HAZARD-WISE

Photocopiable Classroom Exercises on Natural Hazards and Disasters

Chris Dolan

AUSTRALIA

An Australian Disaster Awareness Project for the International Decade for Natural Disaster Reduction

ACKNOWLEDGMENT

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Cover:
Row 1 Summer bushfire, VIC.
2 West seasons floods, NT.
3 Mt Tavurvur eruption, Rabaul, PNG, 1994.
4 Earthquake ground rupture, near Tennant Creek, NT, 1988.
5 Tropical cyclone viewed from space.
6 Drought scene, SA.
(left to right) 6 Tornado near Cleve, SA, 1989.

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FOREWORD

At the beginning of the International Decade for Natural Disaster Reduction (IDNDR), National IDNDR Committees were invited by the United Nations to develop their strategies for the Decade. Under the challenge 'What can the National Committee do?' was the suggestion of Promoting Public Education and Information. The explanation stated: 'This will involve following a full range of creative activities including cooperation with the news media as well as preparing material to be used in schools and colleges'.

The Australian IDNDR Coordination Committee decided that education and training would be a key activity in the framework of action for the International Decade. To date, the Australian IDNDR Coordination Committee has been involved in the following activities in the fields of education, training and media campaigns:

- Production and public dissemination of:
  - 'Australia's Natural Hazard Zones' poster map;
  - 'Hazards, Disasters and Survival - A Booklet for Schools and the Community';
  - 'Emergency/Disaster Planning for Principals' (a handbook for heads of educational institutions); and
  - a comprehensive range of information pamphlets and action guides on disaster prevention and preparedness for householders.
- Television and radio disaster awareness campaigns in the form of cartoon-style Community Service Announcements covering Cyclones, Bushfires, Severe Storms and Floods.
- In conjunction with the ANU Centre for Resource and Environmental Studies, conduct of a seminar for World Disaster Reduction Day 1993 on the theme 'Education for Disaster Reduction'.
- Sponsorship of the publication 'Learning to Live Safely in the Australian Environment' produced by the Australian Geography Teachers Association.

Now we can add 'Hazard-Wise', which builds upon 'Learning to Live Safely in the Australian Environment' and focuses on the Education and Community Awareness requirements for IDNDR. It should not only prove to be of great practical benefit to teachers, students and the public, but also it will raise the profile of Australian IDNDR activities.

'Hazard-Wise' provides the teacher with a ready-to-use classroom resource which covers many aspects of major natural hazards and disasters. Through a series of exercises, students are stimulated to investigate the causes and effects of hazards and the way in which people can respond effectively to them. Well-known Australian case studies are used to illustrate the impact of natural disasters. Each section also contains activities designed to arouse greater interest in the topic such as crossword puzzles, research activities and role-play exercises.

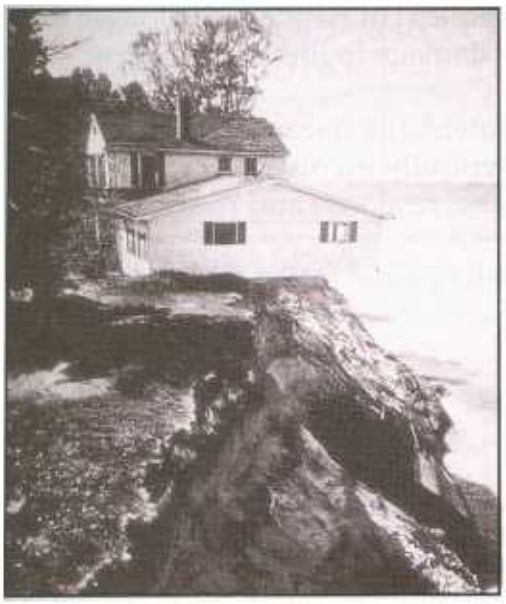
I commend Chris Dolan for his initiative in developing this project. It is one that received very ready acceptance from members of the IDNDR Coordinating Committee. With its attractive layout and captivating subject matter, 'Hazard-Wise' is a most valuable addition to existing teaching resources on hazards and disasters.

