectiveness within health organizations, an appropriate major incident management system is needed. The new system can use lesson learned from previous major incidents to better equip health organizations to cope with similar events in the future.

Seyedin, H., Ryan, J. and Sedghi, S. (2011) conducted a study on how a developing country copes up with major incidents. Research shows that previous experience of major incident has positive effect on awareness and preparedness of organizations. The study aim to examine the preparedness indicators of health organizations against major incidents in two different types of organizations: those with direct involvement in response to the Bam earthquake and other organizations. It was a descriptive study and 230 questionnaires were distributed among the health managers in both types of organizations to compare the questionnaire results between them. A total 114 questionnaire were returned. 85% of the respondents were male, and 15% were female. Considering the organizational factor, a significant difference between the organizations was observed. Considering the communication factor, only differences in relationship with outside stakeholders were significant. Rehearsal and multiagency plans for warning were considerably different in the organizations. In planning, coordination, training, business continuity and cultural factors, there were no important differences. For resource variables, only the statement of sufficient resources and tools for the employees was significantly different, and, for the policy factor, there were significant differences in two variables: incorporation of major incident issues into the service design and management of voluntary efforts in a major incident. The findings have implications for health organizations in developing countries, especially in the Middle East. A major incident-management system re-engineering is required to bring the lesson learnt from previous major incidents into

preparedness efforts and to shift individual-based activities toward systematic approaches in major incident management.

Laborde, D.J., Magruder, K, and et.al. (2012) conducted a study on feasibility of Disaster Mental health Preparedness Training for Black Communities. The objectives of the study were (1) to test the feasibility of developing evidence-based mental health training to build capacity to respond to natural disasters in black communities and the adaptation of a train-the-trainer (TTT) model for black community leaders and clinical providers in distressed areas at risk of natural disasters. A core curriculum was developed based on a training needs assessment and resource review. Participants were recruited using network sampling in North Carolina. The core curriculum was tested for usability, revised, and then pilot tested among five mental health providers. Three of the five were trained to lead one-day workshops tailored for black community leaders and clinical providers. Process data were collected, and workshop participants completed post training knowledge tests, evaluation forms, and debriefing focus groups. The results were (1) Ten providers and 13 community leaders pilot tested the training. Posttest knowledge scores were generally higher among clinical providers. Perceived effectiveness of training was higher among community-based organization leaders than clinical providers. Evaluations indicated that the workshop component were culturally relevant and well received by all participants. The researcher has found that the curriculum and TTT model provide culturally component disaster mental health preparedness training for black communities.

Coulston, J.E. and Deeny, P. (2010) conducted a study on- prior exposure to major flooding increases individual preparedness in high-risk populations. The objective of the study were (1) to ascertain whether prior experience with flooding is a strong motivational factor for preparedness for future flooding episodes (2) To assess preparedness in populations at high risk for flooding. A prospective questionnaire was sent to individuals living in two towns in the United Kingdom, Monmouth and Tewkesbury. Data were obtained from these two populations and analyzed. A total 125 responses (of 200) were returned, and demographic data indicated no major differences between the two populations. The findings of study were (1) The number of protective behaviors was higher from participants from Twekesbury (2) Participants from Twekesbury were more likely to aware of living in a flood-risk area

and of emergency systems present in the area, and feel prepared for future episodes of major flooding. Awareness of living in a flood risk-area increased the likelihood of being knowledgeable about emergency systems and adopting protective behaviors. However, feeling prepared for future episodes of flooding was not associated with a strong increase in knowledge gained to prepare for flooding or having an increased number of protective behaviours. Awareness of being at-risk for flooding is vital for self-protective behavior. Both awareness of risk and recent exposure are motivational for flood preparedness. Recent exposure to flooding increases awareness, but it is unknown how long this effect will last. Recent exposure to flooding increases the preparedness of individuals for major flooding 18 months after major flooding and, if it continues, will help mitigate the devastating health, financial, and social effects of major flooding.

Implications of the above researchers to the present study

The above review of articles is related with disaster preparedness. The studies were qualitative and descriptive in nature. The tools used for the collection of data were semistructured interview and questionnaire. The data obtained in the above studies were analyzed using qualitative and quantitative techniques. The findings of the studies revealed that to increase system efficiency and effectiveness within any organizations, an appropriate major incident management system is needed. The new system can use lesson learned from previous major incidents to better equip any organizations to cope with similar events in the future. **Here, researcher has made attempts to develop disaster preparedness module to develop preparedness skills among student teachers that will help them to get prepare for disaster in future.**

3.8 Implications of above review of related literature to the present research

From the above review of articles, desertations and researches it is evident that environmental education is an important subject and is an important part of the curriculum at all levels. Moreover, the review of related literature from articles suggested a range of teaching learning strategies used to teach environmental education. At the same time it also suggests that environmental awareness is necessary among teachers and students. It also suggested that in order to increase

system efficiency and effectiveness within any organizations, an appropriate major incident management system and disaster preparedness is needed.

The review of related literature helped the researcher decided the objectives, tools and data analysis techniques for the study. The next chapter focuses on the Research Planning and Procedure. The details of the research methodology are indicated in the subsequent sections.

Chapter 4

Research Planning and Procedure

4.1 Introduction

This chapter contains research design, research type, population, sampling technique, tools description, data collection process and an over view of the data analysis techniques. It gives the clear idea of the study conducted by the researcher and the process of the research endeavor.

4.2 Research Design

The present research was an Experimental Research. It followed the pre-experimental design one group pre-test post-test design. Attempts were made by the researcher to prepare a set of activities for disaster preparedness and the same were tried out on a group of pre service teachers.

The details of the same are further mentioned in subsequent sections.

4.3 Research Type

Research as mentioned in the above section was experimental in nature. It followed one group pre-test post-test pre experimental design. The research was qualitative as well as quantitative in nature. Researcher has made attempts to triangulate the qualitative as well as quantitative findings and thus the nature of research is descriptive yet statistical analysis finds a significant place in the next chapter.

4.4 Population

The population is said to be the scope of the study i.e. the unit where generalizations with respect to the findings of the study can be made.

The population of the study comprised of the pre-service teachers of Waymade College of Education of academic year 2012-13.

4.5 Sample

The sample is the working unit of the research. It is a group of subjects that the researcher works and interacts with.

Convenient sampling technique was used in the present research. In the present study the sample comprised student teachers (Total number of student teachers - 37) of Waymade College of education (academic year 2012-13).

4.6 Tools

4.6.1 Description of tools

Tools enable the researcher to interact with the subjects and get their responses. In the present study, the researcher used an achievement test for getting the quantitative data for the research as well as a reaction scale to find the reactions of the student teachers about the course.

Table 5 Tool Design

Sr.No	Tool	Purpose
1.	Questionnaire	To know the exposure and prior experiences that student teachers have towards disaster preparedness.
2.	Pre-test	To know the student teachers knowledge about disaster preparedness.
3.	Post- test	To check the effectiveness of prepared module on disaster preparedness.
4.	Reaction-scale	To know the reactions of student teachers towards the Disaster Preparedness Programme.

4.6.2 Procedure followed for Construction of Tools

The procedure followed for preparing each of the tools is mentioned below in separate sub sections and subheadings.

Preparation of the Questionnaire

The researcher listed a set of questions and discussed the same with the guide. This was further shown to experts and their comments were sought. The modified questionnaire (Refer to appendix No 1) was used to know the responses of student teachers towards disaster preparedness.

Preparation of the Pre-test and Post-test

The researcher constructed a parallel pre test and post test (Refer to appendix No 2 and 3). The pre test consisted of objective type questions. The questions were based on the concepts of disaster preparedness. Moreover, the researcher made attempts to understand the application abilities with respect to the use of disaster preparedness in day to day life.

The researcher brainstormed and read the textbooks related to disaster management and disaster preparedness and then prepared a set of questions. The questions were discussed with the guide. The tool were prepared and administered.

Preparation of the Reaction Scale

The reaction scale was prepared by the researcher and discussed the same with the guide. This was further shown to expert and their comments were sought. The modified reaction scale (Refer to appendix No 4) was used to know the reaction of student teachers towards the Disaster Preparedness Programme.

4.7 Data Collection

The detailed description about the process of data collection is mentioned below stage wise.

Stage1 Researcher prepared materials to prepare students for disasters vis-à-vis disaster preparedness programme (Refer to appendix No 5). Module was evaluated by experts and modifications were made accordingly. The researcher simultaneously prepared the tools namely pre test, questionnaire, post test and reaction scale and got them validated by experts.

Stage 2 Researcher conducted the experiment. Administered the questionnaire, pre test and then module followed by the post test. The reaction scale was also used to get data vis-à-vis the module. The day wise description of the implementation phase of the module is mentioned in the next chapter (Chapter 5).

Stage 3 Data analysis and interpretation was done qualitatively by using content analysis and quantitatively by using t- test and chi square.

Stage 4 Documentation of the research work.

However, the following table mentions the details of the implementation of the experimental session.

Table 6 Implementation of Designed Tasks Session Wise

Sessi on No	Ho urs	Focus	Objectives	Content	TLMs	Session task
1 and 2	2	Introduction to Disaster	a) To make Student teachers aware about the concept of disaster. b) To enable student teachers to know about different disasters in India.	a)Concept of disaster b)Different examples of disaster that has taken place in India	a)Newspaper articles related to disaster b) Power point presentation on difference between hazard and disaster	To read and analyze the newspaper article
3 and 4	2	Types of disaster	a) To introduce few key concepts related to Disasters. b) To make student teachers aware about man-made and natural disaster.	a)Man-made disaster b) examples of man-made disaster c)Natural disaster d)examples of natural disaster	a)PowerPoint presentation on man- made and natural disaster b) Task sheets related to disaster	To complete the task sheet (Refer to task sheet No 6 B)

5 and 6	2	Overview of natural disaster in India	a) To acquaint student teachers with various natural disasters that India is vulnerable to b) To acquaint student teachers with various hazard maps that enables them to visualize different vulnerabilities.	Map reading and map analysis of natural disaster prone zones in India	a) Showing maps of earthquake, flood zones in India b) Video clip on natural disaster	To determine in which earthquake vulnerable zone do students live in
7 and 8	2	Overview of man-made disaster in India	To acquaint student teachers about various man-made disasters	Overview of man-made disaster in India	a) Showing pictures and information related with 10 deadliest man-made disasters b) Video clip showing man-made disasters	To enlist effects of man-made disaster on the society and people
9 and 10	2	a) Impact of disasters b) Need to prepare for disaster	a) To make student teachers aware about different impacts of disaster	a) Impact of disaster on Health, Development, Society and Environment	Video clip on man-made disaster and its impact on health, society and environment	To enlist the impact of disaster on health, development, society and

			b) To make student teachers aware about the needs to face to prepare in order to face disaster	b) Need to prepare for disaster		environment
11 and 12	2	a) Meaning of disaster preparedness. b) Steps of disaster preparedness.	a) To introduce few key concepts used in disaster preparedness in simple terms b) To make student teachers orient with the steps of disaster preparedness	a) Steps of disaster preparedness i) Preparedness ii) Response iii) Recovery iv) Mitigation	PowerPoint presentation to show steps of disaster preparedness	To create disaster plan
13 and 14	2	a) Search and rescue skills b) Golden rules of first-aid	a) To enable student teachers to develop survival skills b) To make student teachers aware with the rules to prepare first aid kit	a) Search and rescue skills b) Golden rules of first aid	a) Simulation b) Power point presentation showing golden rules of first-aid	To complete task sheet (Refer to task sheet 6 F)
15 and 16	2	Sanitation and hygiene	a) To enable student teachers to understand	a) Importance of sanitation and hygiene during emergency	a) Video clip showing ways to maintain sanitation	To enlist different ways to maintain sanitation

			the importance of sanitation and hygiene during emergency situations b) To make student teachers to arrive at ways of maintaining sanitation and hygiene during emergency situations	situations b) Ways to maintain sanitation and hygiene	and hygiene during emergency situation	and hygiene
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17 and 18	2	Earthquake and flood preparedness	a) To make student teachers aware about the concept of being prepared for earthquake and flood through simple Dos and Don'ts	a)Earthquake b)Flood c)Fire d)Stampede e)Bomb explosion f)Leakage of chemical gas	Power point presentation showing Do's and don'ts during earthquake and flood	Students will play Earthquake game
19 and 20	2	Preparedness for man- made disaster	To make aware student teachers aware about the concept of being prepared for fire emergency, stampede, bomb explosion and leakage of chemical gas through simple Dos and Don'ts	a)Fire b)Stampede c)Bomb explosion d)Leakage of chemical gas	Power point presentation showing Do's and don'ts during and fire, stampede, bomb explosion and leakage of chemical gas	Mock drills by the student teachers to get prepare for these man- made disasters

Thus the data collected during the above mentioned sessions was analyzed. The details are mentioned below.

4.8 Data Analysis and Interpretation

Analysis of data means studying the organized material in order to discover inherent facts. The data are studied from many angles as possible to explore the new facts. The present data was analyzed both qualitatively as well as quantitatively. The statistical parameters used were content analysis techniques, t-test and chi square. The qualitative data was analyzed using content analysis technique. The subsequent chapter focuses on data analysis and interpretation.

CHAPTER- 5

DATA ANALYSIS, INTERPRETATION AND DISCUSSION

5.1 Introduction

The present chapter devotes itself to data analysis and interpretation of the data collected. The data for the present study was collected during the span of 16 days. An outline of the data collection phase is presented below.

Table 7 Outline of the data collection phase

Date	Details of Data
24-12-12	Questionnaire and Pre-test
24-12-12 to 7-1-13	The Experiment
8-1-13	Post-test

The details of the data analysis and interpretation are presented in the present chapter in separate sections as depicted below.

5.2 Data Analysis and Interpretation of Questionnaire

5.3 Data Analysis and Interpretation of Pre test and Post test using t-test

5.4 Data Analysis and Interpretation with respect to Reaction Scale

5.2 Data Analysis and Interpretation of Questionnaire

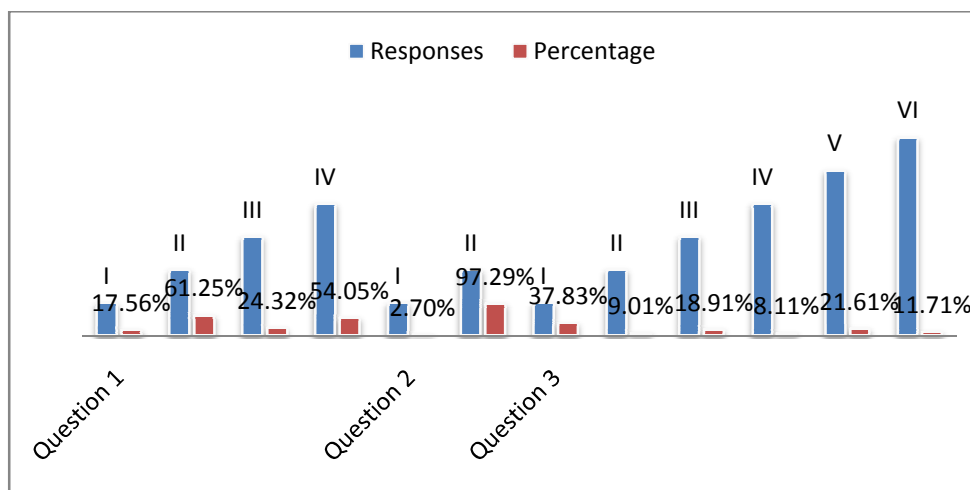
The questionnaire administered on 24-12-2012. The questionnaire comprised of a set of subjective type questions. This was mainly administered on the Pre-service Teachers to find their level of awareness related to concepts of disaster and disaster preparedness. In addition, the researcher wanted to know the exposure and previous knowledge that the student teachers have about disaster concepts and disaster preparedness. A detailed analysis of the questionnaire was done by the researcher using content analysis. The table 8 below shows the major responses of the student teachers and its percentage respectively.

Table 8 Data analysis of the responses obtained through the Questionnaire

Question Number	Questions	Responses of students	Percentage %
1	What do you mean by a disaster?	I. Students said that disaster is an inevitable situation which occurs anywhere and anytime. It is an unexpected and unwanted crisis. II. Disaster is a devastating phenomenon which causes loss of human life, animal life and property. III. Disaster is a situation which creates problems in smooth working of the society and hinders in the developmental process of the society. IV. Disaster is a natural calamity that occurs in surrounding and has negative impact on the environment. It involves natural as well as human induced disaster.	17.56% 61.25% 24.32% 54.05%
2	Have you undergone any training in disaster management/ preparedness? What was your experience?	I. Yes II. No	2.70% 97.29%
3	What impact do disasters have on the society?	I. Students say disaster has an adverse impact on the human life. Human beings are affected both physically as well as mentally. It results in loss of their loved ones and families. II. Disaster has negative impact on the environment. It creates unbalance and unwanted situation in the environment. III. Disaster causes change in the society structure. System of society gets changed, it hinders the development of the society and social growth of the society gets affected. IV. Cause imbalance in man: women sex ratio. V. Disaster had an impact on the economy of the nation. It causes economical setback.	37.83% 9.00% 18.91% 8.108% 21.61%

		VI Disaster results in lack of food, shelter.	11.71%
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Graph 1 Data Analysis of the responses obtained through the Questionnaire



From the above table, it is clear that the student teachers were aware of the basic concept of disaster. The table above depicted detailed questions wise analysis. The major observations derived from table are presented below:

The questionnaire was administered to find the information student teachers have about disaster and disaster preparedness

- 17.56% student teachers could state that the disaster is an inevitable situation which occurs at anyplace, anywhere and anytime. It is an expected and unwanted crisis.
- 61.25% student teachers could state that disaster is a devastating phenomenon which causes loss of human life, animal life and property.
- 24.32% student teachers could state that any situation which creates problems in smooth working of the society and hinders in the developmental process of the society is disaster.
- 54.05% student teachers could state that disaster is a natural calamity that occurs in surrounding and has negative impact on the environment. It involves natural as well as human induced disaster.

