

Mountains, Volcanoes and Earthquakes

Lesson 1: Mount Everest

| Locational Knowledge | Place Knowledge | Key questions and ideas | Teaching and learning activities | Resources |
|--|--|---|--|--|
| Where is Mount Everest? (In what continent is it located? In what mountain range is it located? In what countries are Mount Everest and The Himalayas located?) | <p>Pupils develop contextual knowledge of the location of globally significant places</p> <p>Interpret a range of geographical information</p> <p>Communicate geographical information in a variety of ways, including... writing at length.</p> | <p>Where is Mount Everest located?</p> <p>How high is Mount Everest?</p> <p>What is the landscape like?</p> <p>How do the features of the landscape change at altitude?</p> <p>What is the weather like? How does this change?</p> <p>What are conditions like for people climbing the mountain?</p> <p>Who were Edmund Hillary and Tenzing Norgay?</p> <p>How did they reach the summit of Mount Everest?</p> <p>What did they experience during their ascent?</p> <p>What did they do when they reached the summit?</p> | <p>STARTER: Show pupils the photograph of Tenzing Norgay at the summit of Everest (with no contextualised information from the class teacher.) Pupils identify enquiry questions: who, what where, when, why? What is the evidence?</p> <p>MAIN ACTIVITY: Either, pupils write a diary entry, either as (Sir) Edmund Hillary, or Tenzing Norgay after their successful ascent. The diary should include geographical vocabulary, alongside facts and information about the mountain and the men's endeavour, not just express excitement.</p> <p>Or, pupils complete a 'Mount Everest Facts' sheet using the <i>Mountain Template</i></p> <p>PLENARY: Pupils to share their diary entries with the class.</p> | <p>Interactive: Locate Mount Everest using Google Earth.</p> <p>Downloads: Everest (PPT) Mount Everest factsheet for teachers PDF MSWORD Mountain template PDF MSWORD Examples of pupils' work (PDF)</p> |
| Human and Physical Geography | Geographical Skills and Fieldwork | | | Assessment opportunities |
| <p>Describe and understand key aspects of physical geography, including... mountains</p> <p>Describe and understand key aspects of human geography, including ... land use</p> | Use atlases, globes and digital/computer mapping to locate countries and describe features studied | | | <p>Baseline assessment from the starter activity.</p> <p>Formative assessment from diary entries.</p> |

Web links: For background information on the geography of Mount Everest and the first ascent. <http://www.unlockingthearchives.rgs.org/themes/everest/>
You might also want to look at: <http://www.rgs.org/OurWork/Schools/Teaching+resources/Key+Stage+1-2+resources/Mount+Everest+and+its+ascent.htm>

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Lesson 2: Mapping Mountains

| Locational Knowledge | Place Knowledge | Key questions and ideas | Teaching and learning activities | Resources |
|--|---|---|--|---|
| [In the United Kingdom] name and locate...key topographical features including hills, mountains... | <p>Understand geographical similarities and differences through the study of [the] ...physical geography of a region of the United Kingdom...</p> <p style="text-align: center;">Aims</p> <p>Interpret a range of geographical information including maps...</p> <p>Communicate geographical information ...through maps</p> | <p>Name and locate the seven highest peaks in each continent.</p> <p>Name and locate the mountains of the UK.</p> <p>What is a mountain? Is all high land a mountain?</p> <p>To understand what an OS map represents.</p> <p>To locate Snowdon on an OS map.</p> <p>To understand the key features of an OS map including:</p> <ul style="list-style-type: none"> • Compass directions • The key • Four and six-figure grid references • Grid squares • Scale <p>To interpret an OS map to answer questions about a locality: Snowdon.</p> | <p>STARTER: Follow-Me Loop Card activity based on the teaching and learning from the previous lesson on Everest.</p> <p>The class teacher asks the class a question. Each pupil has a card with an answer. Only the pupil with the correct answer can read that answer aloud to the class. In turn that pupil then reads a pre-given question to the class for someone else to answer. By the end of the game every pupil will have followed on from another by reading their answer and asking their question. The loop will be complete because the class teacher has the final answer.</p> <p>MAIN ACTIVITY: Pupils will complete the <i>Mapping Snowdon</i> worksheet.</p> <p>PLENARY: Pose a question to the class to extend their understanding and interpretation of the OS map of Snowdon: 'Can I see the Clogwyn railway station from Glaslyn (lake)?'</p> | <p>Downloads: Mapping mountains (PPT) Factsheet for teachers PDF MSWORD Lesson 2 Loop Card Starter PDF MSWORD Mapping Snowdon worksheet PDF MSWORD Mapping Snowdon answer sheet PDF MSWORD OS Snowdon Map Extract (JPEG)</p> <p>Other Resources Needed: OS Explorer Map OL17 (This is not provided).</p> <p style="text-align: center;">Assessment opportunities</p> <p>Formative assessment of prior learning from the starter activity.</p> <p>The worksheet will cover the skills covered in the lesson: four and six-figure grid references; the use of the key; four and eight points of a compass; directions; the use of scale.</p> |
| Human and Physical Geography | Geographical Skills and Fieldwork | | | |
| Describe and understand key aspects of physical geography, including mountains... | <p>Use maps...and digital mapping to locate countries...</p> <p>Use the eight points of a compass, four and six-figure grid references, symbols and key (including the use of Ordnance Survey maps) to build their knowledge of the UK...</p> | | | |

