Teacher Resource

Volcanic Activity

Focus Questions

Discuss the BTN story as a class and record the main points of the discussion. Students will then respond to the following:

1. What do you know about volcanoes? Discuss in pairs before watching the BTN story.
2. What ingredients does Jack use in the volcano experiment in the BTN story?
3. What are the 3 main layers of a volcano from inside to outside?
4. What is another name for magma?
5. There are no active volcanoes in Australia. True or false?
6. In which ocean can you find the Ring of Fire?
7. What is the Ring of Fire? Describe using your own words.
8. What affect did the eruption of Mount Nyiragongo have on the environment and people?
9. Name three facts you learnt watching this story.
10. Illustrate an aspect of the Volcanic Activity story.

Activity: Class Discussion

Before watching the BTN Volcanic Activity story, facilitate a class discussion, using the following questions to get the discussion started...

- How would you describe volcanoes? Use a mind map to record your responses.
- What does a volcano look like?
- Where can you find volcanoes?
- What else do you know about volcanoes? Brainstorm and record your thoughts as a class.
- What do you want to learn about volcanoes?

After watching the BTN story hold a class discussion. Use a mind map to record your student's responses.

EPISODE 16
8th June 2021

KEY LEARNING
Students will locate active volcanoes around the world and identify the hazards caused by volcanoes. Students will investigate the different layers of volcanoes and describe their features.

CURRICULUM
Science – Year 6
Sudden geological changes and extreme weather events can affect Earth's surface.

Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions.

Scientific understandings, discoveries and inventions are used to solve problems that directly affect peoples' lives.

Scientific knowledge is used to solve problems and inform personal and community decisions.

Science – Years 5 & 6
With guidance, pose clarifying questions and make predictions about scientific investigations.

Science – Year 7
Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge.

Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed.

Activity: Glossary

Students will brainstorm a list of key words that relate to the BTN Volcanic Activity story. Below are some words to get them started. Students will create their own class glossary of scientific keywords and terms. Consider creating a photographic glossary and students can use photos and/or diagrams to help explain each keyword.

MAGMA	VOLCANOLOGY	TREMOR
DORMANT	ERUPTION	LAVA FLOW

Further investigation: Tricky words

Students will choose additional keywords and terms to add to their class glossary that are tricky. For example, fissure, geothermal, igneous rock, Ring of Fire, pyroclastic flow or plate boundary. Students will find a definition and explain to their classmates what the keywords mean.

Activity: Research project

After watching and discussing the BTN Volcanic Activity story, what questions do students have and what are the gaps in their knowledge? The following KWLH organiser provides students with a framework to explore their knowledge on this topic and consider what they would like to know and learn.

What do I know?	***What do I want to know?***	***What have I learnt?***	***How will I find out?***

Act like a scientist

Students will start to think like scientists and develop their own question/s for inquiry, collecting and recording information from a wide variety of sources. Students may develop their own question for inquiry or select one or more of the questions below.

- How many active volcanoes are there worldwide? Locate some of Earth's active volcanoes on a map and describe their proximity to Australia. Draw the Ring of Fire on your world map.
- Are there any volcanoes in Australia? Locate these volcanoes on a map of Australia. Choose one to research in more detail.
- How can you tell if a volcano is active or dormant? Explore and describe the features of an active and dormant volcano.
- Can we predict when a volcano will erupt? Explore further.
- What impact can volcanic eruptions have on people and the environment? Consider the negative and positive effects.

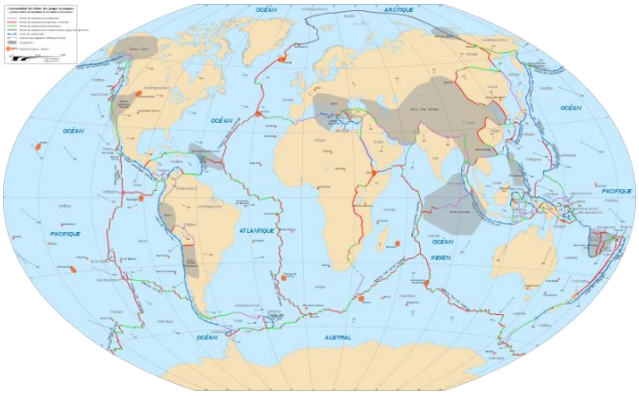
- What are the different layers of a volcano? Draw a cross section of a volcano showing the following features: crust, mantle, crater, magma chamber, magma, ash, cloud, vent. Explain some of the features of each layer.
- What is the biggest volcano on Earth? Investigate how it was formed.