Student teachers were asked to share their experiences if they had undergone any training in disaster preparedness

- 2.70% student teachers had undergone training in disaster preparedness.

- 97.29% student teachers had not undergone any training in disaster preparedness.

The student teachers listed the following impacts of disaster on the society

- 37.83% student teachers could state that disaster has an adverse impact on the human life. Human beings are affected both physically as well as mentally. It results in loss of their loved ones and families.
- 9.006% student teachers could state that disaster has negative impact on the environment. It creates unbalance and unwanted situation in the environment.
- 18.91% student teachers could state that disaster causes change in the society structure. System of society gets changed, it hinders the development of the society and social growth of the society gets affected.
- 8.108% student teachers could state that it causes imbalance in men: women sex ratio.
- 21.61% student teachers could state that disaster had an impact on the economy of the nation. It causes economical setback.
- 11.71% student teachers could state that disaster leads to adverse situations like lack of food, shelter etc.

From the above data analysis of the questionnaire, it is evident that the student teachers were aware of basic concepts related to disaster preparedness. Some of the student teachers had also undergone training in disaster preparedness.

The student teachers also showed readiness to develop survival and preparedness skills among them in order to face disaster in future.

Keeping the above aspects in mind the researcher conducted sessions for the B.Ed (Advanced) students from 24th December 2012 to 7th January 2013. All the sessions were conducted using lecture cum discussion, group discussion, presentations, case study, mock drills and simulations.

5.3 Data Analysis and Interpretation of the Pre test and Post test scores using t test

The scores of pre test and post test are depicted in the table below i.e. raw scores obtained

Table 9 Pre test and Post test scores of the students

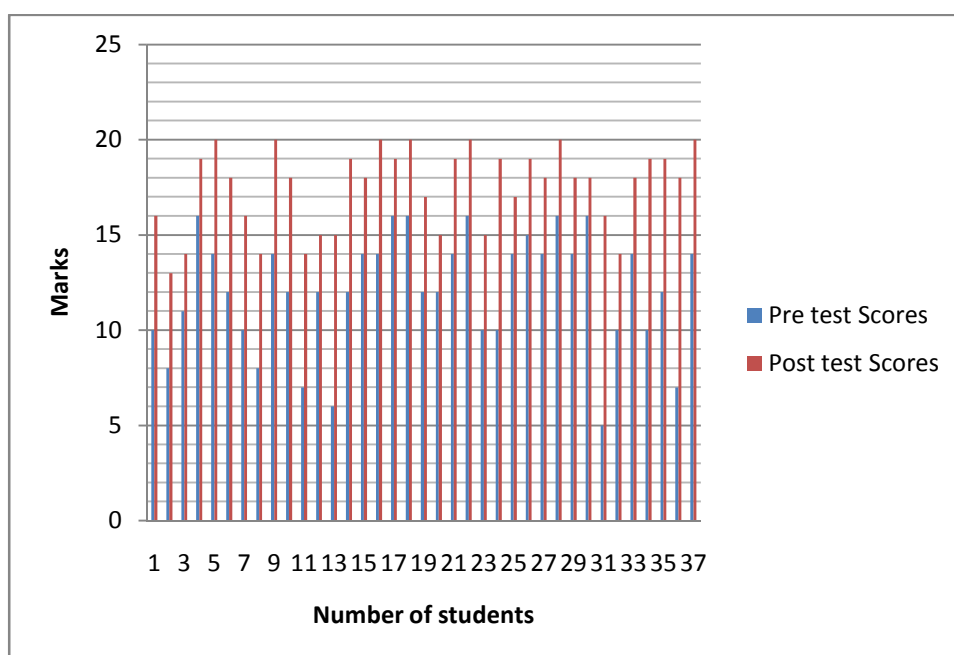
Student's Roll Numbers	Pre test scores Out of 20	Post test scores Out of 20
1	10	16
2	8	13
3	11	14
4	16	19
5	14	20
6	12	18
7	10	16
8	8	14
9	14	20
10	12	18
11	7	14
12	12	15
13	6	15
14	12	19
15	14	18
16	14	20
17	16	19
18	16	20
19	12	17
20	12	15
21	14	19
22	16	20
23	10	15
24	10	19
25	14	17
26	15	19
27	14	18
28	16	20
29	14	18
30	16	18
31	5	16
32	10	14
33	14	18
34	10	19
35	12	19
36	7	18
37	14	20

To test null hypothesis “There will be no significant difference between the mean achievement scores of the pre test and post test of the pre service teachers”. The analysis of the data using t-test is mentioned in below tabular form. The pre test scores were statistically tested using t-test.

Table 10 Mean, SD, SE_M, S_{ED}, df and ‘t’ value

Group	Number of students	Mean score	SD	SE _M	S _{ED}	df	‘t’ Value(cal)	‘t’ Value(table)
Pre test	37	12.08	3.017	0.496	0.36	36	15	2.704 at 0.01 level of significance and 2.021 at 0.05 level of significance
Post test	37	17.48	2.168	0.356				

Here, the computed t- value i.e. 15 is greater than the table value of 2.704 at 0.01 level of significance and 2.021 at 0.05 level of significance. Therefore, Null hypothesis is rejected. Therefore, there is significant difference between the mean achievement scores of the pre test and post test of the pre service teachers. Therefore, post test mean scores are higher than the pre test mean scores indicating the effectiveness of the developed module on disaster preparedness.

Graph 2 Student wise progress from Pre test to Post test

It was found that the mean of the post test was higher than mean of pre test. Moreover, the calculated ‘t’ value was higher than the ‘t’ values of table value. This showed the tasks were effective in terms of performance of student teachers in pre test and post test.

5.4 Data Analysis and interpretation of data obtained through Reaction Scale

The reaction scale was prepared to get the reason of the response of the student teachers about the module. The data collected through reaction scale was analyzed using chi-square, the details are presented below.

Statement 1

The activities given by the teacher researcher during the sessions helped me to develop my confidence level to face disaster skillfully.

Table 11 Responses to statement 1

	Not at All	Rarely	Sometime	Most of the Time	Always
fo	0	0	4	13	20
(Percentage)	(0%)	(0%)	(10.81%)	(35.13%)	(54.05%)
fe	7.4	7.4	7.4	7.4	7.4

$$\chi^2_{\text{cal}} = 37.301$$

$$d f = (r-1). (c-1)$$

$$\chi^2(\text{Cal}) > \chi^2(0.01) \text{ \& } (0.05)$$

$$= (2-1). (5-1)$$

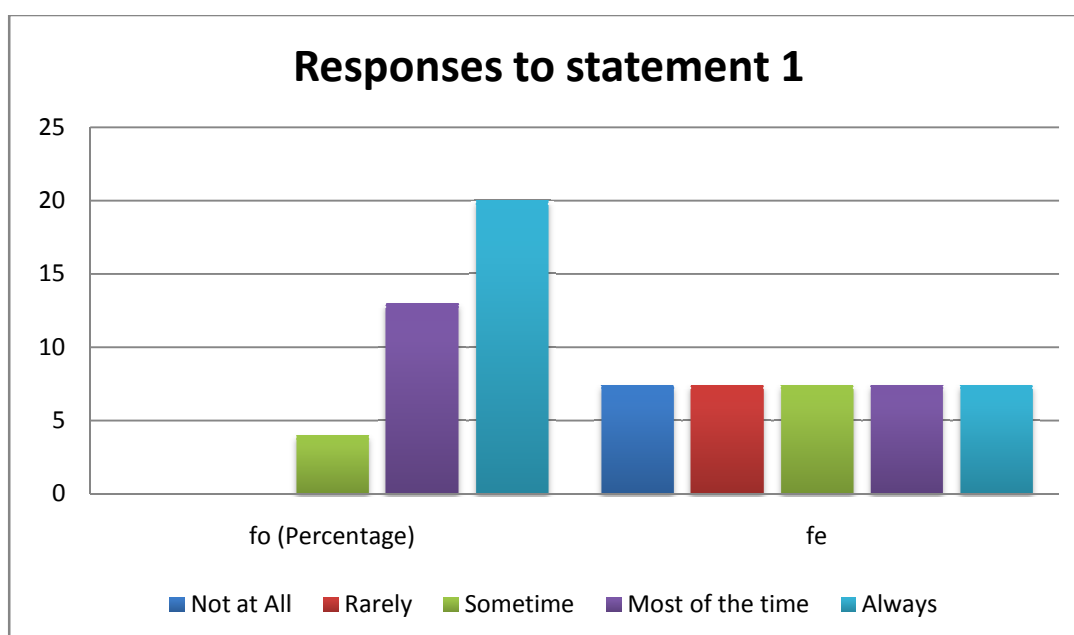
$$\chi^2(\text{Cal}) > \chi^2 (13.28) \text{ \& } (9.49)$$

$$= (1). (4) = 4$$

Therefore the Null hypothesis is rejected.

There is a significant difference between f_o and f_e .

Graph 3 Responses to statement 1



Interpretation

From the above data depicted in the table, it can be said that 54.05% of student teachers found that the activities given by the researcher during the session helped them to develop their confidence level to face disaster skillfully always while 35.13% student teachers found that the activities given by the researcher during the session helped them to develop their confidence level most of the time to face disaster skillfully and 10.81% of student teachers found that the activities given by the researcher during the session helped all the student teachers to develop their confidence level to face disaster skillfully.

Statement 2

During the session I was able to understand the concept related to disaster preparedness.

Table 12 Responses to statement 2

	Not at All	Rarely	Sometime	Most of the Time	Always
fo	0	0	0	19	18
(Percentage)	(0%)	(0%)	(0%)	(51.35%)	(48.64%)
fe	7.4	7.4	7.4	7.4	7.4

$$\chi^2 \text{ Cal} = 49.734$$

$$d f = (r-1). (c-1)$$

$$\chi^2 \text{ Cal} > \chi^2 (0.01) \& (0.05)$$

$$= (2-1). (5-1)$$

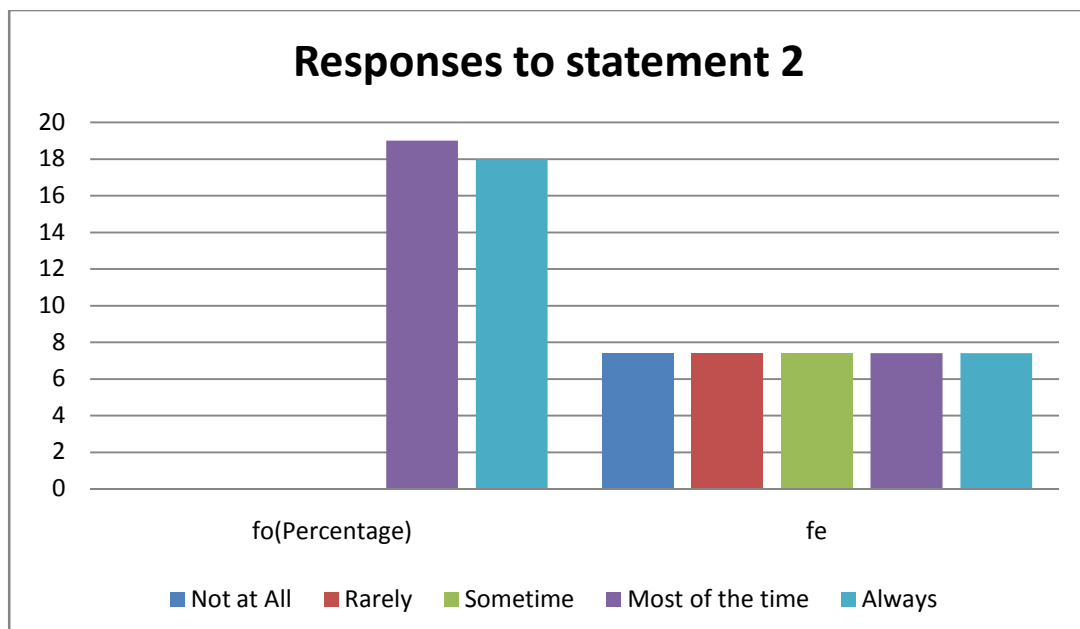
$$\chi^2 \text{ Cal} > \chi^2 (13.28) \& (9.49)$$

$$= (1). (4) = 4$$

Therefore Null hypothesis is rejected.

There is a significant difference between f_o and f_e .

Graph 4 Responses to statement 2



Interpretation

51.35% student teachers were able to understand the concepts related to disaster preparedness most of the time and 48.64% student teachers were able to understand the concept related to disaster preparedness always. Hence, the researcher found that majority of student teachers were able to understand the concept related to disaster preparedness. The students could express their ideas and views about different disasters.

Statement 3

I can now prepare myself to face disaster without much panic.

Table 13 Responses to statement 3

	Not at All	Rarely	Sometime	Most of the Time	Always
f _o (Percentage)	0 (0%)	0 (0%)	6 (16.21%)	9 (51.35%)	12 (32.43%)
Fe	7.4	7.4	7.4	7.4	7.4

$$\chi^2_{\text{cal}} = 31.87$$

$$d f = (r-1). (c-1)$$

$$\chi^2 (\text{Cal}) > \chi^2 (0.01) \& (0.05)$$

$$= (2-1). (5-1)$$

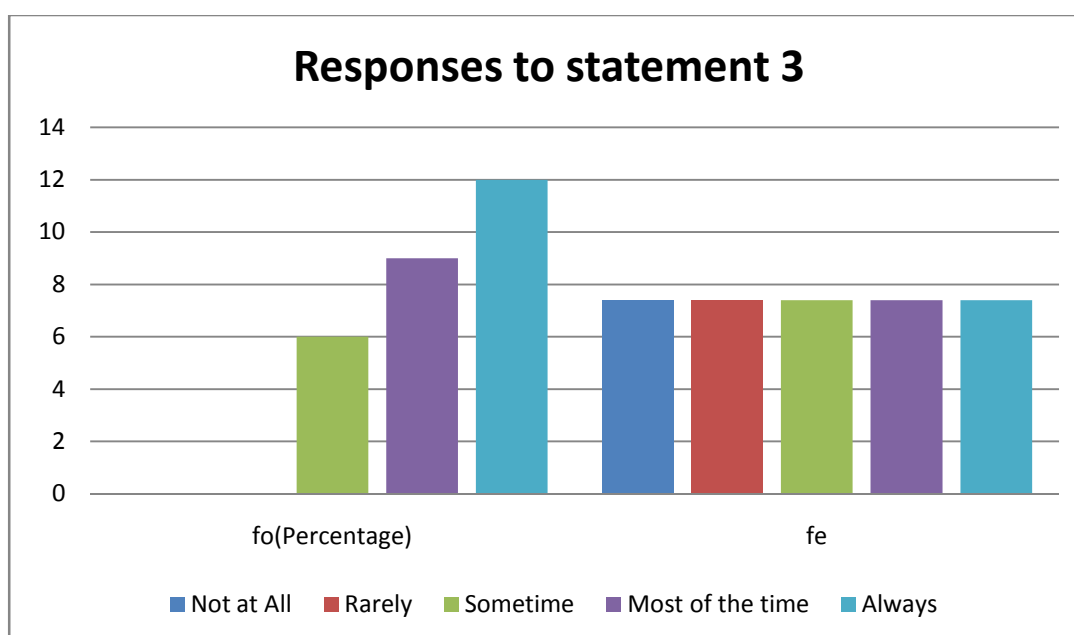
$$\chi^2 (\text{Cal}) > \chi^2 (13.28) \& (9.49)$$

$$= (1). (4) = 4$$

Therefore Null hypothesis is rejected.

There is a significant difference between f_o and f_e .

Graph 5 Responses to statement 3



Interpretation

51.35% student teachers found that they can prepare themselves to face disaster without much panic most of the time while 32.43% student teachers found that they can prepare themselves to face disaster always without much panic and only 16.21% student teachers found that they can sometimes prepare themselves to face disaster without much panic. The student teachers could identify the do's and don'ts during disaster. Moreover, the student teachers could also mention the basic precautionary measures that are needed. They could also express facts related to emergency services during disasters. Hence, the researcher found that majority of the student teachers can now prepare themselves to face disaster without much panic.

Statement 4

The sessions by the teacher prepared me for facing disaster.