Web links: You may also like to subscribe to <http://digimapforschools.edina.ac.uk/cosmo/home>

Mountains, Volcanoes and Earthquakes

Lesson 3: The Formation of Mountains

| Locational Knowledge | Place Knowledge | Key questions and ideas | Teaching and learning activities | Resources |
|---|--|--|--|--|
| <p>Using maps to focus on ... North and South America, concentrating on ... key physical characteristics</p> <p>Aims</p> <p>Understand the processes that give rise to key physical ... geographical features of the world, how these are interdependent and how they bring about spatial variation and change over time</p> <p>Interpret a range of geographical information</p> <p>Communicate geographical information in a variety of ways</p> | <p>Understand geographical similarities and differences through the study of physical geography of a region ... within North and South America</p> | <p>To understand more about the structure of the earth.</p> <p>To understand the role of plate tectonics in forming mountains.</p> <p>To understand that mountains can be formed in different ways.</p> <p>To understand the formation of three types of mountain: Fold Mountains, Fault Block Mountains and Dome Mountains.</p> <p>Can pupils name mountains exemplifying each formation?</p> <p>To understand that mountains change over time.</p> | <p>STARTER: 'Just a Minute': Pupils to speak for one minute without hesitation, repetition or deviation (using factual information and correct vocabulary) on the topic of Everest and the first ascent and/or Mapping Mountains?</p> <p>MAIN ACTIVITY: Pupils draw and annotate diagrams of the three main types of mountain formation (Fold, Fault Block and Dome).</p> <p>PLENARY: Pupils to peer assess their partner's work. Pupils can nominate their partner for praise for the accurate use of geographical vocabulary and detail. Do they have any suggestions for improvement?</p> <p>Then, show interactive clip of the supercontinent Pangea. Can pupils' use their knowledge of plate tectonics to explain what happened? (That a single land mass broke apart to form our current continents.) After, follow the link to see how the today's political borders fit with Pangea.</p> | <p>Downloads:</p> <p>The formation of mountains (PPT)</p> <p>Factsheet for teachers PDF MSWORD</p> <p>The formation of mountains differentiated worksheet PDF MSWORD</p> <p>The formation of mountains differentiated answer sheet PDF MSWORD</p> <p>Examples of pupils' work: mountain formations (PDF)</p> <p>Examples of pupils' work: South America plate side and front (JPEG x 2)</p> <p>Assessment opportunities</p> <p>The starter activity assesses prior learning. Formative assessment from the diagrams. The complexity of the diagrams and annotations will differ according to pupils' understanding. HA pupils will be expected to show the stages of mountain formation over time. Labels will be detailed, accurate and some written explanation may also accompany the work. MA pupils will complete accurately annotated diagrams and LA pupils can use the worksheet supplied.</p> |
| Human and Physical Geography | Geographical Skills and Fieldwork | | | |
| <p>Describe and understand key aspects of physical geography, including...mountains</p> | <p>Use maps ... to locate countries and describe features studied</p> | | | |

