

We Will Rock You

Science, Social Sciences and English - Level 3

The Learning Context:

In this unit students will investigate natural disasters and explore how people can be better prepared to deal with them.

During the first stage of the unit students will brainstorm a range of natural disasters that occur both in New Zealand and across the world, eg: earthquakes, volcanic eruptions, tsunamis, floods, thunderstorms, lightening strikes, and extreme wind conditions. Students will select one type of natural disaster that they wish to study in further depth. They will gather a range of information about their chosen topic using the internet and library, and by interviewing key people (eg: seismologists, meteorologists, civil defence officers, experts from the Earthquake Commission, etc). During this research phase students will explore the causes and effects of natural disasters, and identify the steps that people have taken to protect themselves against them. Students will then collate and organise the information that they have learned about natural disasters and they will create a presentation using ICT tools to share their knowledge with other students.

During the next stage of the unit students will identify the types of natural disasters that could occur in their own environment and investigate the readiness of their community in dealing with these. Students will work together to identify and carry out a project which will make their school and/or homes better equipped to deal with a local disaster. Students may decide to:

- produce an educational video for students in their school outlining earthquake procedures, or
- create a school map that highlights evacuation meeting points and display these in all classrooms, or
- create pamphlets describing what items should be in family survival kits, or
- construct and sell survival kits to families in their local community, or
- develop/enhance their school's survival kit and/ or emergency contact systems, etc.

Approximately 15 lessons

Achievement Objectives:

SCIENCE CURRICULUM: Level 3:

Participating and Contributing:

Students will use their growing science knowledge when considering issues of concern to them. They will explore various aspects of the issue as they make decisions about possible actions.

Planet Earth and Beyond: Earth Cycles: Appreciate that water, air, rocks and soil, and life forms make up our planet and recognise that these are also Earth's resources.

SOCIAL SCIENCES CURRICULUM: Level 3:

- Understand how groups make and implement rules and laws.
- Understand how people make decision about access to and use of resources.

ENGLISH CURRICULUM: Level 3:

Speaking, Writing and Presenting:

Ideas: Select, form, and communicate ideas on a range of topics.

Structure: Organise texts, using a range of appropriate structures.

Enterprising Attributes:

- Generating, identifying and assessing opportunities.
- Working with others and in teams.
- Identifying, recruiting and managing resources.
- Planning and organising.
- Collecting, organising and analysing information.
- Communicating and receiving ideas and information.

Teachers to observe and collect evidence of these enterprising attributes in action.

Resource Requirements:

- Internet sites, eg:
www.civildefence.govt.nz,
www.survive-it.co.nz, www.eq-iq.org.nz,
www.civildefence.co.nz
- Library books
- Decision Making Grid
- KWL Chart
- Various experts on disasters, eg: seismologists, meteorologists, civil defence officers, etc.
- Local council, ICT tools, eg: digital camera, video camera, computers, etc.

Learning Outcomes:

Students will be able to:

1. Explain how and where natural disasters occur.
2. Describe the impact that natural disasters can have on earth's resources, including people, animals and the environment.
3. Identify ways that people are protecting themselves and their environment against natural disasters.
4. Communicate their research findings on a selected natural disaster in a clear and logical way using ICT tools to enhance their presentations.
5. Work co-operatively to carry out a project which will make their school and/or homes better equipped to deal with a local disaster taking responsibility for an allocated role.

Teaching and Learning Sequence

NB: Teachers are encouraged to gauge the prior knowledge of their students before implementing each unit so that they can provide personalised and meaningful learning opportunities. The teaching and learning sequence provided in each unit is to be viewed as a guide only. Teachers will need to adapt this sequence to meet the needs of their students, school and community.

The future focus issues of citizenship and enterprise can be explored during this unit. Community safety is the responsibility of all citizens, however creating the awareness of the risk and what people should do to manage that risk often gets left to a few community groups. Students will be enterprising in identifying the gaps in which they will focus their campaign, and carry that through. Failure to plan for these risks, can impact on the sustainability of a community if disaster strikes, and it is not resourced and managed.

The numbered activities listed below are learning steps rather than lessons. Teachers may choose to combine two or three learning steps into one lesson. Alternatively, they may spread one learning step out over several lessons. This will be largely dependent on students' prior knowledge and their subsequent learning needs.

Getting Started:

The teacher asks students to pretend that a major earthquake has occurred in their local environment and that they have to spend at least two nights at school because roads and houses have been so badly damaged. Students investigate the feasibility of this situation as they determine where they could sleep, what they could eat and drink, where they could wash, how they will keep warm, how they will communicate with their caregivers, how they will obtain required medicines, how they will receive news from the outside world, etc. Students draw conclusions about the readiness of their school to deal with an emergency situation.

The unit and focus for learning is described to the students. Explain that students will:

- investigate the causes and impact of natural disasters
- explore what people can do to prepare for emergencies
- take part in a class project to make their school and/or homes better equipped to deal with a natural disaster.

The class creates a timeline for the unit with key dates for critical actions. This process will make the teaching sequence of the unit explicit to the students.