Table 14 Responses to statement 4

	Not at All	Rarely	Sometime	Most of the Time	Always
fo	0	0	6	19	12
(Percentage)	(0%)	(0%)	(16.21%)	(51.35%)	(32.43%)
fe	7.4	7.4	7.4	7.4	7.4

$$\chi^2_{\text{cal}} = 31.896$$

$$d f = (r-1). (c-1)$$

$$\chi^2(\text{cal}) > \chi^2(0.01) \text{ \& } (0.05)$$

$$= (2-1). (5-1)$$

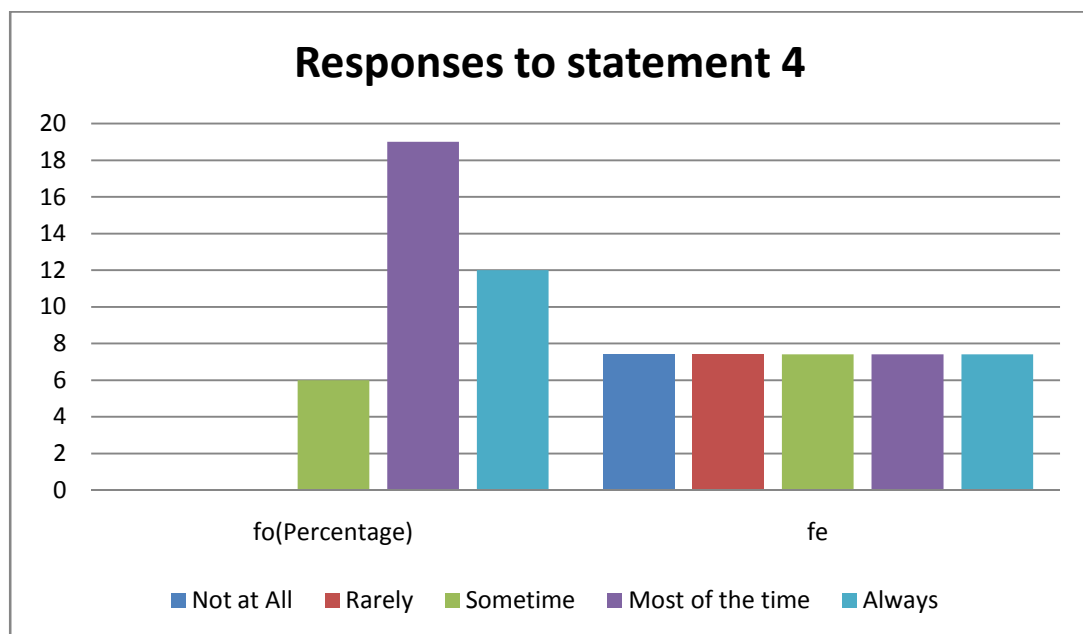
$$X^2 (\text{Cal}) > X^2 (13.28) \text{ \& } (9.49)$$

$$= (1). (4) = 4$$

Therefore the Null hypothesis is rejected.

There is a significant difference between f_o and f_e .

Graph 6 Responses to statement 4



Interpretation

51.35% student teachers found that the session given by the researcher prepared them for facing disaster most of the time while 32.43% student teachers found that the

session given by the researcher prepared them for facing disaster always and 16.21% student teachers found that the session given by the researcher prepared them for facing disaster sometimes. Hence, the researcher found that majority of student teachers can now prepare themselves to face disaster.

Statement 5

All the activities given by the teacher were helpful in developing my preparedness as well as survival skills during disaster/s.

Table 15 Responses to statement 5

	Not at All	Rarely	Sometime	Most of the Time	Always
fo	0	0	3	14	20
(Percentage)	(0%)	(0%)	(8.10%)	(37.83%)	(54.05%)
fe	7.4	7.4	7.4	7.4	7.4

$$X^2_{cal} = 39.734$$

$$df = (r-1).(c-1)$$

$$X^2 (Cal) > X^2 (0.01) \& (0.05)$$

$$= (2-1). (5-1)$$

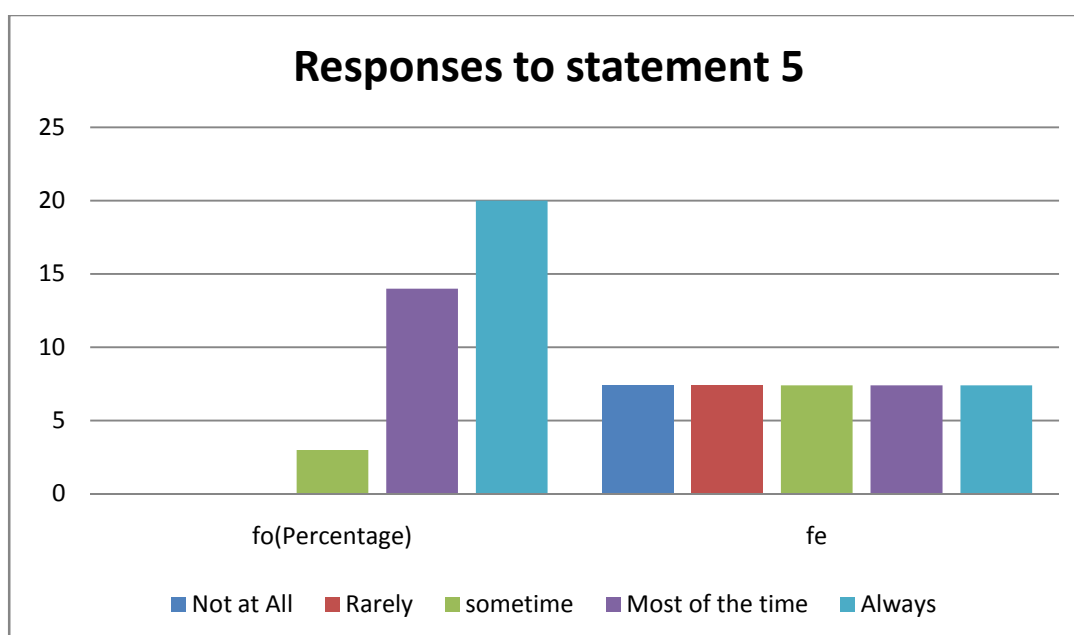
$$X^2 (Cal) > X^2 (13.28) \& (9.49)$$

$$= 4$$

Therefore Null hypothesis is rejected.

There is a significant difference between f_o and f_e .

Graph 7 Responses to statement 5



Interpretation

54.05% student teachers found that the activities given by the researcher were helpful in developing their preparedness as well as survival skills always during disaster/s while 37.33% student teachers found that the activities given by the researcher were helpful in developing their preparedness as well as survival skills most of the time during disaster/s and only 8.10% student teachers found that the activities given by the researcher were only sometimes helpful in developing their preparedness as well as survival skills during disaster/s. Hence, the researcher found that the activities have helped majority of student teachers in developing their preparedness as well as survival skills during disaster/s.

Statement 6

I didn't like the activities given by the teacher.

Table 16 Responses to statement 6

	Not at All	Rarely	Sometime	Most of the Time	Always
fo	26	9	2	0	0
(Percentage)	(70.27%)	(24.32%)	(5.40%)	(0%)	(0%)
fe	7.4	7.4	7.4	7.4	7.4

$$\chi^2_{\text{cal}} = 60.544$$

$$d f = (r-1).(c-1)$$

$$\chi^2 (\text{Cal}) > \chi^2 (0.01) \& (0.05)$$

$$= (2-1). (5-1)$$

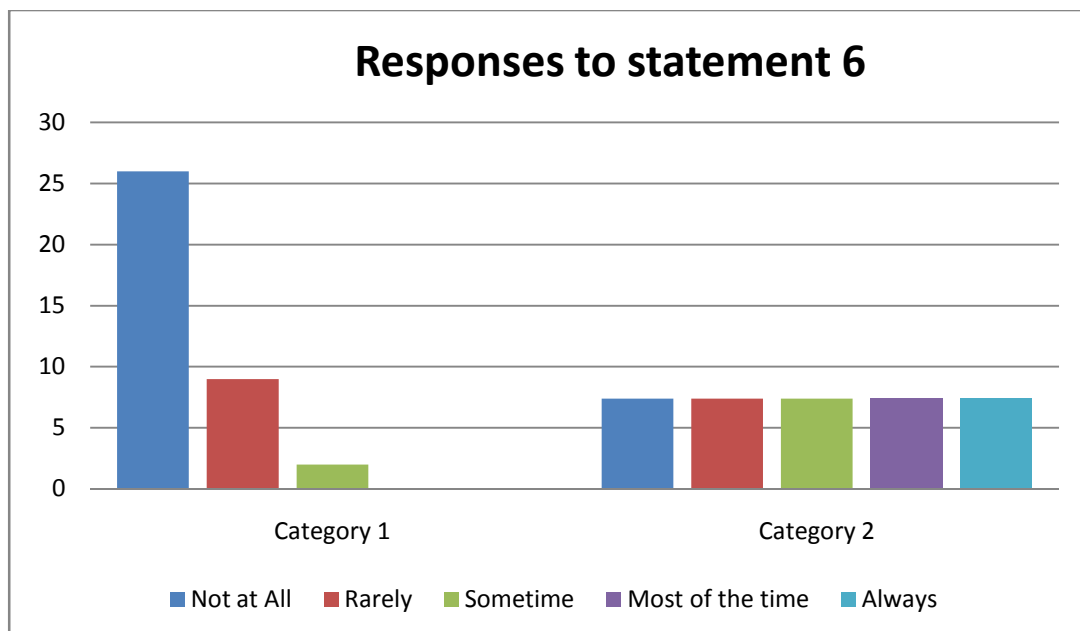
$$\chi^2 (\text{Cal}) > \chi^2 (13.28) \& (9.49)$$

$$= (1). (4) = 4$$

Therefore Null hypothesis is rejected.

There is a significant difference between f_o and f_e .

Graph 8 Response to statement 6



Interpretation

70.2% student teachers liked the activities very much while 24.32% student teachers rarely didn't like the activities given by the teacher and only 5.40% student teachers sometimes didn't like the activities given by the teacher. Hence the researcher found that most of the student teachers liked the activities given by the teacher.

Statement 7

The activities given by the teacher were appropriate and instructions given by the teacher were clear.

Table 17 Responses to statement 7

	Not at All	Rarely	Sometime	Most of the Time	Always
fo	0	0	1	17	19
(Percentage)	(0%)	(0%)	(2.70%)	(45.94%)	(51.35%)
Fe	7.4	7.4	7.4	7.4	7.4

$$\chi^2_{\text{cal}} = 45.41$$

$$d f = (r-1). (c-1)$$

$$\chi^2 (\text{Cal}) > \chi^2 (0.01) \& (0.05)$$

$$= (2-1). (5-1)$$

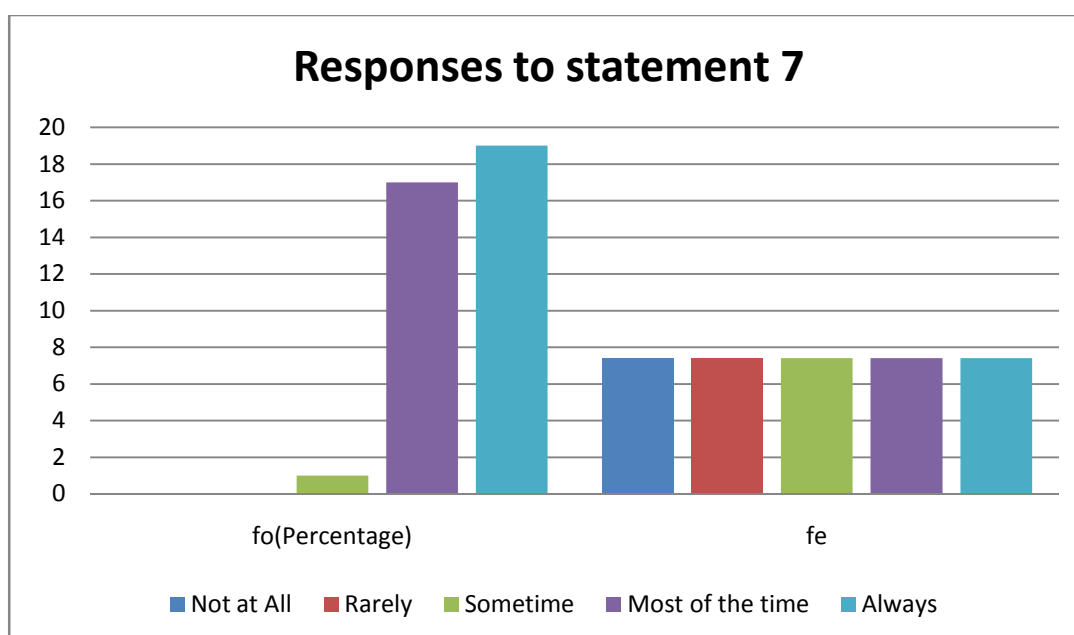
$$\chi^2 (\text{Cal}) > \chi^2 (13.28) \& (9.49)$$

$$= (1). (4) = 4$$

Therefore Null hypothesis is rejected.

There is a significant difference between f_o and f_e .

Graph 9 Responses to statement 7



Interpretation

51.35% student teachers always found that the activities given by the researcher were appropriate and instructions given by the researcher were clear while 45.94% student teachers found that the activities and instructions given by the researcher were most of the time clear and appropriate and only 2.70% student teachers found that the activities and instructions given by the researcher were sometimes clear and appropriate. The researcher observed that many student teachers were able to follow instructions and work effectively. Moreover, the student teachers could complete tasks in a meaningful manner. Hence, the researcher found that the activities and instructions given by the researcher during the session were clear and appropriate.

Statement 8

The instructions given during the class enabled me to understand the different disasters and its post effects.

Table 18 Responses to statement 8

	Not at All	Rarely	Sometime	Most of the Time	Always
fo	0	0	2	16	19
(Percentage)	(0%)	(0%)	(5.40%)	(43.24%)	(51.35%)
fe	7.4	7.4	7.4	7.4	7.4

$$\chi^2_{\text{cal}} = 41.62$$

$$d f = (r-1).(c-1)$$

$$\chi^2 (\text{Cal}) > \chi^2 (0.01) \& (0.05)$$

$$= (2-1). (5-1)$$

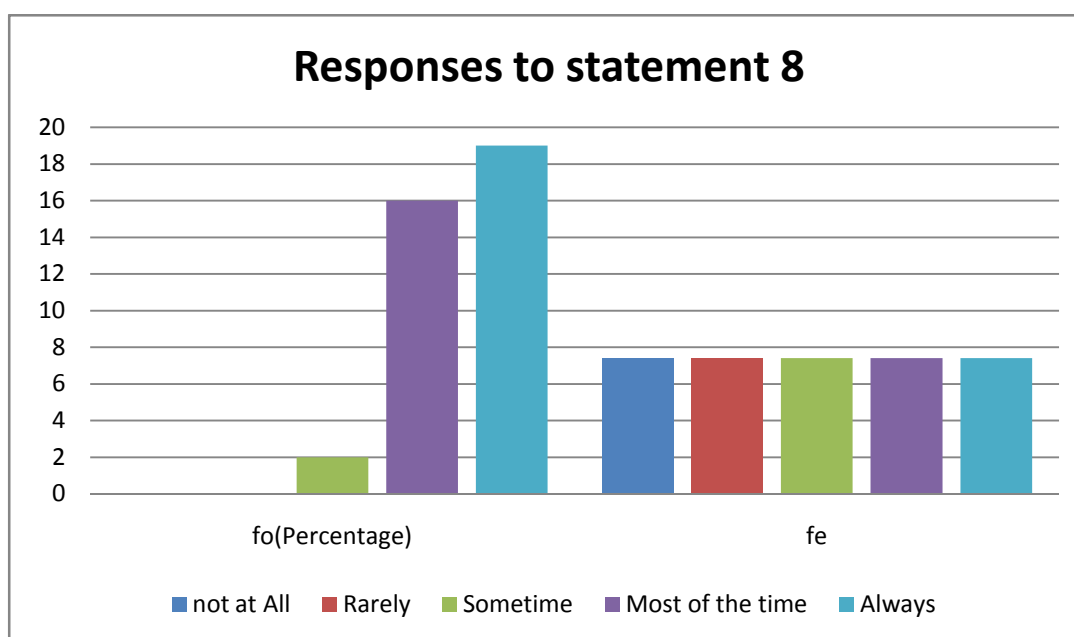
$$\chi^2 (\text{Cal}) > \chi^2 (13.28) \& (9.49)$$

$$= (1). (4) = 4$$

Therefore Null hypothesis is rejected.

There is a significant difference between f_o and f_e .

Graph 10 Responses to statement 8



Interpretation

51.35% student teachers found that the instructions given during the class enabled them to understand the different disasters and its post effect always while 43.24% student teachers found that the instructions given during the class enabled them to

understand the different disasters and its post effects most student teachers of the time and only 5.40% found that the instructions given during the class enabled them to understand the different disasters and its post effects sometimes. Thus, the researcher found that the instructions given during the class enabled majority of student teachers to understand the different disasters and its post effects.

Statement 9

I enjoyed all the activities given by the teacher.