Alan Hodges

Alan Hodges
Chairman
Australian IDNDR Coordination Committee

CONTENTS

Section 1



An Introduction to Hazards and Disasters

In this section .....

Hazards and Disasters: Glossary of Key Terms

Atmospheric hazards: Hazards which are associated with our weather and climate: e.g. tropical cyclones, drought and hailstorms.

Biological hazards: Hazards which are caused or spread by plants and animals: e.g. plagues, pests and bushfires.

Disasters: Hazardous events which are bigger, more frequent or happens for longer than would normally be expected, *and/or* involves excessive damage to life and property.

Emergency management: A process which is used in potentially hazardous situations to minimise uncertainties and maximise public safety. It typically involves the stages of hazard analysis, prevention and mitigation, preparedness, response and recovery.

Geological hazards: Hazards caused by processes which operate inside the earth: e.g. earthquakes and volcanoes.

Geomorphological hazards: Hazards caused by processes which occur on the surface of the earth or ocean: e.g. floods, tsunamis and landslides.

Hazard: An event either natural or human-caused which involves a risk of damage to people and property.

Hazard perception: A view which an individual has of a natural or human-made hazard.

Human-caused hazards: Hazards which do not involve natural processes in any major way, but are caused by human activity alone: e.g. oil spills, war, transport accidents.

Natural hazards: Hazards which occur when extreme natural events, such as intense rainfall, very strong winds or earth movement, interact with human activities, such as transport, industry or settlement.

Hazard or Disaster?

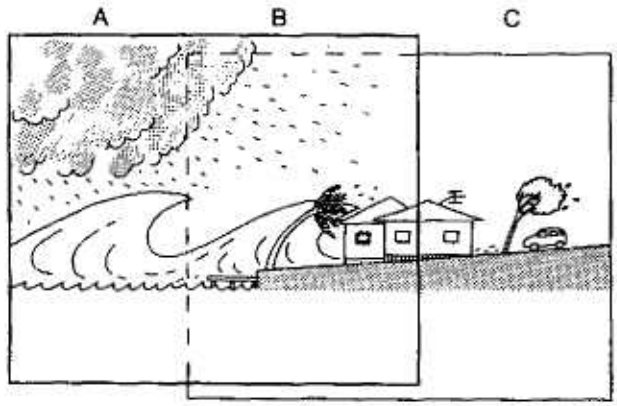


Figure 1: Extreme natural event, natural hazard or natural disaster

HAZARD DATA

- Hazards involve a risk of damage to people and property.
- Natural hazards occur when extreme natural events, such as heavy rain, strong winds or earth movement, interact with human activities, such as transport, industry or settlement (Figure 1).
- 'Human-caused' hazards do not involve natural processes in any major way, but are caused by human activity alone.
- A hazard becomes a disaster when:
  (a) it is bigger, more frequent or happens for longer than would normally be expected;
  and/or
  (b) excessive damage to life and property is involved.

Figure 2: Damage to housing following Cyclone Tracy, Darwin, 1974

Figure 3: The Coode Island fires, Melbourne, 1991

Activities

1 Study Figure 1.
  a Explain what is happening in each section of the sketch.
  b Why is the overlapping section identified as the area where a natural hazard is present?
  c Draw an altered version of the sketch to show that a natural disaster has occurred. Explain the alterations you have made.

2 Would you describe the scene in Figure 2 as a 'natural disaster'? Explain your answer.

3 Study Figure 3.
  a Explain whether you would describe the event shown as 'natural' or 'human-caused'.
  b What additional information would you need to know before classifying the event as a 'hazard' or a 'disaster'?

4 In 1994, major fires swept through forests on the Galapagos Islands, off the coast of South America. A number giant turtles, for which the islands are famous, were killed in the fires, but there was no loss of human life. Would you call such an event a natural disater? Explain your answer.

