

**© UKRIGS Education Project: Earth Science On-Site**

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## INTRODUCTORY WORK.

Pupils should already know the significant characteristics of igneous, sedimentary and metamorphic rocks, weathering, erosion, transport and deposition. For ideas on many practical ways of approaching this topic see “Spot that Rock” teachers’ workshop material and teaching resources on: <http://www.earthscienceeducation.com>

## PREPARATORY WORK

Prior to the **On-Site** visit to the Dryhill Site a suitable preparation is to raise pupils’ awareness of the use of stone in the built environment. Set a homework exercise to list as many different uses of stone that they can see in suitable places. This might be on their way home from school, around school buildings, a local park, shopping centre or monument etc. Stress this is an exercise in observation, and a competition to see who can find the most examples.

Some of the less obvious examples pupils might find are: **clay** (used to make bricks and tiles); **silica sand** (used to make glass); **road metalling** (stone gravel bonded with bituminous material to surface roads); **limestone**, and other minerals (used to make concrete and cement).

## FOLLOW-UP WORK.

Two possibilities are presented for follow up work after the Dryhill visit.

### 1. THE ROCK CYCLE:

Using the information recorded from the Dryhill visit pupils are asked to record their views on the different sections of the two rock cycles they have seen evidence for, using the next worksheet.

### 2. BUILDING STONES:

Using the ideas from the preparation exercises pupils conduct a survey of the use of different building materials in the area, using the worksheets at the end of this document.

After the **On-Site** visit, as a homework exercise, pupils are asked to describe in detail two uses of stone as part of a survey of building stone in the local area.

The term “building” may need to be very loose. Suitable sites could include a local church, gravestones (helpfully dated), school buildings, local walls, high street shop fronts, kerbstones, cobblestones, local monuments, bridges, and the pupil’s own home. In particularly unhelpful areas concrete, cement and bricks could be designated as “man-made” stone for the purpose of this exercise.

Teachers (or pupils) should identify two sites to work on (perhaps taken from the preparatory homework exercise above). Remind pupils about situations where permission is required, and appropriate behaviour is expected. Also, draw attention to thoughts about safety, if kerbstones, or a cobbled road is chosen.

Pupils should record:

- the location or address of the building / construction.
- a sketch of the relevant part of the site, labelling the rock being surveyed, and the use to which it has been put.
- A description of at least two different rocks (perhaps on two buildings) and the use to which they have been put. For each describe the rock, identify it as igneous, metamorphic, **or** sedimentary, and give the reason it has been used for this purpose.
- Finally record the evidence for the effects of weathering on the chosen rock, identifying the kind of weathering responsible, giving the reasons for their conclusion.

Suitable copies of homework record sheets for the follow-up exercise are to be found on the following pages.

**1. The Rock Cycles at Dryhill Nature Reserve**

Under the following headings write your evidence for each of the sections of the Rock Cycles, starting with the Cretaceous part of the cycle through to the present day.

**FIRST CYCLE: weathering and erosion.**

What can you say about the weathering and erosion that led to the formation of the beds at Dryhill during the Cretaceous?

**HINTS:** sand grains; calcium carbonate; physical and chemical weathering; river transport ;

**FIRST CYCLE: deposition.**

What can you say about the deposition of the beds at Dryhill?

**HINTS:** Evidence for current strength, fossils, marine deposition; alternating conditions of deposition.

**FIRST CYCLE: uplift**

What can you say about the uplift and erosion of these beds at Dryhill?

**HINTS:** Evidence for amount of uplift; direction of compression; folding; Alpine mountains.

**SECOND CYCLE: weathering and erosion**

What evidence did you see for modern day biological, physical and chemical weathering; erosion, and quarrying.

**SECOND CYCLE: deposition**

What can you say about where the material weathered from these beds at Dryhill might eventually be deposited.

**EARTH SCIENCE HOMEWORK**

Pupil Name: .....

**BUILDING STONE SURVEY: FIRST SITE.**

ADDRESS OF BUILDING (OR DESCRIPTION OF THE SITE)

DRAW IN THIS SPACE A LABELLED SKETCH OF THE STONE USED AT THIS SITE.

DESCRIPTION OF FIRST ROCK TYPE.

IS IT METAMORPHIC IGNEOUS, OR SEDIMENTARY? (circle the answer)

WHY DO YOU THINK THIS ROCK HAS BEEN USED IN THIS PARTICULAR WAY?

[think about its strength, chemical and physical resistance, attractiveness for decoration etc.]

DESCRIBE ANY EVIDENCE OF PHYSICAL OR CHEMICAL WEATHERING

[explain how it has occurred & label it on your sketch]

EARTH SCIENCE HOMEWORK:

Pupil Name: .....

**BUILDING STONE SURVEY: SECOND SITE.**

<p>ADDRESS OF BUILDING (OR DESCRIPTION OF THE SITE)</p>	<p>DRAW IN THIS SPACE A LABELLED SKETCH OF THE STONE USED AT THIS SITE.</p>
<p>DESCRIPTION OF SECOND ROCK TYPE.</p>          <p>IS IT METAMORPHIC IGNEOUS, OR SEDIMENTARY? (circle the answer)</p>  <p>WHY DO YOU THINK THIS ROCK HAS BEEN USED IN THIS PARTICULAR WAY? [think about its strength, chemical and physical resistance, attractiveness for decoration etc.]</p>          <p>DESCRIBE ANY EVIDENCE OF PHYSICAL OR CHEMICAL WEATHERING [explain how it has occurred &amp; label it on your sketch]</p>	