Table 19 Responses to statement 9

	Not at All	Rarely	Sometime	Most of the Time	Always
fo	0	0	5	15	17
(Percentage)	(0%)	(0%)	(13.51%)	(40.54%)	(45.94%)
fe	7.4	7.4	7.4	7.4	7.4

$$\chi^2_{\text{cal}} = 31.355$$

$$d f = (r-1).(c-1)$$

$$\chi^2 (\text{Cal}) > \chi^2 (0.01) \& (0.05)$$

$$= (2-1). (5-1)$$

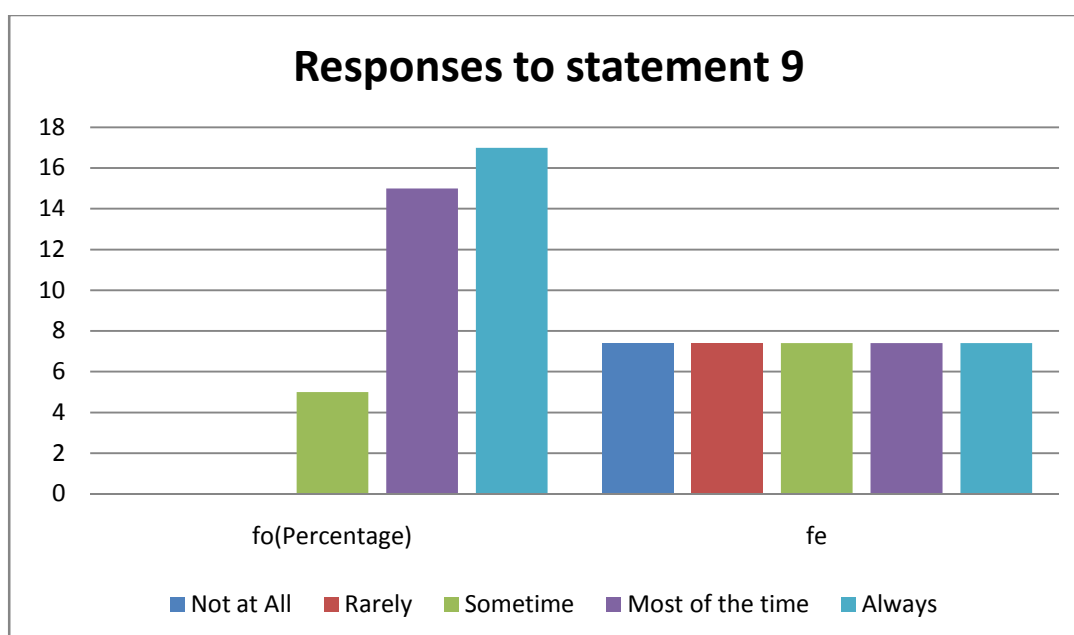
$$\chi^2 (\text{Cal}) > \chi^2 (13.28) \& (9.49)$$

$$= (1). (4) = 4$$

Therefore Null hypothesis is rejected.

There is a significant difference between f_o and f_e .

Graph 11 Responses to statement 9



Interpretation

45.94% student teachers enjoyed all the activities given by the researcher while 40.54% student teachers enjoyed all the activities most of the time given by the researcher and 13.51% student teachers enjoyed all the activities sometimes given by the researcher. Hence, the researcher found that majority of student teachers enjoyed all the activities given by the researcher. The students actively participated during the sessions.

Statement 10

I didn't think all the activities were useful to get prepare for disaster.

Table 20 Responses to statement 10

	Not at All	Rarely	Sometime	Most of the Time	Always
fo	17	16	4	0	0
(Percentage)	(45.94%)	(43.24%)	(10.81%)	(0%)	(0%)
fe	7.4	7.4	7.4	7.4	7.4

$$\chi^2_{\text{cal}} = 34.058$$

$$d f = (r-1).(c-1)$$

$$\chi^2 (\text{Cal}) > \chi^2 (0.01) \& (0.05)$$

$$= (2-1). (5-1)$$

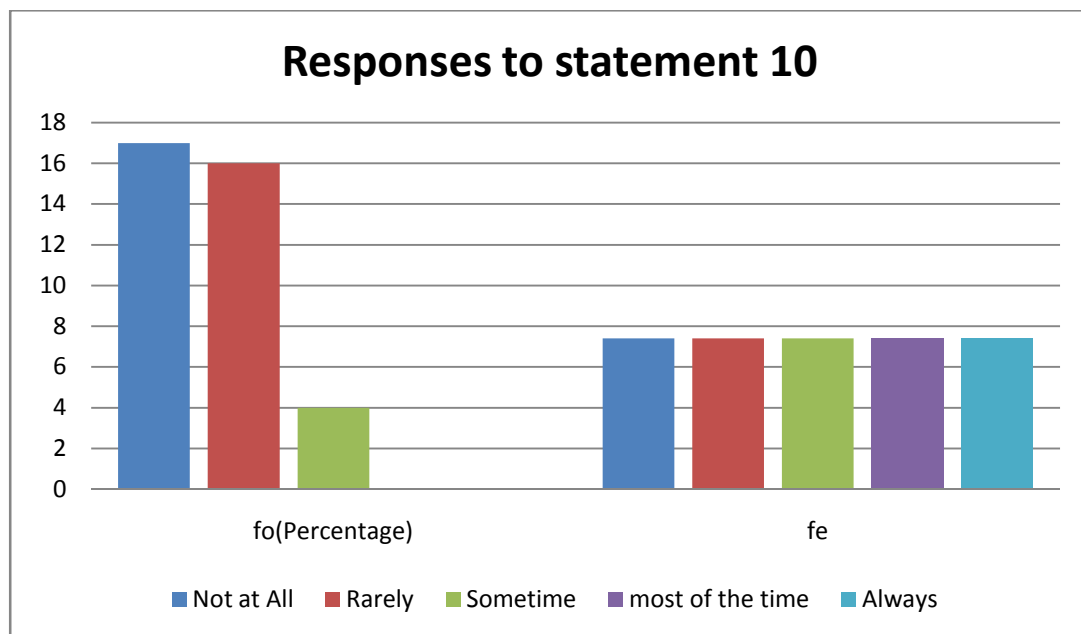
$$\chi^2 (\text{Cal}) > \chi^2 (13.28) \& (9.29)$$

$$= (1). (4) = 4$$

Therefore Null hypothesis is rejected.

There is a significant difference between f_o and f_e .

Graph 12 Responses to statement 10



Interpretation

45.94% student teachers think (not at all) that all the activities were not useful to get them prepare for disaster while 43.24% student teachers think (rarely) that all the activities were not useful to get them prepare for disaster and only 10.81% student teacher think (sometime) that all the activities were not zuseful to get them prepare for disaster. Thus the researcher found that majority of student teachers think that all the activities were useful to get them prepare for disaster.

Statement 11

I felt I will be able to help myself and others during a disaster.

Table 21 Responses to statement 11

	Not at All	Rarely	Sometime	Most of the Time	Always
fo	0	0	1	17	19
(Percentage)	(0%)	(0%)	(2.70%)	(45.94%)	(51.35%)
fe	7.4	7.4	7.4	7.4	7.4

$$\chi^2_{\text{cal}} = 45.41$$

$$d f = (r-1).(c-1)$$

$$\chi^2 (\text{Cal}) > \chi^2 (0.01) \& (0.05)$$

$$= (2-1). (5-1)$$

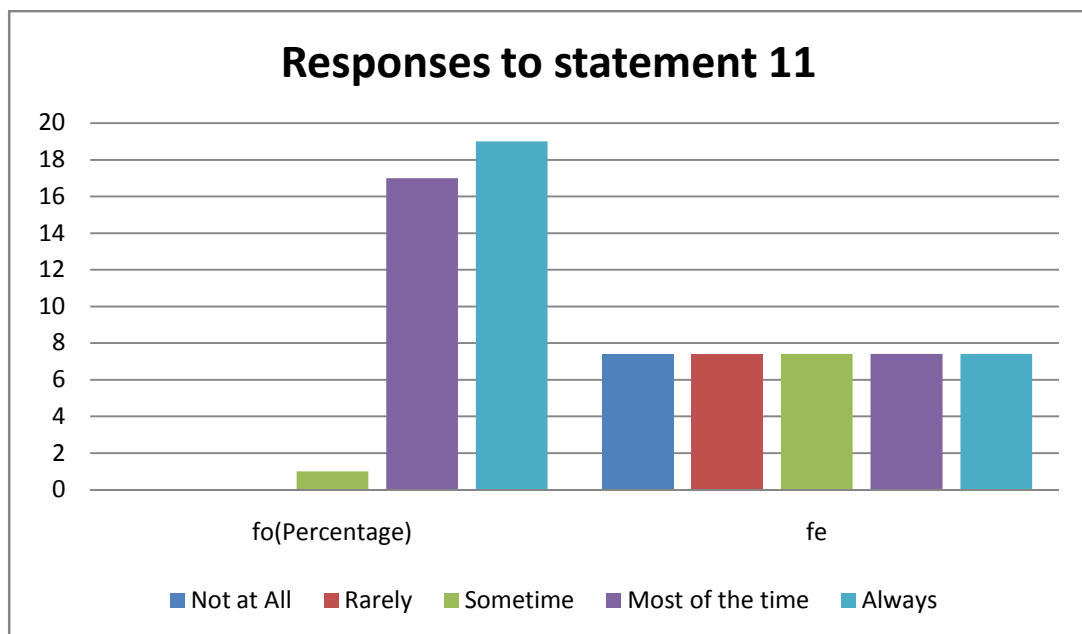
$$\chi^2 (\text{Cal}) > \chi^2 (13.28) \& (9.29)$$

$$= (1). (4) = 4$$

Therefore Null hypothesis is rejected.

There is a significant difference between f_o and f_e .

Graph 13 Responses to statement 11



Interpretation

51.35% student teachers always felt that they will be able to help themselves and others during a disaster, while 45.94% student teachers most of the time felt that they will be able to help themselves and others during a disaster and only 2.70% student teachers felt sometimes that they will be able to help themselves and others during a disaster.

5.5 Conclusion

Thus from the above data analysis it is evident that the students held positive views about the course. The students found the tasks to be useful.

Thus the qualitative and quantitative data analysis i.e. content analysis, t-test and chi-square indicate the usefulness of the tasks.

The following chapter presents findings and conclusions of the study.

Chapter 6

Suggestions, Implications and Conclusion

6.1 Introduction

The researcher conducted the study on effectiveness of disaster preparedness for pre-service teachers with the intention of providing ways and developing survival skills among student teachers to face disaster in future.

This chapter includes suggestions, implications & conclusion. The chapter also presents the outcomes of the study and scope for future researches.

6.2 Findings

In recent years the world has been battered with a series of natural and human induced disasters which have left the world reeling. These disasters have occurred in vastly different places and among different populations, yet they share a common factor; during and afterwards women and children have suffered the most. These disasters have made us painfully aware that although humanity will continue to face disasters, we can act to avoid humanitarian crisis. Thus the disaster management has become important part of the school curriculum from the academic year 2003-2004.

The researcher made an attempt to develop survival skills and preparedness among student teachers to face disasters in future, through mock drill, simulation, Lecture cum discussion sessions, group discussion, case studies and presentations of concepts related to disaster preparedness. The researcher has also felt that there is lack of training materials for disaster preparedness. Moreover, the researcher observed that the students were receptive and were eager to learn about Disaster Preparedness. In addition, practicals done in the class and artificial situations to some extent develop safety and precautionary skills. The researcher also felt that Disaster Preparedness Programme should be for longer duration.

From the data analysis of the questionnaire, it is evident that the student teachers were aware of the basic concepts related to disaster management and disaster preparedness. The researcher could conclude that the student teachers were clear

about the basic theoretical concepts of disaster preparedness. The student teachers also showed readiness to learn about the theoretical and practical aspects of disaster management and disaster preparedness. However, the qualitative and quantitative analysis of the post test indicated that the conceptual as well as preparedness and survival skills of student teachers had enhanced. Their ability was enhanced to conduct the disaster management sessions and training programmes for the students of their own. The student teachers also conducted discussions and successfully put the theory to practice. The reaction of student teachers indicated a favorable view towards the module. Student teachers expressed that the tasks enabled them to prepare themselves to face disasters and also take a note of the emergency situations.

The findings of the study are indicated below.

- The student teachers could state the basic theoretical terminologies of a disaster and related aspects like its outcomes.
- Majority of students had not consciously thought of disaster preparedness but later accept the significance of the concept.
- Practical sessions and mock drills made students feel prepared to face a disaster.
- The tasks based on analysis and interpretation, practical solution oriented tasks helped students gain insights into disaster emergencies and situations.
- A formal training in Disaster Preparedness does make a person for clear and vigilant about disasters.
- The mock drills and tasks also enhanced the collaborative working abilities of students. This is indeed a major significant feature of Disaster preparedness Programme and emergency situations.
- The theory of disasters needs to be linked with the concepts of Disaster management vis-à-vis all its stages. Teaching the concepts and types of disasters in isolation does not prepare students for real life situations.
- Almost 50% of the students expressed that they developed great insights into the do's and don'ts of a disaster. In addition, 40% students expressed that activities given by the researcher was useful in developing practical skills vis-à-vis Disaster Preparedness.
- 52% students mentioned that they felt confident to share Disaster Preparedness activities and teach and train their students for disaster preparedness.

- Authentic materials based on disasters are a potential source of information and enable students to develop insights.
- Disaster preparedness Programmes needs to be knit into the school education and also related habits needs to develop right from the primary stages to higher secondary stages.
- Disaster preparedness training enables students to develop their safety skills.
- Pre-service teachers expressed that the Disaster Preparedness Programme was practical and enable them to face disasters in schools.
- The researcher during the study has also found that no concrete material for Disaster Preparedness is prepared for student teachers.
- Disaster Preparedness can reduce the number of man-made disasters. It makes the people more conscious and careful vis-à-vis disaster precaution.

6.3 Suggestions

The researcher has provided some suggestions based on her experience gained during this study. Suggestions are given for teachers as well as for students.

6.3.1 Suggestions for Teachers

Teachers should design the schedule for disaster preparedness activities for the class. They need to organize the designed activities in a planned manner. Teachers should give proper, clear and unambiguous instructions for all actions. They should create a positive, frank and creative atmosphere. They should support the positive wishes of students and should cooperate with each student. Teacher should find out and help to address the students' concerns. Teachers can generalize knowledge received by students at the end of each lesson. They should help each participant to formulate his/her views. Teachers should answer questions critically and openly and should link all topics to real examples and previous topics. In order to instigate speculation and creativity among students, teachers should ask questions and should avoid giving simple answers like "Yes" or "No".

6.3.2 Suggestions for Students

The students are an integral part of the community, and have an important role to play in being prepared for disaster. Students are effective carrier of messages. Therefore, it

is essential that we aware our students on various hazards. They in turn educate their parents and the community by and large. At the same time teachers are respected members of the society and they have an important responsibility to guide students in this regard.

The schools are the custodian of hundreds and thousands of children who spend the major part of the day within the school premises. Thus, it is all the more essential that schools carry out regular mock evacuation drills so as to save precious lives. School buildings should be strong enough to face any hazard of higher intensity.

6.4 Educational Implications of the Study and Scope for Future Research

It can be concluded that the present study was a fruitful endeavor and helped the researcher develop a course for pre-service students.

The researcher would like to suggest the following topics for future studies.

- A survey on disaster management courses offered at various colleges can be studied.
- Course for PTC, B.Ed. can be developed with additional components of disaster management and disaster preparedness in real settings.

Thus the researcher would like to state that the study was a learning experience for the researcher and gave insights into the procedure of disaster management and disaster preparedness to numerous student teachers.

6.5 Conclusion

The research work has helped the researcher to prepare a disaster preparedness programme and test it. It has provided empirical data vis-à-vis disaster preparedness as well as contributed to the area of Disaster Management.

It can be concluded that disaster preparedness is the need of the hour and is an emerging concept that needs serious attention and exploration studies.

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- 3) <http://www.icm.tn.gov.in/article/disaster.htm>
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- 6) <http://ndma.gov.in/ndma/approachdm.html>
- 7) <http://ndma.gov.in/ndma/cyclones.html>
- 8) <http://www.ourvmc.org/disaster%20management.html>
- 9) <http://ndma.gov.in/ndma/earthquake.html>
- 10) www.gsdma.org
- 11) www.ndmindia.nic
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- 13) http://en.wikipedia.org/wiki/List_of_accidents_and_disasters_by_death_toll
- 14) www.holdcoverholdon.org
- 15) <http://www.earthquakecountry.info/roots/step1.html>
- 16) <http://www.colorado.edu/hazards>

Appendix 1

Questionnaire for Student Teachers

Questionnaire

Effectiveness of a Disaster Preparedness Programme For Pre-Service Teachers

a) Subject:

c) Roll no:

b) Name:

Q1) Answer the following questions briefly:

a) What do you mean by a disaster?

b) Have you undergone any training in disaster management/preparedness? What was your experience?

c) What impact do disasters have on the society?

Appendix 2

Pre test for Student Teachers

Effectiveness of a Disaster Preparedness Programme For Pre-Service Teachers

a) Subject:

c) Roll no:

b) Name:

Q1) Select the most appropriate options from the following: [4X2=8marks]

a) The following is an example of natural disaster

- a) Cyclone
- b) Terrorist attacks
- c) Riots
- d) Chemical gas leakage

b) Which one of them is a natural disaster?

- a) Nuclear accidents
- b) Bomb blast
- c) Chemical and industrial accidents
- d) Earthquake, drought, cyclone, tsunami

c) Which one of them is a man-made disaster?