Activity: Geography

On a map of the world students will locate and highlight the major active and dormant volcanoes (including the volcanoes mentioned in the BTN Volcanic Activity story). Students will then respond to the following:

- Circle nearby cities and towns to each of the volcanoes you mark.
- Highlight the Ring of Fire on your map.
- What do you notice about the location of the volcanoes in relation to the Ring of Fire?

Hands on activity – Tectonic plates



Most of the world's volcanoes are found around the edges of tectonic plates, both on land and in the oceans.

As a class explore the 15 major tectonic plates on Earth and draw and label them on a world map. Using an enlarged version of the tectonic plates map, create a class jigsaw puzzle of tectonic plates. Paste your map onto foam or thick card and cut along the tectonic plate lines. Sit the pieces in a small inflatable pool or trough of water and observe how they move.

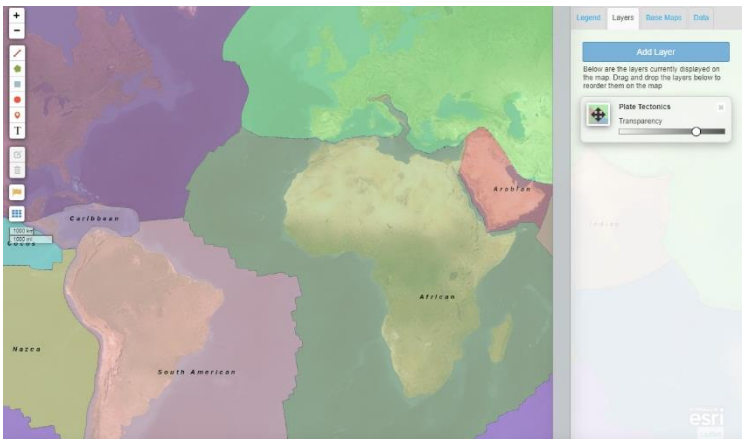
Students will then respond to the following questions about tectonic plates:

- How do the pieces interact with one another? Are they still or constantly moving?
- What direction and speed are they moving?
- Investigate how your jigsaw puzzle experiment reflects how tectonic plates move.

Alternatively, students can use this Interactive Map Maker (National Geographic) to explore the connections between tectonic plates and volcanoes.

Using the interactive map students will add and label the following:

- Major tectonic plates
- 5 or more active volcanoes
- 5 or more dormant volcanoes
- The Ring of Fire



National Geographic – Interactive MapMaker

Activity: Science experiment

Provide students with the opportunity to think and behave like volcanologists. In pairs or small groups, students will build a volcano, by using these step-by-step instructions or watching this instructional video on how to make a volcano. Students will use the following investigation framework before, during and after their investigation.

Before starting this activity, introduce students to what a science investigation is and why we do them. Think of words that relate to "science investigation" and then find and explain their meanings. Here are some concepts to get you started: variable, observation, diagram, fair test and prediction.

Before the investigation

Before starting this experiment, respond to the following:

- What am I going to investigate?
- What do I think will happen? Make a prediction. Why do I think this will happen?
- What steps do I need to follow to investigate my prediction?
- What materials and equipment will I need? Make a list or draw and label each item.
- What variables am I going to keep the same? For example, think about using different materials to change the shape of the volcano or adding more bi-carb soda.
- What things may affect what you are investigating?
- Draw a labelled diagram to illustrate the investigation setup.
- Describe what you will be doing in each stage of the investigation.

