Eanáir/Feabhra – Fócas ar Charraigeacha

Paddy Madden continues his series of SESE tips

January/February

Zoom in on rocks

Rock display

Background information

Rocks are naturally occurring solids made up of one or more minerals. All these are found in the earth's crust.

Igneous rock They form when molten rock called magma cools. When this happens externally, the magma (now called lava), hardens into basalt, pumice or obsidian (extrusive rocks). When the magma cools slowly under the surface it changes into granite (intrusive rock)

Sedimentary rocks Most are made from sediments deposited by water and compacted into layers called strata e.g. sandstone. Limestone is formed from the squashed remains of living things such as shellfish and micro-organisms. It formed under shallow, warm seas that covered most of the country 350 million years ago.
Limestone is the most common rock in Ireland followed by sandstone.

Metamorphic rocks These are formed from the above by heat and pressure. Limestone can change into marble and shale into slate.

Rock strata

Active learning indoors and outdoors

Indoors

Stimulus statement: I brush my teeth with the remains of a creature that lived at the time of the dinosaurs! (chalk, a pure limestone made from tiny creatures is used in toothpaste).

Chain of reasoning: Where do you get your calcium from? (milk) Where does the milk get its calcium from? (cow) Where does the cow get its calcium from? (grass) Where does the grass get its calcium from? (soil) Where does the soil get its calcium from? (limestone rock) So? The calcium in our bones was once part of the earth's crust. Indeed all the minerals in our bodies were once in the rocks that form the earth's crust. (See www.colwellconsulting.com/rocks/rcmr.htm).

All schools received a **pack of six common rocks from TCD** (See www.tcd.ie/geology/outreach/
Sample enquiry questions to ask about these rocks:

- Name the rock? How hard is it? Scratch with fingernail = hardness of two. Scratch with coin = hardness of three. Scratch with sandpaper = hardness of eight.
- Use a small magnifying glass to answer: Is it made from smaller bits? Is it shiny? Does it soak up water? Does it feel heavy for its size? Is it igneous, sedimentary or metamorphic? What is it used for?

Classroom observation: What's made from rock? glass (quartz sand); classroom 'chalk' (gypsum); plaster (do.); mortar and concrete are made from cement (limestone and clay); pottery (clay); pencil (graphite).

Demonstrate how sedimentary rock is made by tilting a two litre bottle (with the top part removed) at a 45˚ angle and filling it with layers of flour, pasta, beans, sugar, coffee etc.

Make fossils. Three kinds: Body: actual teeth, bones etc.; Trace: signs of a creature e.g. footprints; Imprint: cast and mould. A mould fossil is a hollow shape in a rock which resembles the creature that has dissolved. A cast fossil occurs when this hollow fills up with minerals that harden into a three dimensional shape of the creature.

Method: Mix Plaster of Paris in a plastic tub with water. Get some plasticine and press a shell firmly into it. Remove the shell. This is a mould fossil. Now daub the impression lightly with Vaseline. Make a collar out of a strip of paper. Place it around the plasticine. Secure with paper clip. Pour in Plaster of Paris and allow it to harden. Remove to display cast fossil.

Outdoors

Identify the rocks in the school grounds. Visit a local graveyard to identify headstone rocks and lichens.

Visit the Botanic Gardens to view the rock map of Ireland. Look for fossils in the recreated Burren landscape.

Ask a local quarry to supply the school with a large boulder of the rock found there.

Samples

Igneous	*Basalt, granite, obsidian, pumice*
Sedimentary	*Limestone, shale, sandstone, gypsum*
Metamorphic	*Marble, slate, quartzite, schist*

Basalt

Old red sandstone

Erratic rock

Author & pupils from Scoil Aine, Raheny

Ammonite fossil

Useful websites

- **www.geoschol.com** *Downloadable books, geological map of Ireland, activity sheets.*
- **www.makemegenius.com** *Excellent for interactive whiteboard on 3 different types.*
- **www.tes.co.uk/teaching-resource/Volcanoes-6041417/** *Volcanoes*
- **www.tes.co.uk/teaching-resource/Rocks-and-Soils-6184519/** *Interactive whiteboard lessons on erosion, rocks at home.*
- **www.tes.co.uk/teaching-resource/Rocks-Planet-Choccy-6079867/** *Using sweets etc. to investigate rock types.*
- **www.bbc.co.uk/schools/gcsebitesize/geography/rock_landscapes/process_revl.shtml.** *Freeze-thaw weathering.*
- **www.bbc.co.uk/schools/teachers/ks2_lessonplans/science/rocks_soils.shtml/** *Rocks and Soil worksheet.*
- **www.bbc.co.uk/bitesize/ks2/science/materials/rocks_soils/play/** *Interactive whiteboard tests properties of rocks.*
- **www.rocksforkids.com** *Sayings about rocks.*