- a) Riots
- b) Earthquake
- c) Tsunami
- d) Lightening

d) Environmental degradation is an example of

- a) Natural disaster
- b) Human-induced disaster
- c) Slow-onset disaster

d) Rapid-onset disaster

**Q2) Read the following situations and select the most appropriate options:
[2X6=12 marks]**

a) Shri Ramamurthy, a professor is passing through Godhara market, a place mainly dominant by minority community. He is having a heavy briefcase with him. He finds it difficult to run with it. Suddenly he receives a message on his mobile that procession of the chief minister of Gujarat has been attacked by a terrorist and it has damaged CM convoy very badly. Listening to this some customers start looting the shops. In such a situation, what should Shri Ramamurthy do?

- I. Call for reserve auto/taxi, take the briefcase, call police at 100 and run for shelter/reach to safer place or his home.
- II. Carry the briefcase and observe the looting incidence.
- III. Intimate your friends about the incidence.
- IV. Involve yourself in looting.

b) Suppose you are a principal of XYZ College at Anand and leading a team of M.Ed and B.Ed students to conduct field visits of historical places at Ahmadabad by school bus. Suddenly due to terrorist attack bomb blast occurs simultaneously at four different hospitals in Ahmadabad. As a principal, what would you do in such a situation?

- I. Ignore the news and continue with the visit as it is important for school curriculum.
- II. Take the students to visit the blast sites.
- III. Intimate the parents of students that all students are returning to Anand by train as the bus has been sent to hospital for victims help.
- IV. Cancel the visit and return to XYZ College at Anand to ensure safety of the students.

c) Suppose you are Mahesh Chandra and going for a picnic in a car with your friends. While passing through valley, driver came across a bridge (1km long), over which flood water is flowing. Suddenly, due to flash flood and release of

water in the said river through nearby dam gates, your car is stuck and wheels are submerged in water. The level of water is increasing. In such a situation, what will you do?

- I. All persons will climb over the roof of the car and call police/emergency services/raise alarm for help and wait patiently for help to reach.
- II. Get down of the car and try to walk through flowing water.
- III. Get down of the car and try to push it backward manually.
- IV. Remain seated in the car and wait for water level to recede.

d) Suppose you are Mohan Bhagat, a student of science and entered the laboratory room first. You smell the leakage of gas in the laboratory. You are having your mobile with you. In such a situation what you will do?

- I. Raise the alarm without using mobile, hold your breath, cover your mouth and nose, do not switch on the electrical appliances/light points, get away from the room as quickly as possible, switch off main electrical panel if possible.
- II. Using mobile intimate principal about the leakage.
- III. Switch on the lights and search gas leakage objects.
- IV. Try to open windows and put on fans so that gas goes out of the room.

e) You are an engineer in a multinational company. Your office is in 10 storey building. You are working at 3rd floor of building and suddenly notice the smoke coming out of 1st floor of the building. In such a situation, what you will do?

- I. Go back into the building, search for valuables.
- II. Raise the alarm, get out of the building as soon as possible (preferably reach on terrace floor without using lift), call emergency services and wait patiently for help/evacuation.
- III. Hide in safe place inside the building.
- IV. Use the lift to reach at ground floor.

f) Suppose Ramu lives in Bhuj in a single story building with his old father and mother who is wheel chaired. He is also living with his wife, son aged 5 years and daughter aged 10 years. A sudden morning he finds his house collapsed due to

severe earthquake of 7.9 hectare scale. His mother, father, wife and both children are trapped in the debris. He is able to listen the voice of his wife, son and daughter but not able to listen the voice of parents. In this situation, what should he do?

- I. Exit from the house and move to open area away from the buildings, wait patiently for help, and try to evacuate first wife, children & thereafter parents.
- II. Go back into the building, search for valuables & family members.
- III. Hide in safe place inside the another nearby building which is not collapsed.
- IV. Try to remove debris of collapsed house and search/evacuate family members.

Appendix 3

Post test for Student Teachers

POST TEST

Marks: 20

Effectiveness of a Disaster Preparedness Programme For Pre-Service Teachers

a) Subject:

c) Roll no:

b) Name:

Q1) Select the most appropriate options from the following: [15X1=15marks]

1) What should you NOT do during an earthquake?

- a) Run outside to see if it's over
- b) Take shelter
- c) Stay away from windows
- d) Secure all shelters and heavy objects

2) How can tsunamis caused damage?

- a) They can destroy beaches
- b) They can destroy houses
- c) They can kill people
- d) All of the above

3) Which of the following can cause an earthquake?

- a) Animal behavior
- b) Movements of plates on earth's surface
- c) Melting of snow
- d) Electrical problems

4) What precautionary measures will you take before a house fire (i.e. a man-made disaster)?

- a) Have disaster supplies such as food, water, flashlight and a medicinal kit on hand
- b) Keep clothes or curtains near heaters
- c) Move household possession outside your home
- d) Inspect foundations for cracks around your home

5) First aid has the following major objective

- a) To preserve life
- b) Not to promote recovery
- c) Not to prevent the victim's condition from worsening
- d) Not to prevent further injury

6) What would be your first reaction after you have identified a suspected object?

- a) Touch the suspected object
- b) Pour water on suspected object
- c) Inform Police and Bomb disposal Squad immediately
- d) Try to neutralize the suspected device

7) What will you do after an earthquake?

- a) Never replaced damaged gas, water and electrical lines
- b) Enter and stay inside damaged building
- c) Check for injuries and give first aid as necessary
- d) Install smoke detectors on every level of your home

8) What will you do after a fire (disaster) occurs at your home?

- a) Go inside your house if most of the fire has already been extinguished
- b) Keep food that has been exposed to heat, smoke
- c) Clear clogged rain gutters
- d) Enter your house only if authorities say it's safe to re-enter

9) What will you do before an earthquake?

- a) Stay away from windows
- b) Stay indoors especially near mirrors
- c) Stay under overpass when in a vehicle
- d) Take cover under a glass table

10) What would be your first reaction during a fire?

- a) Get out of your house as quickly and safely as possible
- b) Try to get outside your house as soon as you got all your valuables along with you
- c) Escape as soon as possible by running and ignoring smoke and flames around you
- d) Turn on your battery-operated radio to get the latest emergency information

11) If you are outdoor and an earthquake hits your area, you would...

- a) Lie on the ground and stay there until the shaking stops
- b) Stay under cable or power lines
- c) Immediately enter a building
- d) Stay in a field around trees. Stand there until the shaking stops

12) What is the best thing to do when exiting through smoke?

- a) Run as quickly as possible
- b) Crawl low under the smoke

- c) Cover your nose with a handkerchief and wait for rescuers
- d) Stay under heavy furniture

13) You are warned for a flood- red alert situation, You would...

- a) Stay outside particularly in low grounds
- b) Determine if your property is above or below flood level
- c) Get away from windows
- d) Stay away from the volcano sites

14) You are outdoor and a flood hits your area, You would...

- a) Walk through high flood waters
- b) Stay inside a stalled car
- c) Stand in just one place
- d) Climb to high grounds and stay there

15) What should you do after a flood?

- a) Enter buildings to see the damage the flood has caused
- b) Check and watch out for strayed animals like snakes at your home
- c) Use floodwaters as reserve water to water plants or other things
- d) Remove damaged power lines that have fallen in front of your house or at the streets.

**Q2) Read the following situations and select the most appropriate options:
[5X1=5 marks]**

1. Suppose you are sitting in your room and suddenly you smell and anticipate a gas leakage. You suddenly rush to kitchen to check the gas leakage and what will you do?

- a. Switch on the light
- b. Turn the light on and burn the match stick to find the leakage from knob of the stove

- c. Open the window; switch off the gas knob and intimate gas agency about leakage
- d. Just play with your laptop and let the gas leak dissipate itself

2. You are travelling from Ahemdabad to Mumbai and have 3 big suitcases along with you. Suddenly you observe an unidentified object in the train and also clearly listen to the sound of clicking of clock. Suspecting it to be a bomb, you will...

- a. Call the Government Railway Police (GRP) personnel and Train Ticket Examiner (TTE) to stop the train
- b. Pull the emergency chain of the train and alert all the passengers to get out of the train leaving the luggage
- c. Jump from the train alone and ask someone to throw your luggage
- d. Ignore the unidentified object and go back to your birth and sleep

3. You are driving a bus with about 100 students at 70KMPH speed. You are close to the railway crossing and the train reaches the crossing. The crossing does not have a barrier which can stop you i.e. the level rail crossing is of open/unmanned type. You are getting late to school. What you should do at that time?

- a. Keep driving your car at the speed of 70KMPH
- b. Increase your speed to 100KMPH so that you can cross the level crossing before train passes
- c. Wait before the crossing and let the train pass
- d. Move backwards and take the another route

4. You are in your office at 1st floor. You are a mechanical engineer in XYZ Company in Ahemdabad. Due to some technical fault there is the electricity failure in the office and it leads to a fire emergency. The fire alarm fails but you see the fire. What will you do?

- a. Move out of the office silently without informing anyone
- b. Shout and tell everyone, use the emergency exit to come out in open space and call fire brigade
- c. Jump from the 1st floor and run away to safer place

d. Use the fire extinguisher and try to stop

5. You are Virat Kohli playing cricket at the Delhi stadium in Firoz Shah kotla against Pakistan. Your team situation is much better and India is in the driving seat. Due to umpire's fault you are declared out. As you go back to the stadium you feel a major earthquake. You will...

a. Run towards the stadium to pick up your cricket kit and escape to hotel through your car

b. Go to stadium fast and help the people to escape

c. Run back to the cricket crease and stay calm to let the earthquake subside

d. Sit where you are and observe the destruction caused by the earthquake

Appendix 4

Reaction Scale for Student Teachers

Reaction Scale for Student Teachers

Name of student:

Name of college:

Roll No:

Date:

Instruction: Please read the following statements carefully and select the appropriate option.

Sr. No	Statements	Not at all	Rarely	Sometimes	Most of the time	Always
1)	The activities given by the teacher during the session helped me to develop my confidence level to face disaster skillfully.					
2)	During the session I was able to understand the concepts related to disaster preparedness.					
3)	I can now prepare myself to face disaster without much panic.					
4)	The session by teacher helped for facing a disaster.					
5)	All the activities given by the teacher were helpful in developing my preparedness skill as well as survival skill/s during disaster/s.					
6)	I didn't like the activities given by the teacher.					
7)	The activities given by the teacher were appropriate and the instructions given by the teacher were clear.					
8)	The illustrations given during the class enabled me to understand the different disaster and its post effects.					
9)	I enjoyed all the activities given by the teacher.					
10)	I didn't think all the activities were useful to get prepare for disaster.					
11)	I feel I will be able to help myself and others during a disaster.					

Appendix 5

Module

(Disaster Preparedness Programme)

Disaster Preparedness Programme

Session 1&2

Time- 2Hrs

A. Objectives

- 1) To enable students to understand the difference between hazard and disaster.
- 2) To enable students to know about different disasters occurred during the past years

B. Methodology- Lecture cum discussion method.

C. Teaching Learning Materials- Newspaper articles related to disaster, power point presentation showing difference between hazard and disaster (Refer Appendix No 5A)

D. References

- 1.Verma Manju & Menon Kamala (2008) *Together Towards a safer India-II Making a Diference, Class IX*, Central Board of Secondary Education, New Delhi, NCERT
- 2.Verma Manju & Menon Kamala (2008) *Together Towards a safer India-I An Introduction to Disaster management for Class VIII*, Central Board of Secondary Education, New Delhi, NCERT

E. Contents Points

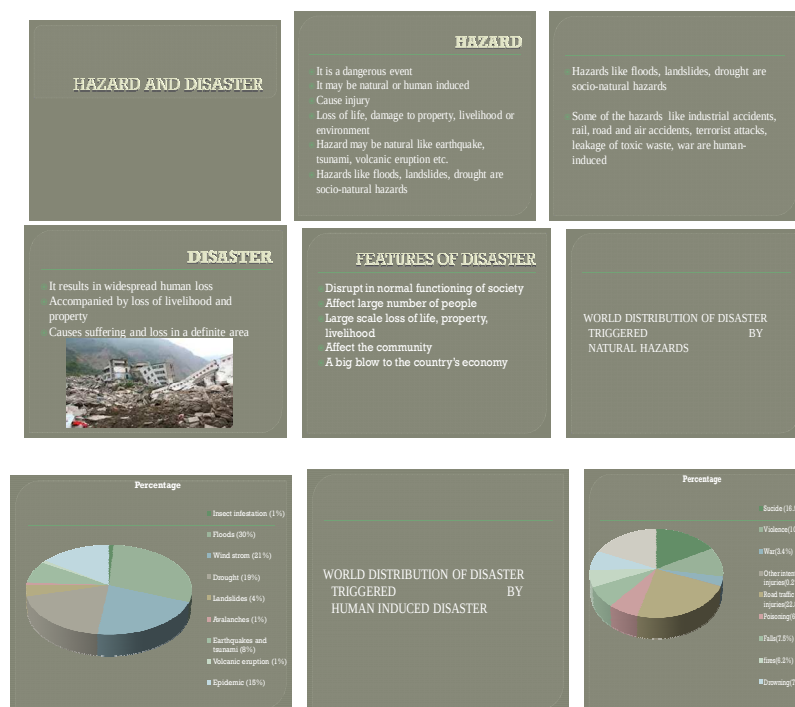
1. Definition of disaster- A serious disruption in the functioning of the society due to a hazard which causes to a huge loss to life, which is affected by geographical as well as social conditions is known as disaster.

2. Difference between hazard and disaster- Hazard is a dangerous event, natural or human induced that could cause injury, loss of life and damage to property livelihood or environment is known as hazard. A hazard could be natural like earthquake, tsunami, volcanic eruption etc. Some of the hazards like floods, landslides, droughts are socio-natural hazards since their causes are both natural and human induced. For example; flooding in an area can take place because of excessive rain which is a natural phenomenon or because of lack of proper drainage facilities which is because of human negligence. Some of the hazards are human –induced. Examples of some human –induced hazards are industrial accidents, rail, road and air accidents, terrorist attacks, dam failures, leakage of toxic waste, war and civil strife etc. A community may be also prone to multiple hazards. A Disaster whether natural or human induced, is an event which results in widespread human loss.

Facilitator's Role	Students' activities
➤ Facilitator showed power point presentation to students and discussed about the difference between disaster and hazard.	➤ Students watched power point presentation and came to know about difference between hazard and disaster.
➤ Facilitator gave news paper articles to students in groups. ➤ Facilitator asked students to read and analyze newspaper articles and news items. ➤ Facilitator discussed with students about different newspaper articles and news items and related it with disaster.	➤ Students read and analyzed the news paper articles and discussed about different disaster.

Appendix 5A

Power point Presentation showing difference between hazard and Disaster



Session 3&4

Time- 2Hrs

A. Objectives

- 1) To enable students to understand different types of disasters.

B. Methodology: - Lecture cum discussion and demonstration technique.

C. Teaching Learning Materials - Power Point Presentation on natural and manmade disaster, task sheets related to disaster (Refer Appendix No 5B)

D. References

1.Verma Manju & Menon Kamala (2008) *Together Towards a safer India-II Making a Difference, Class IX*, Central Board of Secondary Education, New Delhi, NCERT

2.Verma Manju & Menon Kamala (2008) *Together Towards a safer India-I An Introduction to Disaster management for Class VIII*, Central Board of Secondary Education, New Delhi, NCERT

3. <http://www.wcpt.org/node/36987>

E. Content points

1. **Types of disasters:** - Disasters can be categorized in to various types based on the speed and origin/cause.

a) Based on the speed, a disaster can be termed as slow or rapid.

I. Slow onset disaster:- A disaster that prevails for many days, months or even years like drought ,environmental degradation ,pest infestation ,famine are some examples of a slow onset disaster.

II. Rapid onset disaster: - A disaster that is triggered by an instantaneous shock. The impact of this disaster is short –lived or long term. Earthquake, cyclone, flash flood, volcanic eruptions are some examples of rapid onset disasters.

b) Based on the cause, disasters can be natural or human –induced.

I. Natural disasters: - A natural disaster is an event that is caused by a natural hazard and leads to human, material, economic and environmental losses, which exceed the ability of those affected to cope. Some examples of natural disasters are the 2004 Indian Ocean tsunami, the 2008 earthquake in china, the 2007 cyclone in Myanmar, the recurrent droughts in Rajasthan and the annual floods in both rural and urban areas of northern and western India.

II. Human Induced disasters: - A serious disruption of normal life triggered by a human – induced hazard causing human, material, economic and environmental losses, which exceed the ability of those affected to cope. Some examples are the 1984 Bhopal Gas tragedy, the 1997 Uphaar Cinema fire in Delhi, Rajdhani Express train derailment in 2002, Kumbakonam school fire tragedy in 2003, Jaipur serial blasts in 2008, etc.

Facilitator's Role	Student's activities
➤ Facilitators showed Power Point Presentation to students showing different types of disaster on the basis of cause and speed.	➤ Students watched the Power Point Presentation and came to know about different types of disaster on the basis of cause and speed.
➤ Facilitators gave some tasks sheet related with disasters to students. ➤ Facilitator gave instructions to students to complete the task sheet.	➤ Students read, understand and completed the task sheet.