LINKS TO BES Best Evidence Synthesis

5. Quality teachers create effective and sufficient learning opportunities.

<p>Exploring and Sharing:</p> <ol style="list-style-type: none"> 1. The students list all the different types of natural disasters that they know of. They then complete a KWL chart for each type of disaster to record their prior knowledge and wonderings. Students then categorise/classify disasters and the control that people have over them. 2. Students select one type of natural disaster that they would like to study in further depth. The teacher explains that they will be gathering information about their selected disaster and creating a presentation using ICT tools to share their knowledge about the cost – human and financial and whether it is a short term or long term cost. Students may work independently or collaboratively on this task. 3. The teacher and students list success criteria for the presentations using the unit's learning outcomes as a guide. Suggested criteria could include: presentation describes how and where the natural disaster occurs; presentation includes information about the impact that natural disasters have on people and the environment; presentation describes how people prepare for natural disasters, presentation is clear and logical, presentation demonstrates effective use of ICT tools, etc. Excellence 4. Students generate a range of questions about the impact of their selected natural disaster that they will try to answer through the research process (the second column of the KWL charts will be useful in this process). The teacher reminds students of the success criteria designed at step 3 to ensure that students are gathering appropriate information. Possible questions could include: Where does this type of disaster occur? How frequently do they happen? What causes them to happen? How severe can they be? What impact do they have on people, animals and the natural environment? How do people protect themselves and their environment against natural disasters? How well do people's emergency management strategies assist them? What agencies exist to help prepare for natural disasters? etc. Planning and Organising. Community and participation 5. The teacher and students identify and source a range of resources that could be used to answer the research questions. Resources could include: Local Government, internet sites, library books, TV documentaries, news articles, etc. Students may also consider inviting an expert to school (eg: a council worker who deals with emergency management, a seismologist, a meteorologist, a civil defence officer, etc) to share their knowledge about natural disasters and to answer questions. They may also choose to interview experts via the telephone or e-mail. Identifying, recruiting and managing resources, Planning and Organising. 6. Students carry out research on their chosen natural disaster including what rules, laws, and other emergency support is provided by local government. Collecting, organising and analysing information, Identifying, recruiting and managing resources. Learning Outcomes 1, 2 and 3. 7. Students organise their collected information into different categories (eg: scientific facts, examples of natural disasters, survival strategies, etc) and create a presentation using ICT tools or other relevant media, to share their knowledge. NB: The teacher may need to spend several lessons exploring ICT tools before this learning step. Collecting, organising and analysing information, Communicating and receiving ideas and information, Planning and Organising. Learning Outcome 4. 	<p>3. Quality teachers recognise and build on students' prior knowledge.</p> <p>10. Quality teachers involve students in the process of setting specific learning goals.</p> <p>8. Quality teachers ensure tasks and classroom interactions provide support and guidance to facilitate student learning.</p>
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18. Students work co-operatively to carry out their project. Working with others and in teams, Identifying, recruiting and managing resources, Communicating and receiving ideas and information. LO 5. Integrity
19. Students celebrate their achievements by sharing their learning and actions with other classes at a school assembly or by writing an article for the local newspaper, etc.

Reflective Questions:

Exploring new knowledge and skills

- How do natural disasters occur and what impact do they have on people and the environment?
- What steps do people take to protect themselves against natural disasters?
- What types of natural disasters can occur in your own community?
- What steps should people take to be ready for these kinds of natural disasters?
- How prepared are you to deal with a natural disaster? What actions have you taken?
- What actions do you still need to take to be better prepared for a natural disaster?
- How well did we work as a class to carry out our selected project?
- How well did I carry out my role/responsibility?
- Would we do anything differently next time?

Exploring what it is to be innovative and enterprising

- What step/s were you doing when you used each of the Enterprising Attributes? Break each attribute into its separate words and refine your answers.
- How could you improve on using the Enterprising Attribute/s for next time?
- Can you transfer this learning to your other topics?
- This unit links knowledge and skills from Science. Social Sciences and English. How has each of these subjects contributed to your knowledge and how has that knowledge been used in this learning? How did this help you to be innovative in this unit?

Exploring further future focus issues

- What else might you explore now about the risk of community disasters?
- How has the local council been innovative and enterprising in managing local risks? eg: flood protection schemes
- How can you help manage the risk of a community disaster in the future?
- Have communities been 'lost' due to natural disasters?

Possible Assessment Ideas/Activities:

English: Teachers assess the written questionnaires at step 11.

Social Science: Teachers assess students' research skills and understanding of the rules, laws and emergency procedures that are in place to protect people, or to minimise risks from natural disasters. Step 6 & 8

Science, Social Sciences and English: The teacher assesses each student's presentation on a natural disaster to determine how well they understand and communicate their research findings. Points to consider: Did students describe why their selected disaster occurs and what impact it has on people and the environment? Did students recognise that people put strategies in place to minimise and/or prevent the destruction that natural disasters can cause? Did students use their own wording/phrases in the presentations? Did students organise their information in a coherent and logical way? How well did students use sound, written text and images in their presentations? How entertaining and eye catching were the presentations? Etc.

The teacher may also choose to use any of the following Science ARBs which measure students' scientific understanding of volcanoes, volcanic eruptions and other types of natural disasters:

PE 8029
PE 8027
PE 8019
PE 8012
PE 8009

Decision Grid

<div>Choices</div> <div>Criteria</div>						
Total						

KWL Chart

What I know	What I want to know	What I have learnt