

'Rockery 1' - rock game

Model different characteristics of rocks - with your pupils

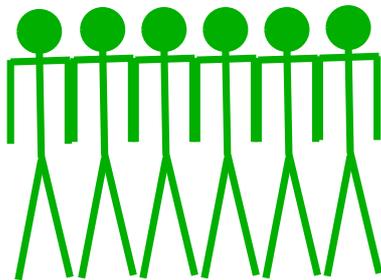
You will need plenty of space for your pupils to play this game.

Before you start, revise the following:-

- sedimentary rocks are made from grains compacted and cemented together, e.g. sandstone and limestone, although finer grained rocks may just have been compacted together, e.g. mudstone
- metamorphic rocks are made of interlocking crystals which either show alignment, e.g. slate, or are made of one mineral, e.g. marble
- igneous rocks are made of interlocking crystals which have cooled and crystallised from magma, e.g. granite. The crystals show little or no alignment

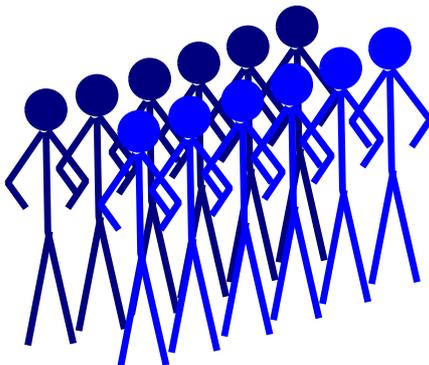
Divide the pupils into groups. Ask some volunteers to demonstrate the following:-

1. **Sedimentary rocks** - pupils stand shoulder to shoulder with arms straight to represent grains compacted and cemented together, e.g. sandstone. They should stand in a group, not in a line.



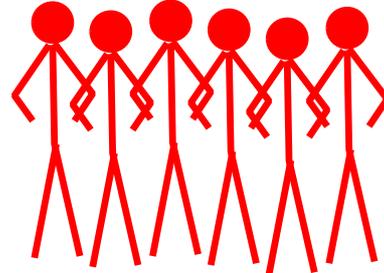
Sedimentary rock e.g. sandstone

2. **Metamorphic rock** - pupils stand with interlocking arms in rows to represent interlocking crystals which show alignment, e.g. slate



Metamorphic rock e.g. slate

3. **Igneous rock** - pupils stand with interlocking arms in a random arrangement to represent interlocking crystals of several minerals, e.g. granite



Igneous rock e.g. granite

Now you are ready to play the game. Pupils are divided into groups. The first group to get into the correct position for the rock group or rock mentioned gets one point. Of course, it is not necessary to play the game in a competitive way.



Pupils from Box Church of England primary school
Photo: Elizabeth Devon

Lastly, give each group a tray of easy-to-identify rock specimens, e.g. different sandstones, limestones, different coloured slates, marbles, a variety of igneous rocks like granite, basalt, gabbro. Ask them to sort the rocks into the three groups.

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The back up

Title: 'Rockery 1' - rock game

Subtitle: Model different characteristics of rocks - with your pupils

Topic: Sorting rock types according to their different characteristics

Age range of pupils: 7 - 12 years

Time needed to complete activity: 30 minutes

Pupil learning outcomes: Pupils can:

- realise that sedimentary rocks are made of grains cemented and compacted together;
- realise that metamorphic rocks are made from interlocking crystals which, in slate, show alignment;
- realise that igneous rocks are made from interlocking crystals which are randomly arranged;
- identify some rocks based on their different characteristics;
- sort rocks into the three groups.

Context:

The activity helps children to remember the fundamental differences between rock types.

Following up the activity:

Pupils could try Rockery 2 - rock cycle game. They could try to put some local rocks into the three groups. The Earthlearningidea series Building Stones 1, 2, 3 and 4 will help with identification.

Underlying principles:

- Sedimentary rocks are made of grains which have been cemented and compacted together.
- Rocks which have been subjected to the heat and/or pressure from plate tectonic movement become metamorphosed and are composed of interlocking crystals.
- Some metamorphic rocks show crystal alignment, e.g. slate, schist, gneiss.
- Some metamorphic rocks show no alignment often because they are made of one dominant mineral so that alignment cannot be seen e.g. marble (made from calcite), quartzite (made from quartz).
- Igneous rocks form from the cooling and crystallisation of molten rock or magma. The crystals are usually randomly arranged.

Thinking skill development:

By sorting the rocks, pupils can see a pattern. Cognitive conflict is caused when rocks do not appear to fit the pattern. Metacognition is involved in the discussions about grouping the rocks. Bridging is required by the pupils pretending to be sedimentary grains or interlocking crystals.

Resource list:

- plenty of space and a dry day
- some rock samples, e.g. a variety of different sandstones, limestones, different coloured slates, marbles and a variety of igneous rocks - granite, basalt, gabbro. Kitchen worktop offcuts can be used to give the igneous variety. *Note: The igneous rocks used to make polished kitchen worktops are often called 'marble' in the trade because they can be polished. However, marble is metamorphosed limestone and is too easily scratched for kitchen worktops.*

Useful links:

The following Earthlearningideas <http://www.earthlearningidea.com>
'Rock detective - rocky clues to the past'
'What was it like to be there - in the rocky world'
Building stones activities 1 - 4.

Source: Developed by Elizabeth Devon of the Earthlearningidea Team with the help of the teachers and pupils of Box Church of England Primary School.

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