Classifying Hazards

Figure 1: Duststorm engulfing Melbourne at the end of a major drought, February, 1983

HAZARD DATA

- Hazards (and disasters) can be classified according to how they are caused.
- Natural hazards can be considered in four categories:
  - a *Geological hazards* - those caused by processes which operate inside the earth. e.g. earthquakes and volcanoes.
  - b *Geomorphological hazards* - those caused by processes which occur on the surface of the earth (or ocean). e.g. floods, tsunamis and landslides.
  - c *Atmospheric hazards* - those which are associated with our weather and climate: e.g. tropical cyclones, drought and hailstorms.
  - d *Biological hazards* - those which are caused or spread by plants and animals: e.g. plagues, pests and bushfires.
- Human-caused hazards are those which do not involve natural processes in any major way, but are caused by human activity alone: e g. oil spills, war, transport accidents.

Figure 2: List of hazards which can become disasters

Aeronautical and space debris
Asteroid / comet impact
Avalanche
Blizzard / snowstorm
Bomb threat
Bridge collapse
Building collapse
Bushfire
Carcinogens / mutagens / pathogens
Civil disturbance or riot
Cyclone / hurricane / typhoon
Dam collapse/overflow
Desertification
Drought
Drugs
Earthquake
Economic recession / depression
Electromagnetic radiation
Epidemic
- human (eg AIDS, malaria)
- animal (eg foot andmouth, rabies)
- plant (eg dieback)

Erosion
- soil
- coastal

Famine
Fire (residential, office, factory)
Flood
Fog
Frost / extreme cold / sea ice
Heatwave
Industrial accident / explosion
Landslide / rockfall / mudflow
Mine accident
Nuclear hazards
- war
- power station accident

Oil spill
Ozone depletion
Plague
- animal (eg rabbit, mouse)
- insect (eg locust, sirex wasp)
- plant (eg prickly pear)

Pollution (water, air or land)
- chemical
- oil
- toxic waste
- gas

Resource shortage / depletion
Salination
Sea level rise
Severe storm
- electrical (lightning)
- extreme wind
- torrential rain
- large hail

Storm surge
Subsidence
Terrorism
Transport accident
- air
- rail
- road
- sea

Tornado / waterspout
Tsunami
Utility failure
- power
- pipeline burst (gas / oil)
- water
- communication
- gas / fuel

Volcano
Warfare
- nuclear
- conventional
- chemical / biological

adapted from list by Colin Wilson, Australian Emergency Management Institute, Mt Macedon, Victoria

contd...

Classifying Hazards (contd)

Activities

1 a Would you classify the hazard shown in Figure 1 as *geological, geomorphological, atmospheric* or *biological* ? Give reasons for your answer. How might human activity have contributed to the hazard?

c In 1963, a minor earth tremor set off a rockslide into the Vaiont Dam in northern Italy. The rockslide caused a huge wave of water to overflow the dam wall and flood the valley below. Almost 2000 people drowned. How would you classify this disaster?

2 Using the list in Figure 2 complete the following:

a Find out the meanings of any hazards listed which you are not familiar with.

b Add any others that you can think of to the list in the spaces provided.

c Complete the table below, by classifying the hazards in your complete list under the appropriate headings.

d Did you have trouble fitting any of the hazards into the table? If so, which ones? Explain why they were difficult to classify.

Natural Hazards				**Human-Caused Hazards**
geological	geomorphological	atmospheric	biological	
eg *Volcano*	eg *Flood*	eg *Drought*	eg *Bushfire*	eg *Oil spill*

