

The rock cycle demonstration

Below is a series of visual aids that can be used to demonstrate the rock cycle. Some are explained in more detail under the specific subject.

Physical weathering

- 1. A photograph of frost shattering***
- 2. A sample of frost shattered rock with all the pieces fitting together***



- 3. Photograph of scree slopes***

Solution by acid

- 1. A chip of limestone dropped into a transparent beaker of acid***
- 2. Limestone showing honeycomb weathering caused by acid in the rain***
- 3. Sandstone showing honeycomb weathering caused by acid in the rain dissolving the cement.***

Thermal expansion

- 1. Show students a piece of pegmatite and explain how different minerals expand at different rates which sets up stresses which eventually cause the rock to crumble.***
- 2. Jar of gravel formed by granular disintegration.***

Break up of shale

Add shale to water and as it soaks up the water it disintegrates. (It does not work with all shales, younger shales are most likely to work.)

Erosion, transport and deposition by water

A tray is filled with water 1cm deep and a pile of sand is placed against one corner. Water is poured onto the sand causing erosion, transportation and the build up of a delta.

Erosion by ice

An ice cube is rubbed against a piece of clear plastic 15cm by 10cm which has been painted with emulsion paint. No scratch is made but if sand is added between the ice and paint the paint is scratched and the scratch can be seen if the plastic is held against the light or put on an OHP.

Effects of water transport

Angular and slightly smaller rounded pebbles are placed on the OHP or if large enough held up for the students to see.

Deposition

Pieces of felt 60cm by 10cm are laid down on top of each other. Each colour represents a different type of sediment.

Cementation

1. Polystyrene balls glued together with araldite to show where the cement is.



2. A sample of "sandstone " made by leaving sand in very hard water for a week.

Metamorphism

A jar of flour and raisins and a piece of cake to show how something can change in appearance but still contain the same chemical elements.

Change from fragmental to crystalline texture

1. About 15 balls, 15mm diameter, of soft plasticine representing sand grains are put touching each other on a piece of wood 15cm by 10cm. These are shown to the group and then a second board is placed on top. A heavy student stands on the board and rocks slightly. The boards are pulled apart to show that the balls have been squeezed together to form a hexagonal pattern.



2. Samples of sandstone and metaquartzite.

3. A photo of a stack of round hay or straw bales. The lowest will have become hexagonal due to the pressure of those above.

Alignment of grains and cleavage

About 20 matches are placed in random orientation between two strips of wood 20cm long either on a board or on the OHP. The strips of wood are moved slowly together and the matches become aligned. This alignment explains why slate splits as it does.



Upward movement of magma

A 500ml beaker has 1cm of red coloured candle wax melted on to the bottom, this represents rock which will turn to magma. Above this a 1cm layer of sand representing the overlying sediments. The beaker is then filled with water. The beaker is heated and the wax melts and rises to the surface leaving a pipe of wax going down to the sand.