Web links: http://education.sdsc.edu/optiputer/flash/pangea_4.htm

Mountains, Volcanoes and Earthquakes

Lesson 4: Volcanoes

| Locational Knowledge | Place Knowledge | Key questions and ideas | Teaching and learning activities | Resources |
|---|--|--|---|---|
| Using maps to focus on ... North and South America, concentrating on ... key physical characteristics | <p>Understand geographical similarities and differences through the study of physical geography of a region ... within North and South America</p> <p>Aims</p> <p>Understand the processes that give rise to key physical ... geographical features of the world, how these are interdependent and how they bring about spatial variation and change over time. Interpret a range of geographical information. Communicate geographical information in a variety of ways.</p> | <p>To understand more about the structure of the earth.</p> <p>To understand the role of plate tectonics in forming volcanoes.</p> <p>To understand that volcanoes come in many shapes and sizes, but primarily occur at the boundary between tectonic plates.</p> <p>To understand the difference between Constructive, Destructive and Transform plate boundaries.</p> <p>To understand why and how a volcanic eruption happens.</p> <p>To understand the structure of a volcano and be able to recognise this in cross section.</p> | <p>STARTER: 'Around the World' challenge- see the Volcanoes Lesson Plan for details.</p> <p>MAIN ACTIVITY: <i>Either</i> draw and label a diagram showing the cross section of a composite volcano.</p> <p><i>Or</i> in pairs or small groups make a 3d cross section of a volcano using colour-appropriate plasticine. Annotate the key features using small labels attached to cocktail sticks. This activity will offer peer support for lower ability pupils.</p> <p>As an extension or homework activity pupil could cut out and glue their own composite volcano using the links provided.</p> <p>PLENARY: What have we learned today? Give each pupil a post-it note. They should write, or draw, one piece of information they have learned today. Pupils then stick their post-it note on a wall/whiteboard. As a class did we remember everything?</p> | <p>Downloads: Volcanoes (PPT) Volcanoes Factsheet for teachers PDF MSWORD</p> |
| | | | | Assessment opportunities |
| Human and Physical Geography | Geographical Skills and Fieldwork | | | |
| Describe and understand key aspects of physical geography, including... mountains, volcanoes | Use maps...and digital/computer mapping to locate countries and describe features studied | To be able to name and locate some of major volcanoes in North and South America and the UK and Ireland. | | The starter activity assesses prior learning. In the main activity, higher ability pupils will be expected to have more detailed and accurate labels. Their diagrams or model will also show more of the key structural features of a volcano. In the modeling activity, higher ability pupils may choose to base their model on a specific volcano and make accompanying landscape features. |

Web links: For an interactive map of the world detailing the major tectonic plates, volcanoes and earthquakes <http://www.geolsoc.org.uk/Plate-Tectonics>
Other links are provided in the Lesson Plan and Factsheet.

Mountains, Volcanoes and Earthquakes

Lesson 5: Volcanoes: A Suitable Home?

