

Learning about rocks

Natural or manufactured

A P 15 min

Students are given a range of materials such as rocks, soil, tap water, table salt, crude oil, sand, pebbles, gravel, roofing slate, concrete, brick, steel nail, china mug etc. Students must divide them into three groups "natural", "manufactured from natural materials", or "made from manmade materials". Some items fit clearly into one category but others such as tap water can be argued about. Then discuss how mankind has altered the original rock and ask if the students can think of any raw material which does not come from underground (for wood and other plant derived materials the nutrients have come from the ground).

Names of common rocks

Pa F 10 min

Students are given clues and must fill in the rock name. I use this to show students who have never studied Geology before that they already actually know quite a few rock names.

Sorting Rocks

A P 5 min

The aim of this activity is to get students to look carefully at the rock samples. They are supplied with labelled examples of sandstone, limestone, chalk, clay, coal, granite, basalt, slate, schist and marble. Students should sort the rocks into groups based on some characteristic e.g. colour, grain size, shininess, crumbliness etc. They should be able to state the basis they used. They should then try to sort them in another way using different criteria. They should not sort them into igneous, metamorphic and sedimentary or use those terms.

Which rock is which?

A P 10 min

The purpose of this activity is to get students to look carefully at the samples. They are provided with numbered samples of some common rocks and they must match those to descriptions. The descriptions should avoid colour terms which make the choice obvious and should concentrate on texture instead.

Using a key

A P F 2 min per sample

Students use a key to identify rock samples. A simple key will only work for a small number of rock types and they need to be fairly standard samples. Check your samples work with the key before presenting it to students.

Granite and sandstone

A P 5 min

Students describe as many differences as possible between granite and sandstone including what happens when each is put in water. Shap granite and Penrith sandstone are the best for the comparison.

Describing rocks

A P 5 min per sample

Students describe labelled samples of common rocks using appropriate terminology.

Sandstone and limestone

A P F 10 min

Students test calcite and quartz with acid and by scratching with a nail and then must identify samples of limestone and sandstone.

Potato test

A P 2 min

A potato and a pebble of the same size and shape are put in separate bags. Students must say how they know which is which (density and hardness).

Rock cycle

Pa F 10 min

Students are given an outline copy of the rock cycle and a list of rock types and processes. They must match the terms to the spaces on the rock cycle diagram.

Rock cycle

A or Pa P F 15 min

Students are given an outline of the rock cycle on an A2 sheet (or 2 A3 sheets selotaped together) and must put the following samples in the appropriate boxes: sand, shells, clay, pebbles, sandstone, bioclastic limestone, clay, conglomerate, metaquartzite, marble, slate, granite, gabbro, obsidian, basalt microgranite dolerite, schist, gneiss. They are also given labels of processes which they must put in the correct boxes. This can also be done as a paper exercise with students just writing on the words on an A4 sheet.

Local Geology map

D

Put on display a geological map of your area with named samples of each rock type and common fossils.

Making rock 1

D or P 5 min

Dry slightly muddy sand is put into a small container 5cm diameter and 3cm deep. It is dampened and left to dry overnight. After which the "rock" can be taken out.

Making rock 2

D

Fine sand is saturated with very hard water and left to dry. It will produce a crumbly "rock". Alternatively sand is wetted with a saturated solution of common salt. When it dries it produces a hard crust of cemented "rock".

Fossils never ever seen before

A P 5 min

Provide the students with pieces of very fossiliferous shale, e.g. parts of the Liassic or Oxford clay with squashed ammonites . They break it open to reveal a 200 million year old fossil which has never been seen by any human being before. Allow them to keep it.