Appendix 5B

Power point Presentation on Natural and Man-made Disaster

TYPES OF DISASTER

TYPES OF DISASTER BASED ON THE SPEED

Based on the speed, a disaster can be termed as :

Slow onset disaster

Rapid onset disaster

SLOW ONSET DISASTER

Disaster that prevails for many days

Drought, environmental degradation, pest infection, are examples of slow onset disaster

DROUGHT



ENVIRONMENTAL DEGRADATION



RAPID-ONSET DISASTER

Disaster that is triggered by an instantaneous shock

Impact of disaster may be short-lived or long-term

Earthquake, cyclone, flash flood, volcanic eruption are examples of rapid-onset disaster



Earthquake



Volcanic eruption



Tsunami



Flash flood

TYPES OF DISASTER BASED ON CAUSE

Based on the cause, disaster can be termed as:

natural disaster

Human-induced disaster

NATURAL DISASTER

Caused by natural hazard

Lead to human, material, economic and environmental losses

Examples: 2001 earthquake in Gujarat, 2004 Indian Ocean tsunami, 2007 cyclone in Myanmar, 2008 Earthquake in China



HUMAN-INDUCED DISASTER

Caused by human activities

Caused human, material, economic and environmental losses

Examples: 1984 Bhopal Gas tragedy, 1997 Uphar Cinema fire in Delhi, Rajdhani Express train derailment in 2002, Kumbakonam school fire tragedy in 2003, Jaipur serial blasts in 2008 etc.



Session5&6

Time- 2Hrs

A. Objectives

1) Students will be able to understand different types of natural disasters.

B. Methodology- Lecture cum demonstration technique, Lecture cum discussion method.

C. Teaching learning materials- Images of map of India to showing areas vulnerable to earthquake, flood, cyclone, and drought in India, Power Point Presentation on natural disaster (Refer Appendix No 5C), and video clip showing impact of natural disaster.

D. References

1. http://www.saarc.sadkn.org/countries/india/hazard_profile.aspx

2. http://www.gsdma.org/hazard_eq.htm

E. Content points

1. **Overview of natural disaster in India-** India with its vast population and unique geo- physical characteristics is one of the world's most 'disaster-prone' countries. Natural disasters are caused by natural hazards. It leads to human, material, economic and environmental losses. Natural hazards such as Earthquakes, cyclones, floods, drought, landslides occur in different parts of India in varying intensity. The East and the South East part of India are frequently affected by cyclones. In the interior of the plateau or in the Himalayas earthquakes, and in the Ganga- Brahmaputra plain, floods are more common. Rajasthan and western Orissa often experience severe drought, as do other areas in South India. This means that we all are 'vulnerable' in different degrees to these hazards.

2. **Map of India showing different areas which are vulnerable to natural disasters.**

Facilitator's Role	Students' activities
➤ Facilitator showed Power Point Presentation showing different types of natural disaster. ➤ Facilitator showed movie clip to students related to impact of natural disaster.	➤ Students watched the Power Point Presentation and understood about natural disaster and knew about the problems faced by the people due to natural disasters
➤ Facilitator demonstrated the map of India to show students the areas vulnerable to different natural disaster.	➤ Students were able to find out the areas vulnerable to natural disaster.

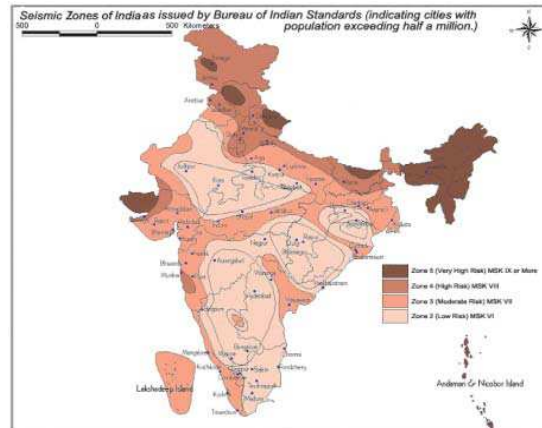
Appendix 5C

Power point Presentation on Natural Disaster

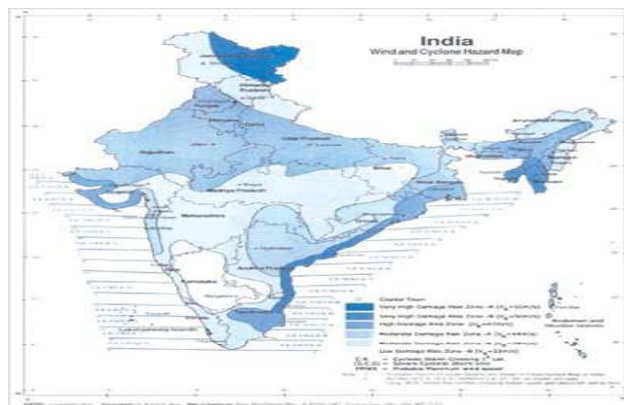


Map of India showing areas vulnerable to different Natural disasters

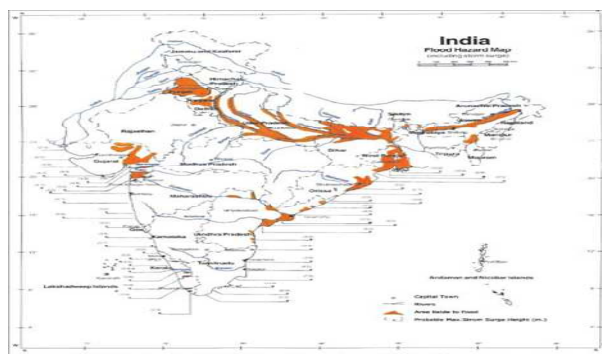
➤ Map of India showing areas vulnerable to earthquake



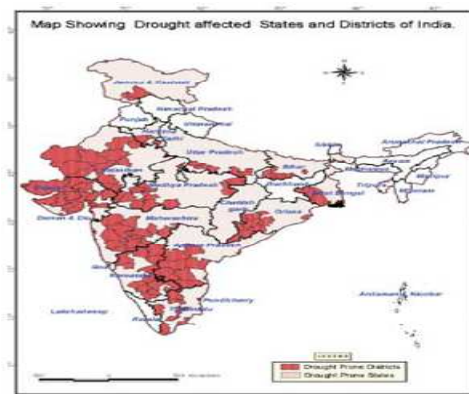
➤ Map of India showing areas vulnerable to cyclones



➤ Map of India showing areas vulnerable to floods



➤ **Map of India showing areas vulnerable to drought**



Session7&8

Time- 2 Hrs

A. Objectives

- 1) Students will be able to acquaint about various manmade disaster.
- 2) Students will be able to know the cause of manmade disaster.
- 3) Students will be able to understand the impact of manmade disaster on society.

B. Methodology - Lecture cum discussion method, demonstration method.

C. Teaching learning materials - Images of different manmade disaster, video clip showing manmade disaster and its impact on society and people.

D. References

1. <http://www.ourvmc.org/disaster%20management.htm>
2. Gnanadevan., R & Muthamizhselvan, M. (2012, January) Loneliness of Bereaved Students Affected by Natural Disaster, EDU TRACKS: 11 (5), 25-28
3. Edwin Sam R., & Minikumari,V.S. (2012, April) Mental Health Status of Tsunami-Affected Students, EDU TRACKS: 11 (8), 31-33
4. Joshith, V.P & Jayaprakash, R.K. (2012, November) *Disaster Management in Teacher Education Curriculum A New Initiative for Disaster Mitigation*, EDU TRACKS: 12 (3), 8-10

E. Content Points

1. **Overview of manmade disaster-** The disasters that are caused because of human negligence or deliberately by an individual or a group is termed as man-made disaster. Man-made disaster cost the most in terms of human sufferings, loss of life and long term damage to a country's economy and productive capacity. Road, rail, war, riots, violence and air accidents are some of the disasters that one faces everyday and they fall under this category.
2. **Impact of manmade disaster on society and people-** Disaster cause disruption in the normal functioning of the society, thereby affecting a large number of people. It causes large scale loss to life, livelihood thereby affecting the community which requires external aids to cope up with the losses. It is a big blow to the country's economy.

Facilitator's Role	Students' Role
➤ Facilitator gave images with short description of 10 most harmful manmade disasters in India. Facilitator asked students to read the information related to disaster and discuss them.	➤ Students read the information related to different disasters. Students discussed among themselves and with the facilitators about top 10 deadliest man induced disaster.
➤ Facilitators showed video clip to students showing the impact of manmade disaster on people and society and asked students to note down the points.	➤ Students watched the video clip, discussed among them and noted down the points related with the effects of manmade disaster on the society and people.

Session9&10

Time- 2 Hrs

A. Objectives

- 1) To enable students to know about the impact of disaster on health, development, society and environment.
- 2) To acquaint students about different needs to prepare for disaster.

B.Methodology- Lecture cum discussion method.

C. Teaching learning materials- Video clip showing manmade disaster and its impact on health, development, society and nation.

D. References

1. Edwin Sam R., & Minikumari,V.S. (2012, April) Mental Health Status of Tsunami-Affected Students, EDU TRACKS: 11 (8), 31-33
2. Joshith, V.P & Jayaprakash, R.K. (2012, November) *Disaster Management in Teacher Education Curriculum A New Initiative for Disaster Mitigation*, EDU TRACKS: 12 (3), 8-10

E. Content Points

1. Impact of disaster on health, development, society and environment- A disaster whether natural or human-induced, is an event which results in widespread human loss. It is accompanied by loss of livelihood, property causing suffering and loss in a definite area. When disaster strikes it affects us directly and indirectly. Human settlement are frequently affected by disasters which take a heavy toll on human lives, destroy buildings and infrastructure and have far reaching economic and social consequences for communities. Every disaster brings with it in addition to the extensive damage to property and infrastructure, a heavy toll on human life and livestock. Consequently it results in heavy financial losses, disruption of activities and loss of labor productivity unleashing a chain of compounding economic losses at the national level.

2. Needs to prepare for disaster- Disasters bring with them misery, destruction and loss of lives of our near and dear ones, the worst affected being women and children. India being a multi- hazard prone country, it is important that we as responsible citizens equip ourselves with essential knowledge about various hazards and ways to overcome them. In order to protect ourselves from the harmful effects of a disaster, we have to prepare ourselves in advance, to face them better. The process involving activities that help us to face disasters effectively is known as ‘disaster management’. The management of disaster is not the sole responsibility of the Government. The plan and policies of the government cannot be successfully implemented, unless people are aware and involved in all stages of planning and managing disasters.

Facilitator's Role	Students' activities
➤ Facilitator divided students in two groups-i.e. Group A and Group B. Facilitator asked students of Group A to discuss and write about impact of disaster on health and development and of Group B to discuss and write the impact of disaster on environment and society.	➤ Students of Group A and Group B discussed among themselves and noted down points related to impact of disaster on health, development, society, and environment.
➤ Then facilitator asked students about various needs to prepare for disaster and acquainted students about disaster management.	➤ Students listened facilitator, noted down and understood about the needs to prepare for disaster and disaster management.

Session11&12

Time- 2 Hrs

A. Objectives

- 1) To introduce students about disaster preparedness.
- 2) To orient students about different steps related with disaster preparedness.

B. Methodology- Lecture cum discussion method, lecture cum demonstration method.

C. Teaching learning materials- Power Point Presentation showing different stages of disaster management (Refer Appendix No 5 D)

D. References

1. Verma Manju & Menon Kamala (2008) *Together Towards a safer India-II Making a Difference, Class IX*, Central Board of Secondary Education, New Delhi, NCERT
2. Berne Rebecca (2009) *Disaster Preparedness Resource Guide for Child Welfare Agencies* The Annie E. Casey Foundation, Baltimore, Maryland

E. Content Points

1. **Meaning of disaster management-** Disaster management cover the range of activities designed to maintain control over disasters/emergency situations and provide a framework for helping people to avoid, reduce the effects of, or recover from impact of a disaster. These activities may be related to preparedness, mitigation, emergency response, relief and recovery and may be conducted before, during or after a disaster.

2. **Steps of disaster management-** There are different phases of Disaster Management. These phases are normally carried out simultaneously after a disaster. As soon as a disaster strikes a locality, immediate response and relief activities are carried out by the Government, Non Governmental Organizations [NGOs], various religious bodies like the Jain trust, Gurudwara Committee etc. This includes search and rescue of those affected, First Aid, provision of food, clothing, shelter, medicine to those affected etc. Soon after the initial response and relief phase, rehabilitation and reconstruction initiatives are taken up by the Government, NGOs and various agencies which would help the affected community to come back to normalcy. Roads, permanent houses, power and communication networks are restored. This phase of disaster management also includes economic rehabilitation for those who have lost their livelihood. As long term measures to reduce the impact of disasters, various structural and non-structural initiatives are taken up. These measures are termed as mitigation measures. If effective preparedness measures are taken into account, the

impact of disasters can be reduced to a large extent and the community is better to combat disasters.

Facilitator's Role	Students' Role
➤ Facilitator showed Power Point Presentation related with concept of disaster management and steps of disaster management:- 1. Disaster strikes 2. Emergency response and relief. 3. Rehabilitation and reconstruction 4. Mitigation 5. Preparedness	➤ Students observed the Power point Presentation and understood about different steps related with disaster preparedness.
➤ Then, Facilitator asked students to create their own disaster plan.	➤ Students divided themselves in groups. They discussed among themselves and developed their own disaster plan.

Appendix 5D

Power point Presentation on Steps of Disaster Management



FIRST PHASE-DISASTER STRIKERS

As soon as the disaster strikes a locality, immediate response and relief are carried out by the government, Non-Governmental Organizations [NGOs], various religious bodies etc.

RESPONSE

It refers to the mobilization of the necessary emergency services and first responders in the disaster area.

This is likely to include a first wave of core emergency services, such as firefighters, police and ambulance crews.

RECOVERY

- The aim of the recovery phase is to restore the affected area to its previous state.
- Recovery efforts are primarily concerned with actions that involve rebuilding destroyed property, re employment, and the repair of other essential infrastructure.

MITIGATION

- Attempts to reduce the effects of disasters.
- Effort to reduce loss of life and property by lessening the impact of disasters.
- Focuses on long-term measures for reducing or eliminating risk.

DISASTER PREPAREDNESS

It refers to the set of activities and precautions that a community collectively takes before a disaster occurs.

It helps to reduce the impact of a disaster, and to cope with it efficiently.

Session13&14

Time- 2 Hrs

A. Objectives

- 1) To enable students to develop survival skills.
- 2) To enable students to know about the golden rules of first aid.

B. Methodology- Lecture cum demonstration method, simulation mock drills.

C. Teaching learning materials- Power Point Presentation showing golden rules of first aid. (Refer Appendix No 5 E)

D. References

1. Verma Manju & Menon Kamala (2008) *Together Towards a safer India-III, A stride Ahead, A textbook on Disaster management for Class X*, Central Board of Secondary Education, New Delhi, NCERT
2. <http://www.indiastudychannel.com/resources/107049-Golden-Rules-of-First-Aid.aspx>
3. <http://www.firstaid.entevazhi.com/>

E. Content Points

1. **Search and rescue skill-** Search and rescue are a technical activity rendered by an individual or a group of specially trained personnel, who rescue and attend to the casualties under adverse conditions, where life is at threat. Search and rescue is organized in close operation with the community and in a team approach. The search and rescue activities are undertaken in two manners i.e, Community as Local Rescuers and Outside Community Resources. The main objectives of a search and rescue team are to rescue the survivors trapped under the debris, from the damaged buildings, Provide First aid services to the trapped survivors and to dispatch them for medical care, hand over, recover and dispose-off the bodies of the deceased.

2. **Golden rules of first aid-** First Aid is defined as the measures to be taken immediately after an accident not with an idea to cure but in order to prevent further harm being done. First aid has the following objectives:

- To preserve life
- To prevent the victim's condition from worsening
- To promote recovery

Facilitators' Role	Student's activities
➤ Facilitator demonstrated students about rescue activities that are carried out during disaster and explained about the objectives of search and rescue skills and showed Power Point Presentation to students to give information about golden rule of first aid.	➤ Students observed about how rescue activities are being carried out during disaster and understood about the objectives and the golden rules of first aid.
➤ Facilitators gave some tasks sheet related with disasters to students.	➤ Students got information about golden rules of first aid. Then students read, understood and completed the task sheet.

Appendix 5E

Power point Presentation on Golden Rules of First aid

FIRST AID

- After rescuing, the victim has to be provided First Aid and every attempt has to be made to see to it that the condition of the victim doesn't deteriorate.
- First Aid, as "measures to be taken immediately after an accident not with an idea to cure but in order to prevent further harm being done".
- Temporary arrangements, need to be made for sealing the injured and this can be done with the help of structures. With this the patient can be shifted to a short distance. Band made stretchers and stretchers made from ropes can be used to shift the patient to a short distance.

