Teacher's Notes
Activity 3: READING THE ROCKS

Activity summary:

This is a hands-on practical exercise allowing students to examine and describe various rock samples.

Level: 5th and 6th class

Time required: 40 mins (activity)

Curriculum links: *SESE Geography:*

Strand: Natural Environments

Unit: The local natural environment

Unit: Rocks and Soil

Unit: Land, rivers and seas of Ireland

Strand: Environmental Awareness

Unit: Environmental Awareness

SESE Science:

Strand: Materials

Unit: Properties and characteristics of materials

Unit: Science and the Environment

Objectives:

- To learn how to recognise differences between various rock-types
- To learn how to describe the visual and physical characteristics of a material
- To consider the composition of different rocks
- To enable the student to play the role of an experimental scientist
- To tangibly examine materials and then to consider where these materials are found in the landscape, and elsewhere in Ireland

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Skills and concepts development:

A Sense of Place and Space

- A Sense of Place

Geographical Investigation Skills\Working Scientifically\Designing and Making

- Observing
- Investigating and Experimenting
- Estimating and Measuring
- Analysing
- Recording and communicating
- Evaluating

Background information and context:

Quite often we, or someone we know, finds a stone on a beach or in their garden and asks, *"What kind of rock is this?"* More often than not, the stone or rock is of local origin, but we are unable to tell what it is. To become familiar with our local rock types is important if we wish to identify with our local environment – and if we wish to appreciate a sense of *place*. In many places in Ireland, the stone is not of local origin, and has been transported perhaps many miles by the ice sheets of the last Ice Age.

By recognising some of the basic characteristics of rocks and stone, we can attempt to describe a rock relatively accurately. This is the first and most important step. (What the scientific name is comes second!) So if we can describe the rock itself, then it is easy to consult a geology book, or ask a geologist, so that next time we will know the name.

Are there fossils in it? Does it have thin layers in it? Is it crumbly or really hard? What colour is it? These are the type of questions that can allow us to reveal the secrets hidden within a rock. Some additional, simple tests can be carried out to determine the rock type – such as the roughness test, or the HCL test.

By knowing how to read the rocks– we can start to tell the story of how and where they came from.

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Prior Knowledge:

Students should be familiar with the following:

- Acid rain can dissolve limestone (and marble). Dilute HCl (Hydrochloric) acid work in a similar releasing $C0_2$ and dissolving the limestone
- if the sandpaper scratches the rock – then the sandpaper is harder than the rock – and is less resistant to physical erosion (easily eroded)
- if the sand is scraped off the sandpaper – then the rock is harder than the sandpaper – and is more resistant to physical erosion

Apparatus and materials:

- Samples of different rocks
- Sandpaper
- Dilute HCl acid
- Student worksheets

Organisation of Students:

- Students can work in pairs

Activity:

(1) Each pair of students is given two samples of a rock
(2) Students describe the characteristics of each rock type to the best of their ability.
(3) Students drop a little dilute HCl acid on each rock type to determine if the acid reacts – which it does with Calcium Carbonate (in limestone or marble)
(4) The *crumbliness* test will show if the rock sample can be eroded easily by friction (wear and tear)

Student questions and answers:

N.B. All questions may be answered with a subjective or discussion style answer.

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