Find-a-word: Hazards and Disasters

A	V	A	L	A	N	C	H	E	O	E	K	A	U	Q	H	T	R	A	E
H	N	O	I	S	O	R	E	L	I	O	S	E	V	A	W	T	A	E	H
U	B	T	E	N	O	I	T	U	L	L	O	P	R	A	E	L	C	U	N
R	A	Y	E	G	R	U	S	T	S	U	C	O	L	S	H	O	C	K	R
R	N	P	E	M	A	L	I	B	P	L	A	G	U	E	E	E	V	E	L
I	G	H	R	D	O	E	O	M	I	M	B	S	U	I	V	U	S	E	V
C	L	O	Y	W	R	M	U	N	L	A	R	A	R	E	T	H	C	I	R
A	A	O	E	E	B	R	A	V	L	G	I	L	C	E	N	O	Z	O	O
N	D	N	V	I	R	P	I	E	S	M	S	T	S	E	R	O	F	D	N
E	E	E	N	A	A	C	O	N	E	A	B	T	O	Y	L	A	V	A	A
M	S	G	Y	J	D	U	S	T	N	I	A	R	D	I	C	A	N	N	C
O	H	O	B	A	R	T	N	O	O	S	N	O	M	P	Y	A	I	R	L
D	A	M	S	T	P	Y	L	A	C	U	E	E	S	M	O	G	R	O	O
I	H	P	A	R	G	O	M	S	I	E	S	D	R	O	U	G	H	T	V
M	S	P	O	T	E	D	I	L	S	D	N	A	L	I	F	L	O	O	D
A	A	Y	T	I	N	I	L	A	S	E	N	I	M	A	F	L	A	S	H
N	F	A	U	L	T	S	S	M	R	O	T	S	L	I	A	H	E	M	A
U	R	A	B	B	I	T	S	E	L	T	S	A	C	W	E	N	S	E	S
S	U	B	S	I	D	E	N	C	E	A	G	L	A	R	E	S	C	U	E
T	R	O	P	I	C	A	L	C	Y	C	L	O	N	E	E	N	A	C	B

Complete the following and then check your answers by finding them in the puzzle above. Words are hidden forwards, backwards and diagonally.

1 A mass of snow or ice that moves rapidly down the side of a mountain: _ _ _ _ _ _ _ _ _
2 A serious shortage of food often caused by prolonged drought: _ _ _ _ _ _
3 Collapse of the land surface _ _ _ _ _ _ _ _ _ _
4 The Salvation _ _ _ _ is a well known volunteer organisation which often assists disaster victims
5 An air pollutant made up of a mixture of smoke and fog: _ _ _ _
6 _ _ _ _ _ _ _ _ _ _ activity is most common along the plate margins of the earth.
7 A period of prolonged hot weather: _ _ _ _ _ _ _ _
8 A large infestation of pests. _ _ _ _ _ _
9 Bushfires burnt very close to this capital city in 1967: _ _ _ _ _ _
10 Material is ejected from a _ _ _ _ _ _ _ during an eruption.
11 This is a major form of land degradation (2 words): _ _ _ _ _ _ _ _ _ _ _ _
12 This cyclone struck Darwin on Christmas Day, 1974: _ _ _ _ _
13 Violent storm characterised by a funnel-shape and extremely powerful winds: _ _ _ _ _ _ _
14 _ _ _ _ _ _ _ _ _ may pollute the coastline and kill coastal birds and animals (2 words).
15 A tropical cyclone is called a _ _ _ _ _ _ _ _ _ in North America.
16 A _ _ _ _ _ may occur after prolonged heavy rain.
17 State Emergency Service (abbrev): _ _ _
18 The depletion of this substance in the stratosphere leads to increases in UV radiation: _ _ _ _ _
19 Major flooding of this important Australian river occurred in 1956: _ _ _ _ _ _
20 A frequent and costly hazard in Australia, particularly in farming areas: _ _ _ _ _ _ _
21 State Emegency Services are involved in _ _ _ _ _ _ operations.
22 A major environmental hazard affecting air water and land: _ _ _ _ _ _ _ _ _

Find-a-word: Hazards and Disasters (contd)

