

# Earthquake

## NEWCASTLE EARTHQUAKE

The earthquake lesson plan provides teachers and students with an opportunity to investigate the 1989 Newcastle earthquake through individual or classroom activities.

### Objectives

The objective of this lesson plan is to ensure that students are able to:

- ▶ know the steps to take during an earthquake.
- ▶ recall most or all of the information learned on how to protect themselves and survival in an earthquake.
- ▶ understand the causes and effects of earthquakes.
- ▶ be assessed on their learning and knowledge of earthquakes.

### The Newcastle Earthquake

Australia's sixth largest city, Newcastle was devastated by an earthquake at 10.27 am on 28 December 1989.

The earthquake measured 5.6 on the Richter scale and was the first earthquake in Australia that resulted in death and destruction - 13 people died, more than 160 people sustained injury and over 10,000 buildings in Newcastle were damaged.

### Get the facts

Students can get the facts on the Newcastle Earthquake by using these resources:

- ▶ General information of earthquakes and survival
- ▶ Geoscience Australia
- ▶ Earthquake information – University of Queensland (UQ) website
- ▶ Earthquake Centre – USGS website

### Newcastle Earthquake information

- ▶ City of Newcastle website – Newcastle Earthquake
- ▶ Newcastle Earthquake page – All shook up website
- ▶ Jacaranda online – Newcastle Earthquake worksheet

### Take time to investigate!

Students can investigate the earthquake individually, in pairs or groups to find the answers to the following:

1. What is an epicentre? Where was the epicentre in this earthquake?
2. What are the main causes of earthquakes? What was the cause of the Newcastle earthquake?
3. How far away from the epicentre was the earthquake felt?
4. What is the measurement used for earthquakes? How does this scale work?
5. How did the emergency services react to the earthquake?
6. How different would it have been if it wasn't school holidays when the earthquake struck?
7. What else could be done to prevent people from dying in earthquakes?
8. How likely is the Cairns region to be affected by an earthquake? Discuss in your class with your teacher.

## Curriculum links

|     |                             |   |   |
|-----|-----------------------------|---|---|
| F   | Health & Physical Education | ACPPS006: Personal, Social and Community Health; Contributing to healthy and active communities         | Identify actions the promote health, safety and wellbeing   |
| 1   | Science                     | ACSSU019: Science understanding; Earth and space sciences   | Observable changes occur in the sky and landscape   |
| 1   | Science                     | ACSHE021: Science as a Human Endeavour; Nature and development of science                               | Science involves observing, asking questions about, and describing changes in, objects and events                         |
| 1-2 | Health & Physical Education | ACPPS017: Personal, social and community health; Being healthy, safe and active                         | Practise strategies they can use when they feel uncomfortable, unsafe or need help with a task, problem or situation      |
| 1-2 | Health & Physical Education | ACPPS018: Personal, social and community health; Being healthy, safe and active                         | Recognise situations and opportunities to promote health, safety and wellbeing  |
| 1-2 | Health & Physical Education | ACPPS020: Personal, Social and Community Health; Communicating and interacting for health and wellbeing | Identify and practice emotional responses that account for own and other's feelings                                       |
| 2   | Science                     | ACSHE034: Science as a Human Endeavour; Nature and development of Science                               | Science involves observing, asking questions about, and describing changes in, objects and events                         |
| 3   | Science                     | ACSHE050: Science as a Human Endeavour; Nature and development of science                               | Science involves making predictions and describing patterns and relationships   |
| 3-4 | Health & Physical Education | ACPPS038: Personal, Social and Community Health; Communicating and interacting for health and wellbeing | Investigate how emotional responses vary in depth and strength  |
| 4   | Science                     | ACSSU075: Earth and Space Sciences; Nature and development of science                                   | Science involves making predictions and describing patterns and relationships   |
| 4   | Science                     | ACSHE062: Science as a Human Endeavour; Use and influence of science                                    | Science knowledge helps people use and influence to understand the effect of their actions                                |
| 5-6 | Health & Physical Education | ACPPS054: Personal, Social and Community Health; Being healthy, safe and active                         | Plan and practice strategies to promote health, safety and wellbeing  |
| 6   | Science                     | ACSSU096: Science Understanding; Earth and Space Sciences   | Sudden geological changes or extreme weather conditions can affect Earth's surface  |
| 6   | Science                     | ACSHE098: Science as a Human; Nature and development of science   | Science involves testing predictions by gathering data and using evidence to develop explanations or events and phenomena |
| 6   | Science                     | ACSHE100: Science as a Human Endeavour; Use and influence of science                                    | Scientific understandings, discoveries and inventions are used to solve problems that directly affect peoples' lives      |

# My earthquake assignment

## Rock your world with these project ideas!

- 1** Can you find out more information about earthquake waves and seismographs? Use words and diagrams to explain what you find.
- 2** Research the San Andreas Fault and find its location, size, and importance for earthquakes. Was the 1906 San Francisco earthquake related to the San Andreas Fault? What were some features of this Californian quake that made it into the history books?
- 3** Research the earthquake in Armenia, 1988, or the earthquake in Kobe, Japan, 1995.
- 4** Refer to a geological map to discover what rocks and soil types your house/school/work place is built on.
- 5** How close is Cairns to the nearest volcanic area? How might this affect our region's chance of withstanding an earthquake? Talk to your teacher about how you would like to present your findings to the class. Make sure your information includes the following:
  - ▶ the location of earthquake (you can use maps to show this)
  - ▶ the intensity and damage caused
  - ▶ some survival stories
  - ▶ some interesting facts
  - ▶ the lessons learned and some of the steps that could be taken for the future (How did/could the region prepare better for another similar event?)

### Source:

Cairns Regional Council earthquake information, available via: <http://www.cairns.qld.gov.au/community-environment/natural-disasters/earthquake>