

Making a Volcano

How can we make a volcano model and use it to educate others?

- Organise students into groups according to which New Zealand volcano they wish to become an expert on.
- Gather information about that volcano from a variety of sources such as:
 - The Volcano Fact Sheets
 - Books
 - Websites

<http://www.geonet.org.nz/volcano/our-volcanoes/index.html>

<http://www.gns.cri.nz/what/earthact/volcanoes/nzvolcanoes/index.html>

<http://www.geonet.org.nz/volcano/activity/index.html>

<http://www.volcanolive.com/newzealand.html>

http://volcano.oregonstate.edu/volcanoes/volc_images/australia/australia.html

<http://www.teara.govt.nz/en/volcanoes>

<http://csl.doc.govt.nz/parks-and-recreation/national-parks/tongariro/features/central-north-island-volcanoes/>

The difficulty of this task can be adjusted to suit student ability, those needing more of a challenge could be assigned a volcano where no fact sheet is supplied so that more extensive independent research is required.

- Complete information worksheet
- Choose construction and eruption method
- Complete planning worksheet.
- Collect materials and construct model

Students who choose to create a stratovolcano such as Ruapehu or Taranaki could be challenged to show the layers within the cone built up by successive deposits of lava and tephra. They could also show that the lava deposits are concentrated near the cone while tephra, landslides and lahar material spread much further.

- Present model to audience.

Explain the location, size, appearance, structure, history, potential hazards, environmental and social consequences of the volcano.

Presentations could be oral, written or digital (possibly including photos or video clips)

Record the eruptions with a video camera if possible so repeated eruptions are not necessary. Watching the eruptions in slow motion is also worthwhile.

Learning Intentions

- Gather relevant information from a variety of sources
- Choose a realistic method of creating and erupting a volcano model
- Organise materials and work cooperatively to construct the model
- Become the class experts on a particular volcano
- Use the model created to explain the history and features of the real volcano

Success Criteria

Students can

- Create and erupt a model volcano
- Choose relevant information about their chosen volcano
- Educate others by presenting their model and information to an audience.

Resources

- Volcano Information Worksheet
- Volcano Construction Worksheet
- Construction and eruption materials

Making a Volcano

How can we make a volcano model and use it to educate others?

This lesson enables individual students or groups to research, create and ‘explode’ their own volcano.

By investigating websites, the volcano fact sheets and other information sources, students should be able to plan and make a model that represents a New Zealand volcano.

They can then show their understanding of that volcano, its history and potential future hazards by presenting their model and related information to the class. This should give each group a chance to become the experts on a particular volcano.

There are many alternatives to the classic vinegar and baking soda eruption and neither the models nor the eruptions should need elaborate or expensive materials. The science of the model is more important than the art, especially when models may be damaged by eruptions! Long processes such as paper mache should be avoided in favour of faster alternatives such as clay, dough, plasticine, cardboard, cake, mud or sand.

There are a large number of websites that give visual or written instructions for creating volcanoes. Students could be directed to a limited range of models or given the opportunity to choose their own method after exploring all the possibilities.

<http://www.sciencebob.com/experiments/volcano.php>

http://www.mbmj.mtech.edu/kids/make_a_volcano.htm

<http://www.youtube.com/watch?v=qGnHQkiyoys>

<http://www.youtube.com/watch?v=mWZW4FeHHbU&feature=channel>

<http://www.youtube.com/watch?v=yLzBZepVx7A&feature=related>

Encourage students to be creative and think of their own eruptive methods.

Tephra could be created by cooking popcorn and ‘exploding’ it out the vent.

An ash explosion could be flour blown with a straw.

Blowing into a thick mud (or milo) ‘crater lake’ could create a lahar.

Layering of a cone volcano could be achieved with alternate bread and spread (such as peanut butter or honey) layers. Heated honey or diluted peanut butter could be blown or poured out of the vent to create new lava layers.

For summaries and diagrams of New Zealand’s volcanoes see

<http://www.teara.govt.nz/en/volcanoes/1/1>

Curriculum Links

Planet Earth and Beyond

Physical World

| Science Concept | NOS |
|---|-----------------------------|
| PE-Earth Systems L3/4 –develop an understanding of what makes up our planet PW-Physics Concepts L1/2 –explore physical phenomena such as movement, forces and heat. | Understanding about Science |
| | Investigating in Science |
| | Communicating in Science |

Assessment

Opportunity for assessment of key competencies:

Managing self

Participating and contributing

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Name:

Group members:

Volcano Information Worksheet

| | |
|---|--|
| Volcano Name | |
| Maori Name | |
| Type of volcano | |
| Location and height Closest town or city. | |
| Eruption History -age of volcano -first historic eruption -latest eruption | |
| Eruption materials | |
| Date of last eruption | |
| Other hazards | |
| How the model resembles the real volcano | |
| Other information including new vocabulary | |

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Volcano Construction Worksheet

| | |
|--|--|
| Volcano | |
| Construction materials required for volcano | |
| Materials required for eruption | |
| Cross section diagram of model showing eruption mechanism. | |
| Materials required for eruption | |
| Risk management plan (how to keep the audience safe, where to erupt and how to clean up) | |
| Modifications made during construction and reasons for changes | |
| How the model and eruption are similar to the real volcano | |