

Introduction

Rocks (which shares some features with *Zoos*, a resource from the ASE CD ROM *Can we; should we?*) is a PowerPoint template that pupils use to produce their own ICT presentation based on the ways in which the different types of rock are formed. This is approached through reference to specific websites, which are accessed through hyperlinks in the PowerPoint template.

The websites give information about volcanoes, the three main types of rock formation and the rock cycle. Pupils are expected to use the information from these websites to answer questions in the template, thus preparing their own presentation, which can also be turned into a hard copy by using the tools in PowerPoint to put six slides onto one side of A4.

A PowerPoint presentation consists of a series of slides that can include images and/or text. More advanced presentations may also include sounds and movie clips. Pupils select information from a resource document and insert this text into their presentation. They select relevant images provided on the PowerPoint template and use these to illustrate their presentation. They can also insert information that they have researched from other sources. This activity should be accessible to a wide range of abilities.

Note that the questions asked of pupils are also provided as a Word file. Thus the exercise could be done using Word rather than PowerPoint. The advantage of PowerPoint is that it means that the answers have to be shorter and there is less opportunity for cutting and pasting text directly from the website.

Running the activity

Pupil familiarity with PowerPoint varies considerably, depending on the ICT curriculum across school and their own individual experience. Arrange pupils in groups, preferably pairs, depending on the number of computers you have available. You could encourage pupils to work with a partner who is more confident with ICT if they feel daunted, but generally pupils learn the basics for using PowerPoint very quickly. The presentation template has deliberately been kept very simple to facilitate this. An Introduction page follows these teacher notes. Use it as an OHT, or copy the text into a new PowerPoint slide, and show it via a digital projector to illustrate to pupils how they will give their presentation.

This activity should be run with access to the Internet for each group of pupils, although if this proves to be problematic then the information can be downloaded in advance and either given out as a hard copy or placed in a folder which can be accessed by each computer.

Pupils may also scan in photographs if you have the necessary equipment and ICT support. Details of how to import images from the Internet are included on the pupil W/S *Designing your presentation*. This W/S also explains how to change the order of slides, create new slides in the presentation, type in and edit text, etc.

Pupils produce their presentation. This should take one – two lessons depending on lesson length. Encourage pupils who progress quickly through their presentation to enhance their slides with further illustrations. Many are available through clipart, particularly if they have access to the Internet. Ideally presentations should be made using a digital projector onto a screen or white board. If this is not available the alternative is to print the slides onto overhead transparencies. The transparencies and ink required to do this for a whole class would be fairly costly.

The pupils should follow the instructions on the first slide to produce a hard copy of their work and this hard copy is the main aim of the lesson. Given the very structured nature of the questions on the slides, it will probably be the case that many of the pupils' presentations will be very similar and at some stage during the lesson you will need to decide whether or not it is appropriate that everyone should actually present their work although early finishers *could* present their work on the extension task to the rest of the group.

More ideas

You might use this exercise as a longer project where pupils could use the conclusions from their practical work activities to add more information to the presentation. As well as the suggestions available within the rest of this resource you can find suggestions on practical activities at:

<http://www.bbc.co.uk/education/rocks/rockcycle.shtml>

<http://www.earthscienceeducation.com/>

Learning outcomes

- Select relevant information from more than one source
- Develop ICT skills to communicate information
- How cooling affects crystal size
- Spectacular rock formations are a result of cooling in particular conditions
- Volcanic activity can have a severe effect on the environment
- Improved literacy skills through reading for understanding and writing to communicate

Prior learning

Pupils should be familiar with making crystals and the fast and slow cooling of Salol

Where the activity fits in

QCA Unit 8H *The rock cycle*

Skills

Communication, ICT.

Questions on the slides and suggested answers:

1. Introduction

The aim of this presentation is to try and tell the story of rocks. It is easy to forget that the rocks are not permanent. They are made and broken down in a cycle. Through this PowerPoint you should try to tell the story of rocks; the processes that form them and change them, some of their properties and what rocks can tell us about the earth.

Use the questions on the slides that follow this one to create a PowerPoint that tells this story. To access the necessary information, click on 'info'. This takes you straight to a relevant website.

On each slide, delete the questions and substitute your answers. If these do not fit on one slide, change the font size. Make sure you answer in full sentences (include the question in the answer).

To print your work

Delete this slide and all the pictures (unless you use a colour printer, you will not be able to read the text)

Click on 'file', 'print preview', 'print what' then 'Handouts (6 slides per page)'

Ask permission and then print your fact sheet.

2. Eruptions [info](#)

- ◆ What do volcanoes tell us about the inside of the Earth? That the inside of the Earth is very hot. [Note that, although the website doesn't actually say this, it gives the impression that the mantle is molten. The mantle is almost entirely solid, but where there is increased heating, increased amounts of water or reduction in pressure, it can partially melt to form magma – which being less dense than the surrounding rocks, rises.]
- ◆ Where do we find most volcanoes? On the ring of fire around the edge of the Pacific Ocean.
- ◆ What information can be used to forecast if a volcano is about to erupt? The seismic record, the chemical nature of the gases being emitted, changes in the slope of the land around the volcano.