OBJECTIVES OF FIRST AID

- To preserve life
- To prevent the victim's condition from worsening
- To promote recovery

GOALS OF FIRST AID

- To restore and maintain vital functions. The ABC of basic life support (Airway, Breathing, and Circulation) are always the first priority.
- Airway must be open so that air containing oxygen enters the body
- Breathing must take place so that oxygen passes through the lungs into the blood stream
- The heart must circulate the oxygen carrying blood
- To prevent further injury or deterioration
- To reassure the victim and make him or her as comfortable as possible

ACTION PLAN

- It is a first aid to the first after assessing whether the victim has any life-threatening conditions and if appropriate, first aid is required.
- Do the DRABC.
- D- Check for DANGER
- R- Response
- R- Reason
- R- Check RESPONSE
- R- Reassure (reassure)
- R- Reassure (reassure)
- R- Check AIRWAY
- R- Breathe (check if open)
- R- Check for BREATHING
- R- Breathe (check if open)
- R- Carry out first aid (if needed)
- R- Check for CIRCULATION
- R- Carry out first aid (if needed)
- R- Carry out first aid (if needed)

FAINTING OR LOSING CONSCIOUSNESS

- It is a brief loss of consciousness and is the result of an interference with the function of the brain.
- There are many causes of fainting, however, the most common of which are fainting, head injury, epilepsy, stroke, poisoning, diabetes and conditions associated with lack of oxygen. If you have seen a person fainting then:

Do's

- Catch the person before he/she falls
- Pinch the person and see if she wakes or opens her eyes
- Examine the patient and causes of unconsciousness
- Tilt head back and keep arms at right angle to body
- Raise the legs 8-12 inches. This promotes blood flow to the brain.
- Loosen any tight clothing
- Keep the victim warm if it is cold outside

Don'ts

- Don't give the patient anything to eat or drink
- Don't allow the person who has just fainted to get up until the victim is fully conscious
- If the area is warm, don't crowd around the victim

BURN

- A burn is damage to the skin caused by contact with dry heat. It may be caused by fire, flames, steam, hot liquids, hot metal, sunlight, electricity or chemicals.
- The degree of burn varies:
- First Degree (Superficial) - Involves only top layer of the skin and is red and dry and the burn is generally painful. The area may swell. Most burns are first degree burns.
- Second degree (Partial - Thickness) - Involves both the epidermis and dermis. The area is red and blisters may open and weep fluid, making the skin appear wet. These types of burns are usually painful and the area often swells.
- Third Degree (Full Thickness) - Destroys both the layers of the skin with muscles, bones, blood vessels and nerves. These burns may look brown or charred with tissues underneath sometimes appearing white.

Do's

- Immediately immerse the burnt area in cool water or by applying clothes soaked in cool water.
- Remove jewellery and constrictive clothing before swelling or blisters occurs.
- Cover the area with a dry, sterile dressing and not cotton or other fluffy material.
- Drop, Cover and Roll if caught fire or cover the person with a blanket immediately

Don'ts

- Don't place a burn under extreme water pressure
- Don't remove the cloth that is stuck to the burnt area.
- Don't apply butter ointment, oil, ice in the area affected

Session15&16

Time- 2 Hrs

A. Objectives

- 1) To enable students teaches to understand the importance of sanitation of hygiene during emergency situation
- 2) To enable students to arrive at ways in maintaining sanitation and hygiene.

B. Methodology- Lecture cum discussion method, Lecture cum demonstration method.

C. Teaching Learning Materials- Video clip showing ways to maintain sanitation and hygiene and the importance of sanitation and hygiene during emergency situations.

D. References

1. Huuhtanen Sari & Laukkanen Ari (2006) *A GUIDE TO SANITATION AND HYGIENE FOR THOSEWORKING IN DEVELOPING COUNTRIES*, University of Applied Sciences Publications, Tampere
2. Curtis, V. and Cairncross, S. (2003). *Effect of washing hands with soap on diarrhoea risk in the community: a systematic review*
3. <http://www.thereadystore.com/emergency-preparedness-supplies>

E. Content Points

1. Importance of sanitation and hygiene- During periods of emergency or disaster, sanitation levels can deteriorate rapidly and diseases can spread and even cause death in a matter of days. Maintaining good hygiene will prevent disease and illness from spreading, we will need a sanitary way to use the restroom, a way to keep our living environment clean, and a way to keep our hands, mouth and body clean. Some Hygiene or Sanitation items that we could use during emergency situation are as follows

- Waterless Hand Sanitizer
- Antibiotic ointment
- Antiseptic cream
- Bar of soap
- Tissue packs
- Toilet paper Rolls
- Latex-Free Gloves
- Dust Mask

- Toothbrushes
- CombRazor

Facilitator's Role	Students' Activities
➤ Facilitator showed video clip to students showing the importance of sanitation and hygiene during emergency situations.	➤ Students watched the video clip and understood about the importance of sanitation and hygiene during emergency situations.
➤ Facilitator divided students in groups and asked students to discuss different ways to maintain sanitation and hygiene and to present their views for 2 mintues.	➤ Students divided themselves into groups. They discussed among themselves about different way to maintain sanitation and hygiene and gave Presentation for 2 minutes.

Session17&18

Time- 2 Hrs

A. Objectives

1) To enable students to be prepare for disaster through simple Do's & Don'ts.

B. Methodology- Mock drill, simulation, Lecture cum discussion method.

C. Teaching Learning Materials- Power Point Presentation showing Do's & Don'ts during earthquake and flood (Natural disaster) (Refer Appendix No 5 F)

D. References

1. <http://ndma.gov.in/ndma/earthquake.html>

2. <http://ndma.gov.in/ndma/flood.html>

E. Content Points

1. Preparing for an earthquake- When an earthquake occurs, buildings that are not earthquake-resistant may fall, the walls may collapse trapping people under the rubble. The railway and road routes may be dislocated, increasing the time taken for external aid to reach the disaster site. It is important to help survivors quickly. The people living in nearby region usually carry out most of the first-aid and rescue work, who we call first responders. Hence we have to train ourselves in basic rescue and First- aid functions. The following are some Do's and Don'ts that we should follow during an earthquake

A. Before an earthquake

- Follow and advocate local safe building codes for earthquake resistant constructions.
- Make plan and preparation for emergency relief.
- Identify the medical centres, police posts and organize relief society of your area.
- Heavy objects, glasses should be kept in lower shelves.

B. During an earthquake

- Keep calm and reassure others.
- The safest place is an open space, away from buildings.
- Once in the open, stay there till the vibrations stops.
- Do not use candles, matches or other open flames. Put out all fires.

C. After an earthquake

- Keep stock of drinking water, foodstuff and first-aid equipment in accessible place.
- Do not spread and believe rumors.
- Be prepared for aftershocks as these may strike.
- Attend the injured persons and give them aid, whatever is possible and also inform hospital.

2. Flood Preparedness- Flood results in physical damage. People and live stock die due to drowning. It also affects the soil characteristics. The land may be rendered infertile due to erosion of top layer. Sudden food shortage can be caused due to loss of entire harvest. Clear water may be unavailable because of contamination of water in wells, ground water and piped water supply. The following are some Do's and Don'ts that we should follow during floods

- Do not enter deep, unknown waters.
- Sprinkle medicines in the stagnant dirty water.
- Inspect your house for any cracks or other damage. Check all the walls, floor, Ceiling, doors and windows, so that any chance of house falling down can be Known and you can be aware about the immediate danger.
- If the floodwater has entered the house or has surrounded the house, then it is advisable not to enter such house.
- Keep listening to weather forecast on radio and television. Move to your residence only when instructed by the competent authority. It is not safe to believe that the problems have ended after the flood water has receded.
- Beware of the various insects or poisonous snakes that may have been dragged inside the house along with the floodwater.
- Destroy the food commodities that have been affected by floodwater.
- Switch off the main electric supply, if any damage is noticed to the electric equipments.

Facilitator's Role	Students' Activities
➤ Facilitator asked students about how to prepare themselves during an earthquake. Facilitator played earthquake game and asked students to adopt different tips when they are indoor and outdoor of the house during an earthquake.	➤ Students played earthquake game and came to know about different places which they can use to hide themselves during an earthquake.
➤ Facilitator asked students about flood preparedness, what to do during floods.	➤ Students came to know about different steps that they would take to save themselves and their family members to prevent from flood.

Appendix 5F

Power point Presentation on Do's and Don'ts for Earthquake and Flood

DO'S AND DON'TS FOR EARTHQUAKE AND FLOOD

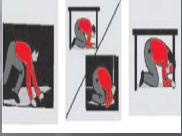
PREPARING FOR EATHQUAKE



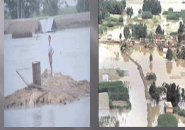
DROP, COVER AND HOLD

- If you are indoors when an earthquake strikes, stay there. Drop, cover, and hold, protecting your eyes by pressing your face against your arm, until the shaking stops.
- If unable to drop, cover, and hold because there's no table or desk nearby take other protective action. For example, sit on the floor against an interior wall away from windows, skylights, doors, and things that could fall.

DROP, COVER AND HOLD



FLOOD PREPAREDNESS



BEFORE FLOODING OCCURS

- Know the route to nearest safe shelters that you have learnt about earlier. You must have the following ready, to carry to the safe shelter, if need be. This is your Emergency Kit.
- First aid kit with extra medication for snakebite and diarrhoea.
- Strong ropes for tying things.
- Airtide torch and spare batteries.
- Stocks of fresh water, dry food, salt and sugar, kerosene, candles and matchboxes.
- Water-proof bags to store clothing and valuables
- Umbrellas and bamboo sticks (to protect you from snakes).

WHEN YOU HEAR A FLOOD WARNING

- Tune in to your local radio or watch TV for warnings and advice
- Keep vigil on flood warning given by local authorities.
- Keep dry food, drinking water and warm clothes ready
- In rural areas, prepare to take bullock-carts, other agricultural equipment and domestic animals to safer places.
- Check your emergency kit.

DURING FLOODS

- Drink boiled water.
- Keep your food covered, don't eat heavy meals.
- Use bleaching powder and lime to disinfect the surroundings.
- Avoid entering floodwaters. If you must, wear proper protection for you feet and check depth and current with a stick. Stay away from water over knee-deep depth.
- Do not eat food that has got wet in the floodwaters.
- Be careful of snakes. Snakebites are common during floods.

Session19&20

Time- 2 Hrs

A. Objectives

1) To enable students to be prepared for man induced disaster.

B. Methodology- Mock Drill, simulation, Lecture cum discussion method.

C. Teaching Learning Materials- Power Point Presentation showing Do & Don'ts during fire emergency, bomb explosion, stampede and leakage of chemical gas (Man-made disasters) (Refer Appendix No 5 G)

D. References

1. <http://ndma.gov.in/ndma/bombblast.html>
2. <http://ndma.gov.in/ndma/stampede.html>
3. Verma Manju & Menon Kamala (2008) *Together Towards a safer India-I An Introduction to Disaster management for Class VIII*, Central Board of Secondary Education, New Delhi, NCERT

E. Content Points

1. Precautionary and preventive measures against fire- Fire is a phenomenon of combustion manifested in intense heat and light in the form of a glow or flames. Around 30,000 precious lives are lost because of fire related incidents. Heat, fuel and oxygen are the three ingredients which cause a fire. By cutting the supply of any one we can avoid causing destruction. The following are some Do's and Don'ts that we should follow during a fire emergency

Do's

- If you see smoke or flames, raise the alarm.
- Get out of the building as soon as possible.
- If there's smoke crawl along the floor.
- Switch off all the electrical appliances.

Don'ts

- Don't go back into the building.
- Never hide in a cupboard or under a bed.

2. Precautionary and preventive measures against bomb explosion- The following are some Do's and Don'ts that we should follow during bomb blast

Do's

- If suspected device is found in a building, immediately evacuate the people systematically to a safe distance from the building.
- If suspected device is found in a building or room, keep open all the doors and windows of the room or building.
- Disconnect all electric connection.
- Ensure that no rumors are spread.

Don'ts

- Don't touch the suspected object(s).
- Don't spread rumors.
- Don't pour water on the suspected object.
- Never try to neutralize a suspected device.
- Life is precious. Don't be a dead hero.
- Please call the police- Control Room (100)

3. Precautionary and preventive measures against stampede - The following are some Do's and Don'ts that we should follow during stampede

Do's

- One must also be very alert to the fact that some pilgrims of certain nationalities come in bunches and batches and push their way through. Pilgrims should not get into their way or try to stop them as one could get harmed in the process. It will be more sensible to avoid their path and wait till they get out.
- It is advisable to move in groups from the camps with the assistance of the controlling authority or group leader or police person.
- Do not try to go against the direction of the crowd. Move with the crowd.

Don'ts

- Do not lose temper and do not fight with others. If required, pilgrims can retrace steps after the rush has passed.
- Understand the evacuation routes, emergency exits and layout of the place of event.
- Keep calm. Don't panic.
- In case of emergency do not run.
- Think before you do. Do not just blindly follow others.

- Open area is safer. On exit try to get away in diverse directions.
- Follow instructions given by the authorities, public address system etc.
- Do not spread rumors.
- Assist and collaborate with the organizers, authorities, fire services. Police etc.
- Try to help others in your best capable way.

4. Precautionary and preventive measures against leakage of chemical gas - The following are some Do's and Don'ts that we should follow during leakage of chemical gas

Do's

- Use your senses to detect gas leaks. A natural gas leak is usually recognized by smell, sight, or sound. If you smell natural gas, get up, get out and call emergency immediately from a neighbor's phone.

Don'ts

- Do not smoke or operate electrical switches or appliances. These items may produce a spark that might ignite the natural gas and cause an explosion.
- Do not assume someone else will report the condition.

Facilitator's Role	Students' Activities
➤ Facilitator showed Power Point Presentation to students related with dos & don'ts they should follow during fire.	➤ Students understood different rules that they should follow during the emergency.
➤ Facilitator showed Power Point Presentation to students related with different rules that student should follow during bomb explosion, leakage of gas and stampede.	➤ Students understood and came to know about different rules that they should follow during bomb explosion, leakage of gas and stampede and also learnt to bring awareness among their friends and family members.

Appendix 5G

Power point Presentation on Do's and Don'ts for Fire and Bomb blast

FIRE SAFETY

Do's

- If you see smoke or flames, raise the alarm.
- Get out the building as soon as possible. Cover yourself if you can.
- Find a phone call and call 101. Ask for the fire brigade and then give your slowly and calmly.
- If there's smoke, crawl along the floor, as the air is closest there. Hot air rises up.
- If your escape route is blocked, go into a room with a window, put things round the door to stop smoke getting in, open the window and call for help.
- Switch off all the electrical appliances. The best thing one could do is to turn off the main switchboard.

Don'ts

- Don't burn crackers in crowded, congested places, narrow lanes or inside the house.
- Don't light a cigarette without a match.
- Don't show the Don'ts of lighting crackers on own hands.
- Don't use fireworks inside a vehicle.
- Avoid using loose clothes, as they are fast in catching fire.
- Don't remove a burnt clothing (unless it comes off easily), but ensure that the victim is not still in contact with such clothing.
- Don't apply adhesive dressing on the burnt area.

Don'ts

- Check for worn or tape up cables or leads. These are dangerous and you should replace them.
- Store flammable liquids properly.
- Avoid storing incompatible chemicals next to each other as an interaction may occur and cause a fire or an explosion.
- Discard those chemicals which shows signs of decomposition.
- Clean up spills immediately.
- Dispose rubbish in a proper manner.
- In case of gas leakage switch off the gas regulator and open the windows immediately. Don't light a match stick.

BOMB BLAST- Do's AND Don'ts

Do's

- Always keep an eye for suspicious objects.
- Never handle an unclaimed object.
- Notice your surroundings for anything out of place.
- Evacuate all the people immediately to a safe distance.
- Open all windows and doors.
- Remove all valuable and unstable articles like fuel and electronic items.
- Place sand bags around the suspected object. The height of sand bags should be three times the height of the suspected object.
- Inform the Bomb Disposal Squad.
- Inform the Fire Brigade, hospitals and ambulance service.

Don'ts

- Do not spread rumours.
- Do not touch, disturb and approach the suspected object.
- Do not try to submerge the suspicious object in water.
- Do not try to open or puncture the suspicious object.

Appendix 6

Selected Responses of Student Teachers

Task 6 A

Read and analyze the news paper article and relate it with disaster.

Response 1

THE TIMES OF INDIA, AHMEDABAD
WEDNESDAY, NOVEMBER 21, 2012

(A-1)

Patna stampede survivors blame dist admin

'Poor Arrangements Led To Tragedy'; Scenes At Hospitals Chaotic



Devotees at Adalat Ghat in Patna on Tuesday. A bamboo bridge on Ganga river collapsed there on Monday.

Patna: Chhath worshippers, who are still under a shock following the stampede at Adalat ghat on the bank of the Ganga here in which at least 22 persons lost their lives, blamed the district administration for "poor arrangement".

Prem Kumar, a worshipper, said there was inadequate arrangement to accommodate the large crowd of devotees that thronged the ghat which had never witnessed a tragedy like this.

Jaiprakash Bharti, who had come from Bhojpur district with his family to offer obeisance to the Sun God during the Chhath festival, said that the narrow pathway between the ghat and the road outside were to blame for the stampede.

"The pathway should be broadened into a road by next year if a stampede of this scale needs to be prevented," Bharti said.