| Locational Knowledge | Place Knowledge | Key questions and ideas | Teaching and learning activities | Resources |
|---|---|--|--|---|
| Using maps to focus on Europe... North and South America, concentrating on ... key physical and human characteristics, key topographical features... and land-use patterns; and understand how some of these have changed over time. | <p>Understand geographical similarities and differences through the study of ... a region of the United Kingdom, a region in a European Country and a region within North and South America</p> <p>Aims Communicate geographical information in a variety of ways including through... writing at length</p> | <p>To understand why people live on or near volcanoes.</p> <p>To understand that volcanoes produce useful minerals and that these can be extracted.</p> <p>To understand that volcanic soils are fertile and good for agriculture.</p> <p>To understand the importance of geothermal energy.</p> <p>To understand that the volcanic landscape and environment can be important for tourism.</p> <p>To understand the dangers of living on or near volcanoes.</p> | <p>STARTER: Spot your teacher's mistakes! Use the mislabeled diagram of a cross section of a composite volcano. As an extension- can they correctly label the diagram?</p> <p>MAIN ACTIVITY: Pupils write a postcard home having visited a volcanic locality. This postcard should include a description of the key features of the volcano. Pupils can then draw the picture on the front of the postcard- which should be relevant. HA pupils should be expected to include more of the geographical detail specific to the chosen volcano in their writing. Their design for the front of the postcard will be more complex, including a picture of the volcano and its surrounding landscape, a map showing its location, and/or how the benefits of volcanic activity for the region.</p> <p>PLENARY: Volcano Tennis. In pairs pupils take it in turns to say, "Did you know that..." and then give one piece of information or one fact about volcanoes from the lesson. The Tennis Champion is the pupil who runs out of information last.</p> | <p>Interactive: Locate volcanoes using Google Earth.</p> <p>Downloads: Volcanoes: A Suitable Home? (PPT) Factsheet for teachers PDF MSWORD</p> <p>Links: Other links are provided in the Lesson Plan</p> |
| | | | | Assessment opportunities |
| | | | | Formative assessment of the content of the postcard according to the accuracy and the level of detail in the writing and picture(s). |
| Human and Physical Geography | Geographical Skills and Fieldwork | | | |
| <p>Describe and understand key aspects of physical geography, including volcanoes...</p> <p>Describe and understand key aspects of human geography, including... types of settlement and land use, economic activity... and the distribution of natural resources including energy, food, minerals...</p> | Use maps... and digital/computer mapping to locate countries and describe features studied | | | |

Web links: You may like to read an interview with Sarah Henton, a graduate student, at the Alaska Volcano Observatory, University of Alaska, who researches volcanoes: <http://www.rgs.org/OurWork/Schools/Geography+in+the+News/Ask+the+experts/Volcanoes+and+volcanology.htm>

Mountains, Volcanoes and Earthquakes

Lesson 6: Earthquakes

| Locational Knowledge | Place Knowledge | Key questions and ideas | Teaching and learning activities | Resources |
|---|---|---|---|--|
| Using maps to focus on ... North and South America, concentrating on ... key physical characteristics | <p>Understand geographical similarities and differences through the study of physical geography of a region ... within North and South America</p> <p>Aims</p> <p>Understand the processes that give rise to key physical ... geographical features of the world, how these are interdependent and how they bring about spatial variation and change over time</p> <p>Interpret a range of geographical information</p> <p>Communicate geographical information in a variety of ways</p> | <p>What is an earthquake?</p> <p>To understand where earthquakes happen.</p> <p>To understand the role of plate tectonics in the formation of earthquakes.</p> <p>To understand that earthquakes have different magnitudes and these impact differently.</p> <p>To be able to locate California and the San Andreas Fault.</p> <p>To understand the significance of the San Andreas Fault on the landscape and people of California.</p> <p>To understand the potential dangers of the San Andreas Fault in the future.</p> | <p>STARTER: Show a picture of the after effects of the earthquake in Folkestone, Kent, on 28/04/07 (magnitude of 4.3). Do not contextual the information. Pupils identify enquiry questions: who, what where, why? What is the evidence? After discussion, introduce theme of lesson.</p> <p>MAIN ACTIVITY: Pupils will design a board game. This can be in the style of Monopoly, Snakes & Ladders or one of their own devising. To progress in the game players will need to correctly answer questions on earthquakes. See the Lesson Plan for more details.</p> <p>PLENARY: 'Let's be Seismologists!' The class teacher defines the effects of an earthquake. From the evidence, pupils have to deduce its measurement on the Richter Scale.</p> | <p>Downloads: Earthquakes (PPT) Factsheet for teachers PDF MSWORD Japan Earthquake Case Study PDF MSWORD Examples of children's work 1 (PDF) Examples of children's work 2 (PDF) Examples of children's work 3 (PDF) Examples of children's work 4 (PDF) Examples of children's work 5 (PDF)</p> <p>Assessment opportunities</p> <p>Formative assessment of the content of the board game according to the depth of geographical knowledge and understanding in the questions and decorations.</p> |
| Human and Physical Geography | Geographical Skills and Fieldwork | | | |
| Describe and understand key aspects of physical geography, including... earthquakes... | Use digital/computer mapping to locate countries and describe features studied | Additional Extension: To understand the events of the 2011 earthquake and tsunami in Japan. | | |