23 The south-east of Australia is particularly prone to this hazard during summer: _ _ _ _ _ _ _ _
24 Massive wave caused by an earthquake at sea. Often wongly called a tidal wave: _ _ _ _ _ _ _
25 A major pollution problem caused by rain mixing with pollutants in the air (2 words): _ _ _ _ _ _ _ _
26 Salt lake in northern South Australia, which occasionally experiences major floods: _ _ _ _
27 A hazard which causes major destruction in hot wet regions (2 words): _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
28 Radioactive fallout is a major concern if an accident occurs at a _ _ _ _ _ _ _ power station.
29 This hazard involves the downhill movement of solid material: _ _ _ _ _ _ _ _ _
30 These introduced animals are a major pest in Australia: _ _ _ _ _ _ _
31 An north African country which has suffered terrible drought in recent decades: _ _ _ _
32 Australia's worst earthquake occurred in this city in 1989: _ _ _ _ _ _ _ _ _
33 Emergency Management Australia (abbrev): _ _ _
34 The _ _ _ _ Toad is a major pest in Queensland.
35 One of the world's most volcanically active countries: _ _ _ _ _
36 These storms are often associated with heavy thunderclouds: _ _ _ _ _ _ _ _ _ _
37 Insects which swarm in large numbers causing massive crop damage: _ _ _ _ _ _ _
38 Earthquakes send out _ _ _ _ _ waves.
39 Lines of weakness in the land surface along which earthquakes occur: _ _ _ _ _ _
40 Blue-green _ _ _ _ _ has been a major summer problem along the Murray and Darling Rivers.
41 Another major problem along the Murray River: _ _ _ _ _ _ _ _
42 _ _ _ _ storms are often associated with drought.
43 _ _ _ _ _ flooding occurs very quickly and is common in cities.
44 This capital city experienced major flooding in 1974: _ _ _ _ _ _ _ _
45 This instrument is used to record earthquake activity: _ _ _ _ _ _ _ _ _ _ _
46 As well as storing water, _ _ _ _ may also help control floods
47 Asian country which has experienced many disastrous floods, cyclones and storm surges.
48 The magnitude of an earthquake is measured on the _ _ _ _ _ _ _ Scale.
49 This famous European volcano showered ash on Pompeii in AD 79: _ _ _ _ _ _ _ _
50 _ _ _ _ _ banks are built to hold back floodwaters.
51 A tropical cyclone is called a _ _ _ _ _ _ _ in south and east Asia.
52 Thunderstorms, tornadoes and land gales can all be classified as _ _ _ _ _ _ storms.
53 Rainy season in South Asia, often characterised by widespread flooding is called the _ _ _ _ _ _ _ _.
54 Hot, molten rock which flows from a volcano: _ _ _ _
55 A storm _ _ _ _ _ is a large ocean wave whipped up by a tropical cyclone.
56 Australia's _ _ _ _ _ _ areas are most prone to wildfires.
57 Water _ _ _ _ _ _ _ is often used to control fires in inaccessible areas.
58 Tropical cyclones are areas of intense _ _ _ pressure.
59 In a bushfire, when cinders are spread by the wind _ _ _ _ fires may start in new areas.
60 _ _ _ Wednesday was a day of devastating bushfires in Victoria and South Australia.
61 In dryland farming areas, _ _ _ _ rising to the surface may cause serious crop damage.
62 Tall, convex-shaped volcano: _ _ _ _
63 The hill or mountain formed by volcanic activity is called a _ _ _ _.
64 Hot, molten rock beneath the earth's surface: _ _ _ _ _
65 These Australian trees have fire-resistant adaptations: _ _ _ _ _ _ _ _
66 An opening in the earth's crust through which volcanic material flows: _ _ _ _

The remaining letters make a word which describes an important strategy for helping cope with a range of hazards:

_ _ _ _ _ _ _ _ _ _ _

How Hazards and Disasters Vary

Two flood accounts

1 *We had watched the water rise for more than two weeks, and spent days strengthening the levee around the town to protect it from flooding. However, our efforts proved fruitless as the river, fed by continuous heavy rain in the hills, eventually broke through the levee and rushed into town. We only had time to gather a few possessions before we were evacuated by boat down the main street!*

We were flown out of the area, and only returned after the waters had finally receded, 10 days later. It was the biggest flood the town had ever experienced. Everything was covered in mud or waterlogged, as the flood spread across the town and over hundreds of square kilometres of surrounding farmland. While no lives were lost, the damage to property was enormous.