The usual bustle was missing on Tuesday morning at the ghat with most worshippers outside Patna preferring not to visit the ghat and paying their obeisance elsewhere.

Nita Devi, an aged woman, blamed the stampede to inadequate security arrangements at Adalat ghat to manage the swelling crowd.

The stampede occurred after worshippers, mostly women and children, began to run for their lives after word spread that the narrow pontoon bridge had been electrocuted, which turned out to be false.

Meanwhile, chaos prevailed in Patna hospitals. Victims and dozens of injured persons were rushed to the nearby government-run Patna Medical College and Hospital (PMCH) as television channels ran reports of announcement of probe and compensation by the chief minister.

According to Vishesh, a local resident, the chaos at the government hospital led many injured people to go to other hospitals in the city for treatment.

"There are many people who are injured and many have died as well. Many injured have gone to other hospitals. Nothing is systematic over here. It is utter chaos," he said on Tuesday. AGENCIES

Group No. 4 Man made Disaster Date -> 8/12/20
 Patna stampede survivors blame distal

- Due to poor arrangement at Adalat ghat on the bank of Ganga river around 22 persons lost their lives. So due to this accident many devotees outside Patna preferring not to visit there and blamed the stampede to adiqueet security.
 - This happened due to the narrow pathway between ghat and the road
 - Victims and dozens of injured persons were rush to the near by hospitals. (Patna medical college and hospital) and many others are shifted other hospital also.
 - It is utter chaos. Nothing is systematic over here.
 - So, after this accident the pathway should be broadend into a road by the next year.
 - Peoples were running here & there for saves their lives.
- Name (1) Vivek (4) Hemal
 (2) Jignasa (5) Sejal
 (3) Damini

Response 2

4 **TIMES CITY** (A-7)

11 hurt in fire at Prahladnagar tower

Panic Caused Occupants To Jump From Second And Third Floors

Times News Network

Ahmedabad: A major fire broke out at a commercial complex, Safal Pegasus on the Prahladnagar Road on Tuesday afternoon. Panic-struck occupants of the building jumped off the second and third floors to escape. A total of 11 people were injured in the incident out of which six were hospitalized by EMRI 108 and fire brigade ambulances.

According to Ahmedabad Fire and Emergency Services (AFES) officials, they got a call about a fire in the basement of the building at 2:40pm.

Considering it a major fire due to its central location in the business district, a team of 15 vehicles including fire fighters and tankers started the rescue operation.

Rajesh Bhatt, additional chief fire officer, AFES, told TOI that the primary reason for the fire was a short-circuit in the electric ducts at the basement.

"The building has a row of ducts in every floor. After the first one tripped, the entire row fused and fire erupted in the electric supply cables. At the fire caused a lot of smoke, reducing visibility in the entrances and passage of the first floor," Bhatt said.

"More than the fire, the thick smoke swirling inside the building created a lot of confusion and anxiety among those who got trapped in the upper floors," said Bhatt.

As it was during the peak business hour, the number of employees and visitors was high in the premises, said officials.

Around 150 people managed to get out though an equal number of people were trapped on the second and third floor. "We evacuated them after fanning out the smoke. However, the rumours of the fire caused panic and many jumped out of the windows," said an AFES official. The Anandnagar police and teams of civil defense controlled the crowd and eased the traffic flow. Paramedics from three ambulances of EMRI 108 provided primary treatment to the victims. The firefighting ended at 5:30pm, said a senior AFES official.



Firefighters rescue people trapped on the top floor of the building

11 HURT IN FIRE AT PRAHLADNAGAR TOWER.

In Ahmedabad there occur a major fire broke out at the Safal Pragyas a commercial complex in Prahladnagar. According to report there were around 11 people who got injured. Inquiry is still going on to detect the reason for the fire. The primary inspection reveals short-circuit in the basements. The smoke due to fire created a havoc like situation for those who got trapped in the building, which causes some occupants to jump from the building. Around 150 people managed to come out, primary aids like paramedic and Emergency Emergency Ambulance were provided at the spot.

Response 3

US cowers as Sandy menaces East Coast
Mass Evacuations On; Hurricane May Affect US Prez Race
 James Barron & Brian Stelter

New York: Hurricane Sandy churned through the Atlantic Ocean on Monday en route to what forecasters agreed would be a devastating landfall that is expected to paralyze life for millions of people in more than a half-dozen states in the Northeast.

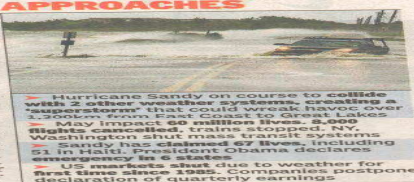
NRGs on alert
 One of the biggest quarries in the US along the east coast in New Jersey. Community members told TO that at least 10 per cent of the corner shops, restaurants and resorts along the coast are owned by Gujaratis, all of which were evacuated by the authorities on Monday, ahead of Hurricane Sandy hitting the region. "We are heading for the next few hours," said the Menka of the Dalwara Valley Gujarati Samaj in Philadelphia. The

spread of power failures, a halt in transportation systems and extensive evacuations.

The huge storm, which has been picking up speed, over water, was producing winds of 80 miles per hour (130 kmph) by Monday. On Monday, the centre of Hurricane Sandy made its expected landfall on the New Jersey coast and the National Hurricane Center said the center of the storm was moving north.

With a wary eye on its expected path, the impact of the storm in North Carolina, Delaware, New York, Pennsylvania and Maryland. Residents were ordered to evacuate, with many seeking refuge in shelters. Mass transit systems ground to a halt and people were urged to stock up on food and supplies. The New York Stock Exchange suspended trading on Monday. BY NEWS SERVICE

'SUPERSTORM' APPROACHES



Hurricane Sandy on course to collide with 2 other weather systems, creating a 'superstorm' that could wreak havoc over 1,500 miles from East Coast to Great Lakes. Flights cancelled, trains stopped. NY, Washington shut mass transit systems. Sandy has claimed 6 lives, including 21 in Haiti. President Obama declares emergency in 4 states. US markets shut due to weather for first time since 1989. Companies postpone declaration of quarterly earnings.

Flights from India scrapped for 3 days
 TIMES NEWS NETWORK

New Delhi: Airlines across the world, including Indian carriers, cancelled more than 9,000 flights to and from mass US hubs for the next three days, ahead of Hurricane Sandy's landfall.

Atlanta, New York, Newark, Washington, Philadelphia and Boston were large numbers of flights, who constitute 20% of the disruption in bookings will cascade for at least a week on Monday's flight were being recommended on flights for Thursday onwards. P 10

Full coverage, P 42

Headline-

US COWERS AS SANDY MENACES EAST COAST

- ↳ Hurricane Sandy collide with the weather system and created super storm that could havoc over 1030 km from east coast from newyork.
- ↳ 8000 flight cancelled
- ↳ 60 million lives effected. 67 died.
- ↳ US markets shut down.
- ↳ Economic decision postpone.
- ↳ TE sustain winds of 90 mph. (145 kmph).
- ↳ It is natural disaster - Basis of cause.
↳ Rapid disaster - Basis of speed.

Task 6 B

Task sheet was given to student teachers.

Response 1



- a) Give a caption to the Picture.
- b) Prepare a report on the problems faced by people due to flood.

Ans-a: Water is destructive & life giving.

Ans b:- Due to the flood people will lose their life, properties, possessions, family. People will not get food, shelter easily.

Due to this economic condition of state / country becomes poor.

Sometimes this also leads to robbery, fights for survival.

Several diseases gets spread, so it affects the health condition of people.

Again it is very difficult to bring back to the normal conditions.

Response 2



- a) List the causes of floods.
b) Suggest some measures to control flood.

Ans: a :- (i) Heavy Rainfall.
(ii) Tsunami.
(iii) Breakdown of Dam.
(iv) Improper drainage.
(v) Melting of icebergs (due to global warming).

Ans (b) :- (i) Regular maintenance of dam.
(ii) Proper check on carbon emission.
(iii) The length of the coast near dam should be of proper length to minimise the risk of flood due to Tsunami.
(iv) Greenery should be maintained instead of deforestation.

Response 3



- a) Give a caption to the picture.
b) Identify & list out the problems faced by people during earthquake.

Answers :

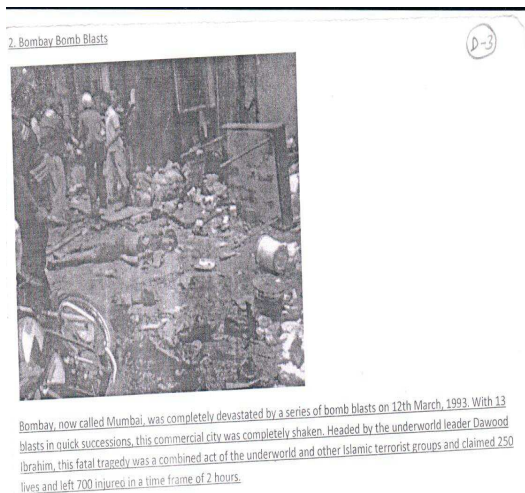
a) It is about Earthquakes.

- b) → Loss of Lives,
→ Loss of Economy,
→ Loss of Properties,
→ Loss of Infrastructures,
→ Communication lost, communication between two states or place where earthquake occurs is not communicate with country.
→ After earthquake ^{affected} people does not get basic things like food & water and shelter.
→ People migrates to the other place.

Task 6 C

Read a news paper item and write a note on impact of man-made disaster on society and people.

Response 1



Impact of man-made disaster (Bomb blast)

a) On people.

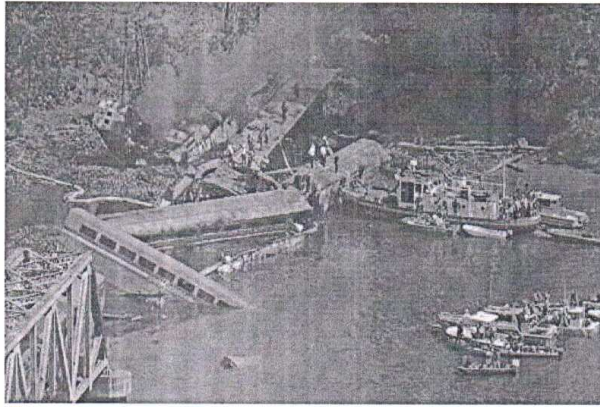
- Loss of lives
- Injuries, → Mentally & physically.
- Loss of families and dear ones
- Loss of home and property.
- People loose trust on others.

b) Society

- Religious fights.
- Disturbance in social settings.
- Poverty — Economic condition becomes poor
- Growth & development of society gets slow

Response 2

Rajdhani Rail Derailment



The Delhi bound Rajdhani Express left Howrah on 10th September, 2002 and faced a deadly derailment on the rail bridge over the Dhawe River in Bihar. The incident was initially considered as an accident but investigations prove it to be a deliberate attempt. One of the local Maoist group is believed to have damaged the rail tracks, thereby leading to a derailment. With most of the rail coaches falling into the water and geographical hindrances faced by rescuers increased the death toll to more than 130 and left several injured.

IMPACT OF TRAIN ACCIDENT ON

PEOPLE :-

- ① ^{Sometime} There is loss of life of a single bread earner in a family.
- ② Sometime the aftermath of the accident causes disabilities in children and adult as well.
- ③ Sometime there is termination of pregnancy due to accidents.
- ④ There arises a fear factor, that is psychological impact to the person who faced accidents.

IMPACT ON SOCIETY :-

- ① There is economical setback to the society due to loss of man and property.
- ② Children lost their parents, hence take wrong path to compensate their needs, hence there is accumulation of corruption in the society.
- ③ There arises traffic problem, due to accidents, as rail route get jammed.
- ④ There arises loss of rail property and ultimately to the economical level & development of a particular country.

Task 6 D

Read a news paper item and write a note on the impact of disaster on development, society and environment.

Response 1

Impact of man made Disaster

* Development of Nation

- Due to the serial blast in Jaipur on 15th Dec many people lost their lives and it created chaos and confusion in the whole city.
- There was an haste and haste all around which disturb the process of develop of Nation.
- Many tourist had come on that particular day to visit the place but lost their lives in the which created Negative impression in the minds of their family there by hindering in the Nation's development process.
- Due to this incident foreigner shines and fast away for visiting our country for up coming few years. thereby it caused an hindrance development of Nation.

* Environment

- Due to this incident almost all the busy areas of the city were destroyed and this due to this our surrounding can't be regenerate at once.

Task 6 E

To create a disaster plan

Response 1

JAN-SEVA- TRUST	
a) Disaster strikes!	Suppose if there is a earthquake in near by region/area. Then following steps can be taken
b) Responses & Relief!	Immediate response team will be called. Medical team and manpower will try to save the life of persons and provides first aid. Immediate Food packages will be supplied. Dead bodies and other persons who have been injured will be taken care.
c) Recovery.	New constructions of home & buildings and Rehabilitation for the persons who have suffered from this disaster will be done.
d) Mitigation!	Long term measures can be taken to avoid or minimize the effect of disaster.
e) Preparedness!	Awareness and readiness programme can be given to the people.

Response 2

Disaster - Earthquake.

- (a) Disaster strike - If earthquake occurs then we visit that place and observe condition of that place & start giving immediate response.
- (b) Response :- We can give emergency services to the people who are affected by earthquake. We will provide hospital services, food, shelter etc. We help people to come out from debris & try to save their life.
- (c) Recovery :- We collect fund from societies and trust, government & approach with people who can reconstruct the buildings for those who have lost their houses. We can give financial support to those who have badly injured.
- (d) Mitigation :- We try to provide them materialistic things & attempt to reduce the effects.
- (e) Preparedness :- We can make people aware about the disasters. We can guide, advise them how to take precautions.

Task 6 F

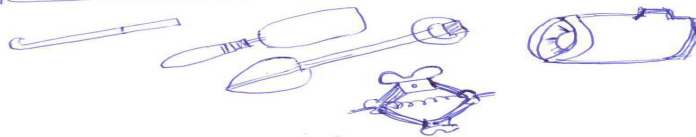
Task sheet was given to student teachers

Response 1Group 2:-

- 1) Select the equipments which you would require if you had to be a part of Search & Rescue Team :- (Earthquake)

Personal equipments for Rescuer :-
Helmet, Torch, Gum-boots, Life-jackets, Whistle.

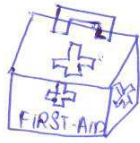
Team Equipments for Rescuer :-
Rope, Ladder, Pulley, Small cutting First-Aid Box, Crow Bar, Hammer, Stethoscope.



Personal {
Helmet
Torch
Whistle
Rope
Ladders

Response 2

2) Prepare your Own First Aid Kit (F-6)



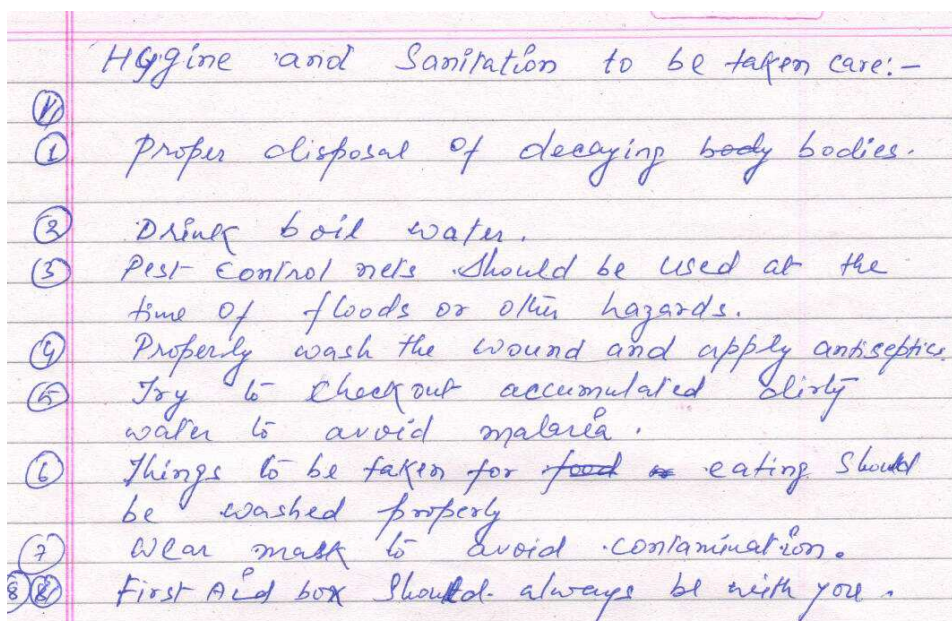
Scissors, antibacterial ointment,
bandage, cotton gauze,
cotton wool, antiseptic (detol),
water bottle, glucose,
painkillers, Tincture,
Relief spray, Wicks (Balm),
white cotton tape, torch.

"Be Calm, Don't panic and
Save life"

Task 6 G

Discuss and write a note on ways to maintain sanitation and hygiene.

Response 1



Response 2

ways to Maintain Sanitation and Hygiene

- 1) Dead bodies should be disposed which may cause disease.
- 2) Not to eat the food which may be uncovered due to earthquake.
- 3) Water specially drinking water should be purified by chlorine tablet
- 4) ~~During~~ After flood stinking water should be made way to flow out.
- 5) Bleaching / DDT powder should be sprinkled around the houses.