

What was it like to be there – in the rocky world?

Bringing the formation of solid rock to life – by imagining yourself there when it formed

The 'What was it like to be there?' rocky questions

Bring a rock into the classroom that has lots of clues of how and where it formed. Then ask the class a series of questions to get them to 'feel' what it was like to be there when the rock was being formed. Some classes might need much more help than others to take them back to the past – but these are good trigger questions for all.

If you were there when this rock was being formed:

- *Could you stand up?*
- *What would you need to survive?*
- *What might you see?*
- *What might you hear?*
- *What might you taste, smell?*
- *What might you sense?*
- *What might you be feeling? - scared? - happy? - amazed?*

A 'What was it like to be there?' rocky example

For a coral limestone, formed in an environment like the one in the picture, some of the answers might be as follows.



- *Could you stand up?* Yes - the sea bed is hard, but it is very lumpy and uneven and you might

cut your feet. Water currents probably wouldn't be strong enough to knock you over.

- *What would you need to survive?* You would be in shallow water a few metres deep – so you would need a snorkel or diving gear.
- *What might you see?* Coral reef seas are usually quite clear – so you might see corals growing through the water and coloured fish as well. When you surfaced, you might see low tropical islands with lush green vegetation growing on them – like tropical islands today. Depending on the age of the rock, you might see a pterosaur soaring in the sky or spot a huge marine reptile swimming nearby.
- *What might you hear?* Below water, if using diving gear, you'd hear your own breathing. At the surface you might hear waves on a nearby reef or possibly, depending on the age of the rock, bird cries.
- *What might you taste, smell?* The water would be salty sea water. There is not much smell under water or at the surface.
- *What might you sense?* You'd feel the warm tropical water going past your skin as you swam, and the hard lumpy seabed with your hands or feet.
- *What might you be feeling? - scared? - happy? - amazed?* If you were an experienced diver, you'd probably be enjoying this tropical undersea paradise. If not – you might be quite scared ...

More rocky examples are given below – but use your own imagination to try to visualise what it really might have been like to be there.

Scuba diver and sponges, Cane Bay wall, by Clark Anderson/Aquaimages. This work is licensed under the Creative Commons Attribution ShareAlike License version 2.5: <http://creativecommons.org/licenses/by-sa/2.5/>

The back up

Title: What was it like to be there – in the rocky world?

Subtitle: Bringing the formation of solid rock to life – by imagining yourself there when it formed.

Topic: Asking questions relating to all the senses to try to bring past environments of the formation of rocks to life.

Age range of pupils: 8 – 80 years

Time needed to complete activity: 15 minutes

Pupil learning outcomes: Pupils can describe what a rock-forming environment might be like, by reference to all their senses.

Context: Bringing the formation of solid rock to life, by asking trigger questions as in the examples below.

A red-coloured dune sandstone specimen with clear cross bedding



Feel the sand dunes: by Horizon, <http://www.flickr.com/photos/horizon/> You are free to copy, distribute, display, and perform the work http://creativecommons.org/licenses/by-nc-nd/2.0/deed.en_GB

- *Could you stand up?* The photo shows you could, although you might slide down the steeper slopes.

- *What would you need to survive?* In these hot dry conditions, you'd need lots of water.
- *What might you see?* Sand dunes all around with little or no vegetation or other signs of life.
- *What might you hear?* The whining of the wind across the dunes.
- *What might you taste, smell?* The gritty sand would get into your teeth – but there's not much to smell out here
- *What might you sense?* In red sand dune areas it is often very hot in the day and cold at night.
- *What might you be feeling? - scared? - happy? - amazed?* You might be enjoying the wide open barren country, as long as you knew you were going back to a comfortable place to spend the night!

A lava specimen with gas bubbles



Volcanologists take samples of molten lava for study at the Hawaiian Volcano Observatory. Photo ID: h6iw7b Image Courtesy United States Geological Survey; Image source: Earth Science World Image Bank <http://www.earthscienceworld.org/images>

- *Could you stand up?* You can stand up on lava when it has solidified – but don't try standing on molten lava!
- *What would you need to survive?* If you were close to the red hot lava, you would need heat-protective clothing.
- *What might you see?* The flowing lava would be red or orange hot. Solidified lava is usually black or grey – so you would see a desolate black/grey landscape around you, with no plants for colour.
- *What might you hear?* If a lava fountain is erupting nearby, you might hear the roar. If the lava did flow into trees, you'd hear crackling as they bust into flames.
- *What might you taste, smell?* There would be a sulfurous smell in the air, and you might smell burning vegetation too. There's not much to taste out here.
- *What might you sense?* If the breeze was in your direction, you might feel great wafts of heat.
- *What might you be feeling? - scared? - happy? - amazed?* This is an amazing desolate place, where new land and landscape is being created before your eyes.

A granite specimen, with obvious crystals

- *Could you stand up?* The rock was molten when it formed – so no standing up in a liquid!



Granite: from <http://www.earthscienceeducation.com/virtual-rock-kit/index.htm>

- *What would you need to survive?* Granite crystallises from magma several km underground and at temperatures around 800°C - so you'd need to be in a sub-magma vehicle that could stand great pressure (probably a sphere) and very high temperatures.
- *What might you see?* If the vehicle had heat-proof windows, the magma would be white hot – but you couldn't see through the magma – it would be opaque.
- *What might you hear?* The heat insulation of the sub-magma vehicle would keep out any sound as well as heat.
- *What might you taste, smell?* Insulated from the magma, you wouldn't taste or smell anything.
- *What might you sense?* If the insulation and refrigeration weren't good – you'd feel the heat. If your vehicle had mechanical arms, they might 'feel' crystals forming in the liquid magma – more and more as the magma cooled down.
- *What might you be feeling? - scared? - happy? - amazed?* You'd be very scared. Your future would be bleak. When your magma solidified into granite, you'd be 'frozen' inside, as a xenolith ('foreign rock').

Following up the activity: You can use the 'What was it like to be here?' questions on most rocks. Try: a graptolitic shale, a coal with plant fossils, a river conglomerate, a volcanic ash.

Underlying principles: This approach applies the Principle of Uniformitarianism, that the 'present is the key to the past', by using our experiences of the world today and applying them to the past, using evidence preserved in the rocks.

Thinking skill development: A wide range of imaginative and creative skills are used in trying to 'bridge' our current experiences of life into the past.

Resource list: An excellent imagination.

Useful links: Photographs of a wide range of modern environments can be found on the internet.

Source: Devised by Chris King of the Earthlearningidea team.

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