GEOSCIENCE FOR LEAVING CERTIFICATE GEOGRAPHY

Continuing Professional Development Course 2021

VOLCANIC ACTIVITY IN THE IRISH CONTEXT LESSON PLAN

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Geological Survey
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Ireland | Éireann

An Roinn Comhshaoil, Aeráide agus Cumarsáide
Department of the Environment, Climate and Communications

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Lesson plan: Volcanic activity

Contents

Lesson plan: Getting to know volcanoes and looking at volcanic activity in the Irish Context

Links to curriculum

Core unit 1: Patterns and Processes in the Physical Environment

- Statement 1.3 examines landforms influenced by the operation of the tectonic cycle. Students will study volcanic activity, sedimentary processes and the impact of folding, faulting and doming.

Learning Outcomes

Students should know:

- The positive and negative effects of volcanoes on society and planet.
- The different volcanic cone structures.
- The two types of lava emitted from a volcano.
- All materials emitted from a volcano.
- The different parts of a volcano
- How to identify rocks (basalt) by appearance?
- Ireland's tectonic journey

Keywords and definitions

Cinder volcano	A volcano made of cinders with steep sides formed by violent eruptions.
Composite volcano	A volcano made of layers of ash and acidic lava formed by explosive eruptions; sides are not as steep as a cinder cone. Also known as a stratovolcano, strato means layers.
Dome volcano	A volcano made of acid lava with steep sides formed by violent eruptions, looks like an upside-down bowl.
Shield volcano	A volcano made of basic lava with gentle slopes and a wide/broad base.
Cinders	Small volcanic bombs - the size of peas.
Bombs	Huge rocks from a volcano.
Pumice	Lava mixed with air causing it to fill up with air bubbles.
Basic lava	Low in silica and very runny.
Acidic lava	High in silica and is pasty.
Pyroclastic flows	A mixture of hot lava, ash and volcanic gases that travel down a volcano at great speeds
Lahar	A volcanic mudflow.

Learning activities

Students will:

- Complete the retrieval exercise on previous knowledge.
- Learn about volcanoes and volcanic activity in Ireland through a PowerPoint presentation.
- Participate in a group activity to construct models of the volcanic cones.
- Engage in talk and discussion on the different types of volcanic cones.
- Present their models to the class.
- Participate in a group activity to identify rocks.
- Engage in talk and discussion on the appearance of rocks.
- Evaluate their work by completing 3-2-1 Exit ticket.

Extra info and files

	Web Address	Brief Description
1.	https://www.nationalgeographic.com/science/article/mass-extinction	5 mass extinctions
2.	https://scied.ucar.edu/learning-zone/how-climate-works/mount-tambora-and-year-without-summer	Mount Tambora
3.	https://www.bbc.co.uk/bitesize/guides/z8p9j6f/revision/1	Volcanoes
4.	https://blogs.unimelb.edu.au/sciencecommunication/2020/09/21/fire-and-bikes-how-a-volcano-sparked-the-invention-of-the-bicycle/	Volcanoes & the bike
5.	www.gsi.ie	Maps Spatial Resources
6.	www.gsi.ie	Your County

Resources provided

- Teacher Lesson Plan
- PowerPoint to guide lesson
- Photocopiable Activity 1 Worksheet
- Photocopiable Activity 2 Worksheet
- 3-2-1 Exit ticket

Materials needed

- Play dough – 2 colours per student
- Rock samples
- GSI Map - Bedrock Geology of Ireland
- Wipes and hand sanitiser

Teacher Notes

Activity one: Guess what type of volcano

Learning Intentions	At the end of the activity students will: • Know the four types of volcanic cones • Understand the formation and structure of various volcanoes • Provide examples
Materials required	Play dough – 2 colours Photocopiable Worksheet
Activity explanation	Students get into groups of 4. Students are provided with 2 different colours of play dough – one representing lava, the other cinders. Using this worksheet, student selects one of the volcanic cones and makes their own. Students discuss the differences and similarities between the types of volcanic cones. The class tries to guess what volcanic cone the student has made.
Composite/stratovolcano	Use 2 different colours of play dough Made of layers of cinders and lava Steep sides Tallest volcanic cone
Shield	Gentle sides Broad base Largest and flattest volcanic cone
Cinder	Use 2 different colours of play dough Loosely arranged cinders Not very high Smallest and steepest
Dome	Steep sides Looks like an upturned bowl

Methodologies

- Talk and Discussion Q&A
- Active learning
- Investigative approach
- Group Work
- Keywords accompanied by a set of Notes
- Visual examples

Assessment

- Teacher observation and discussion on the construction of volcanic cones and completing worksheet on rocks.
- Teacher questioning – talk and discussion
- Worksheet

- Review keywords at the end by writing out what they have learned on a new page.
- Self-assessment – Exit ticket

Linkage and Integration

Linkage

Art- model construction
Maths – statistics
S.P.H.E. – working together co-operatively
English- oral language through talk, discussion, and presenting their work

Differentiation

- Teaching style
- Support
- Task

Photocopiable

Activity 1: Constructing a volcanic cone

Materials required	Play dough – 2 colours Worksheet
Activity explanation	1. Get into groups of 4. 2. You are provided with 2 different colours of play dough – one representing lava, the other cinders. 3. Discuss in the group and select one of the volcanic cones to make. Make sure that each volcanic cone is selected in the group. 4. Using the play dough, make a model of your chosen volcanic cone. 5. After completion, discuss the differences and similarities between the types of volcanic cones in your group. 6. Then present your model to the class for them to guess what volcanic cone you have made. 7. Continue to make each of the other volcanic cones in your group.
Composite/stratovolcano	Use 2 different colours of play dough Made of layers of cinders and lava Steep sides Tallest volcanic cone **Example:**
Shield	Gentle sides Broad base Largest and flattest volcanic cone **Example:**
Cinder	Use 2 different colours of play dough Loosely arranged cinders Not very high Smallest and steepest **Example:**
Dome	Steep sides Looks like an upturned bowl **Example:**

Photocopiable

Activity 2: Identifying rocks

Rocks	Basalt	Cinders	Pumice	Ash
Place the rock sample into the correct space				
Type of Rock				
Colour				
Density				
Bubbles present				
Hard or soft				
Uses & why				