2 *The storm coincided with high tide, whipping up enormous waves. Within minutes the water was lapping our verandah and after about quarter of an hour it was half a metre deep inside the house. We decided to make a run for it. We retreated to a stone shelter about 500 metres inland and watched as about 20 flimsy holiday homes along the shore buckled and collapsed in the surging flood.*

Our area had been inundated several times before, but this flood was the most devastating. 12 people were drowned in the floods and numerous people were injured by falling debris. There was nothing anyone could have done against a flood which struck so quickly and with such force.

Figure 1

HAZARD DATA

Hazards (and disasters) can vary in a number of ways:
- *Cause* - they can be natural or human-caused.
- *Frequency* - some occur more often than others.
- *Duration* - some may be over quickly while others go on for long periods
- *Speed of onset* - some give no warning, while others have a long lead-up period.
- *Area affected* - this may vary from a small area to a whole country or region.
- *Destructive potential* - some cause only minor damage while others may cause massive destruction of life and property.
- *Predictability* - some follow certain patterns, others do not.
- *Controllability* - humans are able to control or modify the impact of some hazards, but not others

adapted from 'Hazards, Disasters and Survival', Natural Disasters Organisation, 1992

Figure 2: A tornado at Northam, Western Australia, 1977

Activities

1 Read the two accounts of flooding in Figure 1, and compare the floods under the following headings:
- cause
- duration
- area affected
- predictability
- frequency
- speed of onset
- destructive potential
- controllability

2 Study Figure 2. Comment on the following features of the hazard shown:
- cause (you may need to research this)
- area likely to be affected
- predictability
- destructive potential.

3 Complete each of the following sentences by inserting the words in brackets in the appropriate place.

An . .. . .. is a natural disaster, while an .... is a human-caused disaster. (earthquake, oil spill)

A ..... is likely to last much longer than an ..... (earthquake, drought)

While humans may have some control over a ....., they are unlikely to be able to control a ... . (volcano, bushfire)

While a . . . is likely to affect only a small area. a ..... . can affect people over a very wide area. (drought, tornado).

Perception of Hazards

Figure 1: Damage as a result of the Newcastle earthquake, 1989

Figure 2: Village in the Ethiopian province of Tingay during the 1985 drought

HAZARD DATA

The word 'perception' refers to the way people 'see' or 'feel about' the world around them. The study of the perception of hazards therefore looks at the different ways that people view a potential hazard and how this influences their ability to prepare, cope and respond. There are a number of reasons why people have different perceptions of hazards. For example:

- *Attitude*- Some people are willing to live with the risk of a major disaster, while others are not.
- *Competing factors* - Many people accept the risk of living in a potential hazard zone, because of the advantages the area offers.
- *Knowledge* - People will perceive a hazard differently if the risk is well-known.
- *Experience* - People's perceptions will be changed once they have experienced a major disaster.
- *Information* - Perception is influenced by how much an individual knows about a particular hazard.
- *Type of hazard* - Hazard perception may be shaped by the different characteristics of individual hazards (eg speed of onset, destructive potential).
- *Customs and beliefs* - Traditional behaviors and beliefs may influence people's feelings about particular hazards.
- *Wealth* - The different abilities of rich and poor people to cope with major hazards is an important influence on hazard perception.

Activities

1 Study Figure 1. Prior to 1989 Newcastle had never suffered major earthquake damage. Explain how how the perceptions that Newcastle residents had of the earthquake risk might have been altered by the 1989 disaster.

2 a Study Figure 2. At the time this photograph was taken only seven of the village's forty-five families remained. The rest had migrated to areas outside of the drought zone. What does this tell you about the villagers' perceptions of the drought hazard?

b How does this compare with perceptions of drought amongst Australian farmers?

c Using examples other than drought, explain why people in poorer countries might perceive hazards differently from those in richer countries.