Investigation

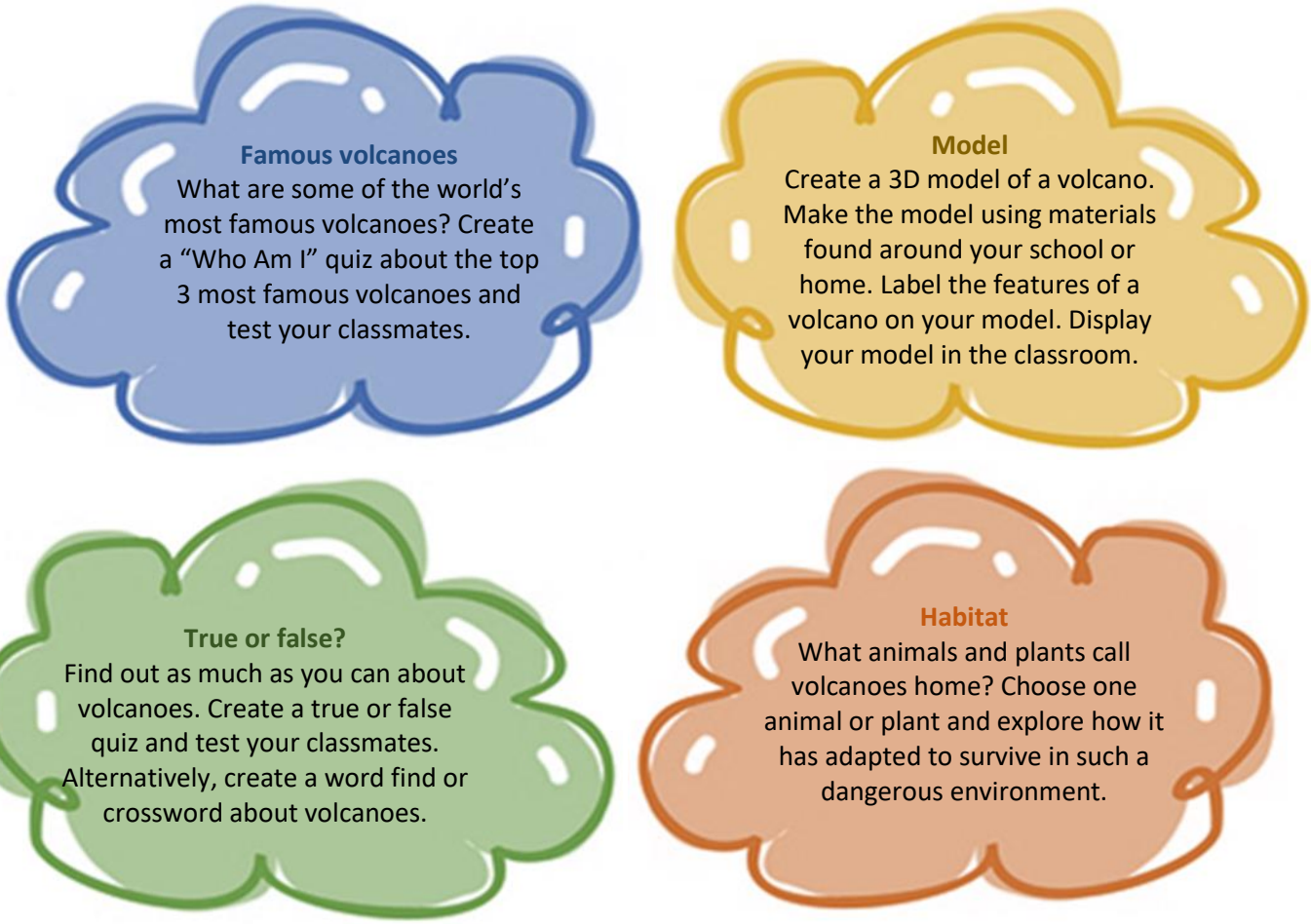
- Use these step-by-step instructions (Questacon) or watch this instructional video (National History Museum) to make your own bi-carb soda volcano. You may want to film your experiment.
- Record your observations. How high did the eruption go? How far did the mixture spread?
- Try using different amounts of bi-carb soda, water or vinegar. How does it change the eruption?

After the investigation

- Write a sentence that summarises what happened.
- Draw a labelled diagram of your observations to show what happened.
- Draw a labelled diagram of a volcano including Earth's layers (crust, mantle, outer core and inner core). Explain some of the features of each layer.
- Was this what I expected to happen? Yes or no.
- Why do I think this happened? Use science ideas to explain. What gas is produced when bicarb is mixed with vinegar. Is this the same gas that is produced when a volcano erupts?
- What problems did I experience when I was doing the investigation?
- One important fact I learned when doing this investigation was…
- What I found surprising was…
- What I would do differently next time is…

Activity: Choose a project

Individually or in small groups, students will choose one of the following projects to work on and then present their findings to the class.



Useful Websites

- Volcano Warning – BTN
- Volcanoes Explained – BTN
- Hawaii Volcano – BTN
- Everything you need to know about volcanoes – Newsround
- Volcano – Geoscience Australia
- What makes volcanoes erupt? – TedEd
- Volcano Facts – National Geographic Kids
- Curious Kids: Why do volcanoes erupt? – The Conversation