3. Edinburgh's Volcano [info](#)

- ◆ Where is Arthur's Seat? Edinburgh.
- ◆ Of what is it the remains? A basalt lava plug, the remains of a Carboniferous volcano.
- ◆ From what type of rock is it made? Basalt.
- ◆ How long ago was it formed? 335 million years ago
- ◆ What caused it to be clearly exposed? Glaciation.
- ◆ What must the Edinburgh area have been like when it was formed? A description of a volcanic eruption expected.

4. Volcanoes [info](#)

- ◆ List some good things about volcanoes.
 - ◆ Volcanic areas can provide us with energy
 - ◆ The areas around volcanoes can be very fertile and good for farming
 - ◆ Volcanic rock can be used in building
 - ◆ Volcanic eruptions helped in the production of the Earth's atmosphere
 - ◆ Volcanoes can be a source of income through tourism
 - ◆ Volcanic activity can be a source of mineral wealth (it is not strictly the volcanoes themselves, but the hydrothermal activity associated with them).

5. Sedimentary Rocks and Fossils [info](#)

- ◆ What are fossils? The preserved remains or traces of ancient living things.
- ◆ Why are fossils useful? They can help us to find out more about the history of the earth and the way that living things have evolved.
- ◆ How do fossils come to be in sedimentary rocks? Sedimentary rocks are made up of layers of sediment, living things can be trapped and preserved in these layers.

6. Metamorphic Rock [info](#)

- ◆ What is metamorphic rock? It is rock that has been formed from other rocks by heat and/or pressure.
- ◆ How is slate formed? Slate is formed when shale is subjected to heat and pressure.
- ◆ What is slate used for? Slate is often used for roofing.

7. Rocks in the Graveyard [info](#)

- ◆ Take a virtual tour of the graveyard.
- ◆ In the graveyard you should be able to find an example of each of the three types of rock- igneous, sedimentary and metamorphic. List them.
 - ◆ Igneous – Granite, Dolerite
 - ◆ Sedimentary – Limestone, Sandstone
 - ◆ Metamorphic – Marble
- ◆ What properties of rock should you think about before using them in a graveyard? Their appearance, how hard-wearing they are, and how easy they are to get.

8. How Are Rocks Formed [info](#)

- ◆ How are igneous rocks formed? Igneous rock is formed by the cooling of magma, the molten rock inside the earth.
- ◆ How are sedimentary rocks formed? Sedimentary rock is formed by layers of earth being squashed together.
- ◆ How are metamorphic rocks formed? Metamorphic rocks are formed when igneous or sedimentary (and metamorphic) rocks are squashed and heated.

From *The Rock Cycle* slide:

Igneous Rocks [info](#)

- ◆ Add a photo of igneous rock in the box to the left.
- ◆ In this box list some of the properties of igneous rocks.
 - ◆ They are formed from molten rock called magma.
 - ◆ Igneous rocks are made up of interlocking crystals which form when the magma cools and becomes solid.
 - ◆ When magma becomes solid underground it has taken a long time to cool and so the crystals have had time to grow to a large size.
 - ◆ When magma comes out of the ground from a volcano it is called lava. This cools quickly and so the crystals are small in size.
 - ◆ Because of the way they are formed, igneous rocks never have any fossils in them.

Metamorphic Rocks [info](#)

- ◆ Add a photo of metamorphic rock in the box to the left
- ◆ In this box list some of the properties of metamorphic rocks
 - ◆ Metamorphic rocks are formed when igneous or sedimentary rocks are changed by heat or pressure, or both.
 - ◆ Metamorphic rocks are formed by the movement of the Earth's plates when mountains are formed. [Note that the site says that metamorphic rocks are formed from igneous or sedimentary rocks (correct) but then goes on to say that they are changed sedimentary rocks – it should say that they are changed sedimentary and igneous rocks. The site also says that slate is formed from shale and that gneiss is made from 'clay-type rock'. What it fails to realise is that shale is a clay-type rock. If rocks containing clay (eg. shale, mudstone, clay) are metamorphosed, they form slate first, with greater heat and pressure, schist is formed and finally gneiss forms. Gneiss can also be formed by the metamorphism of granite.]

Sedimentary Rocks [info](#)

- ◆ Add a photo of sedimentary rock in the box to the left
- ◆ In this box list some of the properties of sedimentary rocks
 - ◆ Sedimentary rocks are formed from fragments of weathered rock.
 - ◆ Sediments build up due to the action of water (rivers and seas) and wind. These sediments get compressed and harden forming sedimentary rocks.
 - ◆ Because of the way they are formed, sedimentary rocks sometimes have fossils in them. -