3 Make a list of the reasons why people continue to live in areas where there is a high hazard risk.

4 Describe how the following people might perceive the hazard risk in their area. Give reasons for their perceptions.

- An Hawaiian farmer living in a volcanically active areas and farming fertile volcanic soils.
- A Californian who lives south of San Francisco, and whose house suffered major damage during the 1991 San Francisco earthquake.
- A Bangladeshi farmer living on a low-lying silt island in the Bay of Bengal, who lost a number of family and friends in the tropical cyclone and coastal flooding of 1991.
- A north Sydney resident, who, as a result of the 1994 bushfires, has adopted a range of strategies for preventing bushfire damage to their home in the future.
- An Indonesian villager who believes that major volcanoes in their area are the homes of gods and spirits.
- An Australian farmer facing long-term damage to their land as a result of overgrazing.

Hazards and Disasters in the Newspapers

Complete the following steps:

1 Collect newspaper reports of hazards - both natural and human-caused - over a set period of time (e.g. one month). Try to use more than one newspaper if possible.

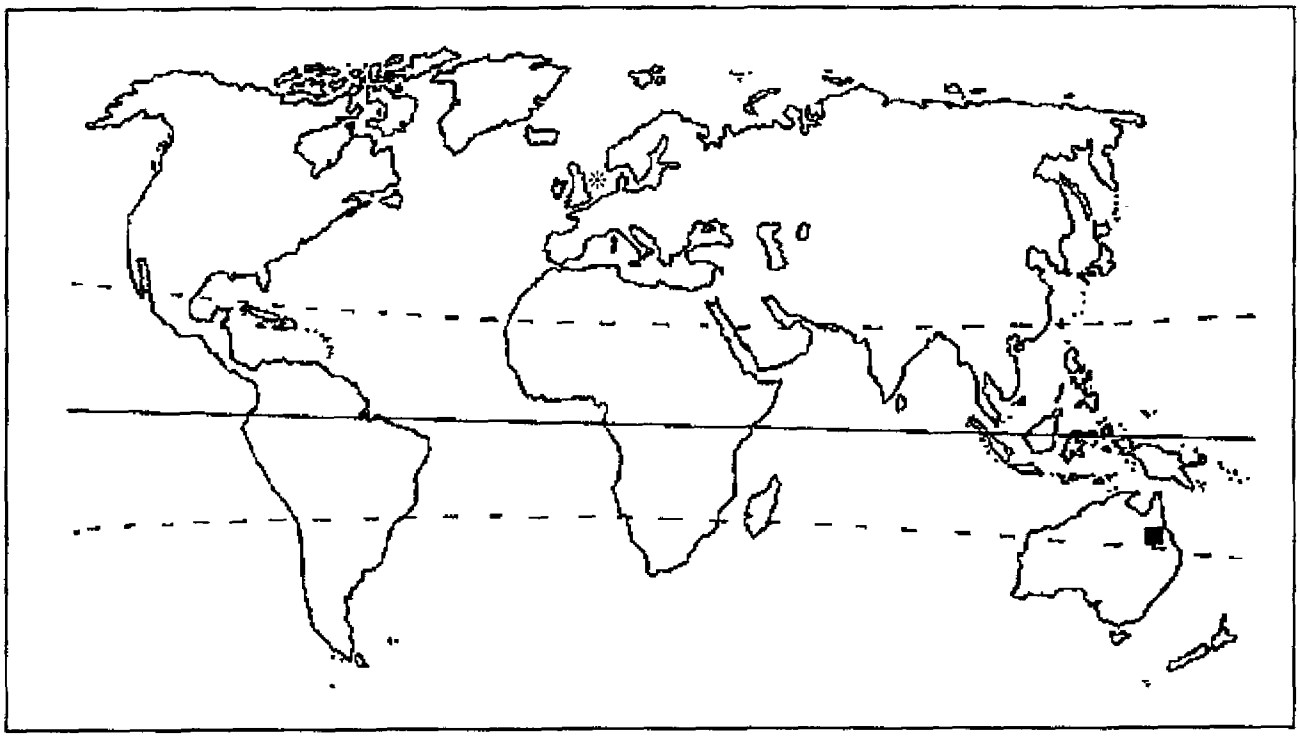
2 Record information about each hazard on the following table.
Note
- Two examples have been provided to help you.
- When one hazard is covered over several days, only record it once on the table.
- If necessary, extend the table below to cover all of the hazards reported.

Newspaper	Date	Local	National	International	Natural / Human-Caused	Effects of Hazard / Disaster
The Australian	*11/2/95*			*oil spill in the North Sea*	*human-caused*	*pollution of beaches, damage to important fish breeding grounds*
Canberra Times	*13/2/95*		*major flooding in north Queensland*		*natural*	*two lives lost, transport routes cut, some loss of livestock*

contd..

Hazards and Disasters in the Newspapers (contd)

3 On the blank map of the world below show the location of each of the hazards that you have listed in your table Use a key to identify each natural hazard Group human-caused hazards into one category.
eg ■ flood - north Queensland
⁕ human-caused hazard - North Sea



5 Using your table and map, answer the following, giving reasons for your answer in each case
a Which type(s) of hazards were most frequently reported?
b Was most coverage given to local, national or international hazards?
c Which continents/countries were given greatest coverage? Which were given least coverage?
d Which hazard category - natural or human-caused - was given greatest coverage?

6 a Select two articles from your collection. Try to choose articles which come from different sources and which deal with different hazards and locations. Analyse each article under the following headings
- length of article
- detail of the hazard provided (eg location, cause, effects, relief operation)
- type and depth of information (eg sensational account, human interest story, geographical explanation)
- use of photographs, maps or other visual information
- any other distinguishing features.

b In your opinion, which of the articles was most effective in terms of
(i) providing factual information about the hazard
(ii) holding the interest of the reader?

Research Assignment: Natural and Human-Caused Disasters

Research

Choose one of the following natural or human-caused disasters for detailed research

- Droughts
- Bushfires
- Floods
- Tropical Cyclones/Hurricanes/Typhoons
- Earthquakes
- Volcanoes
- Landslides
- Acid rain
- Oil spills
- Soil erosion
- Air pollution
- Water pollution

Conduct your research under the following heading:

- What are the *causes* of the disaster?
- What are the *effects* of the disaster on (i) people, (ii) the environment, (iii) the economic structure of the community (eg agriculture, industry, transport, communications) and (iv) the social structure of the community (eg family, health care, education, law and order)?
- What role do *relief organisations* play before, during and after the crisis? Consider voluntary, government and overseas organisations.
- What *prevention* and *mitigation measures* can be taken to stop the disaster from occurring or to minimise its impact?

Your research should involve the following steps.

a *Defining the topic* Working out exactly what the topic requires you to do.
b *Locating information* Using a variety of sources (eg newspapers, books, videos, surveys, interviews) to find information on the topic.
c *Selecting information* Choosing only the information you need, using skills such as skimming, scanning and notetaking.
d *Organising information* Getting notes, statistics, photographs, maps etc into a form which can assist the report writing and creative writing outlined below
e *Presenting your research findings* See the two presentation requirements - report writing and creative writing - outlined below. Presentations should include a bibliography of information sources used.
f *Evaluating your efforts* When you have completed all stages of your research, consider whether you achieved the original aims of the assignment and how you might have improved on your efforts.

Report writing

Using your research findings, write a detailed report on the disaster. This report should be suitable for publication in a newspaper or magazine.

Creative writing

Now complete one of the following creative writing options based on an example of the disaster you have researched.

- *Eyewitness account* Imagine you are a reporter - write an eyewitness account of the disaster.
- *Interview with a survivor* Write a record of an interview conducted with a survivor of the disaster.
- *Memoirs of a survivor* Complete a piece of personal writing as if you had just survivedthe disaster. Say what happened, what you observed, how you survived and how your family and friends were affected
- *Diary of a disaster* Write a series of journal entries to cover your experiences leading up to, during and after the disaster.
- *A day in the life of a relief worker* Imagine you are a relief worker during the disaster. Outline your methods of operation, the equipment and knowledge you use and the services you perform to help care for the victims of the disaster.
- *Poetry writing* Write a poem discussing your experiences and observation during and after the disaster.

Assessment

Your teacher will provide you with details about how your research assignment will be assessed. Make sure you have a clear understanding of these details before proceeding.