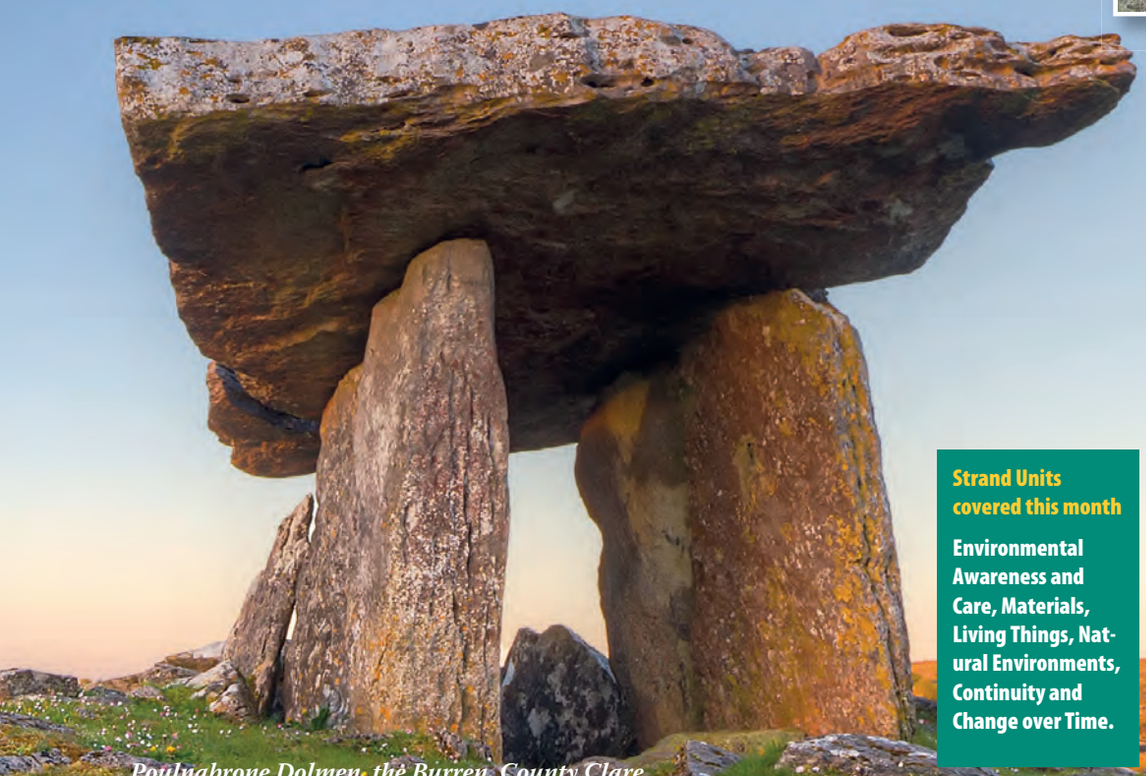
Useful books

- ***Written in Stone*** **(1995) by Pádhraig S Kennan (Geological Survey of Ireland)**
- ***Rocks Minerals and Fossils*** **(2001) by Barbara Taylor**

Packs

Rock and Fossil sets from SciChem (formerly Shaw Scientific). Ph: 014504077 for catalogue.

Rock map in Botanic Gardens



Poulnabrone Dolmen, the Burren, County Clare

Strand Units covered this month

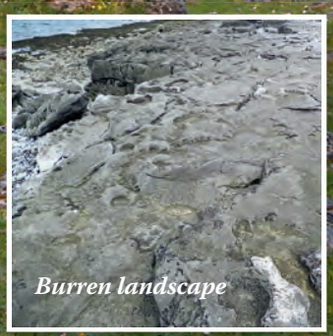
Environmental Awareness and Care, Materials, Living Things, Natural Environments, Continuity and Change over Time.

Literacy/litearthacht

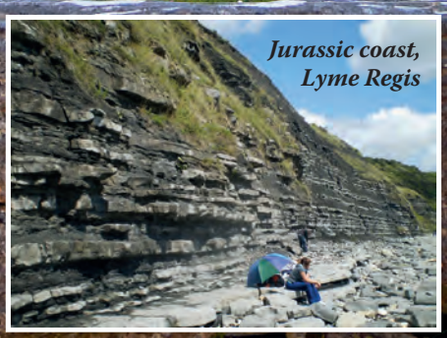
- Igneous rock/*Bruthcharraig:* Rock formed from the cooling of molten magma and lava. *Carraig a cruthaíodh nuair a bhí magma agus laibhe leáite á bhfuarú.*
- Sedimentary rock/*Carraig dhríodair:* Rock formed from layers of sediment which have hardened. *Carraig a cruthaíodh ó ghreamairí de dhríodair a bhí tar éis a bheith cruaite.*
- Metamorphic rock/*Carraig mheiteamorfach:* Rock formed when sedimentary and igneous rocks were subjected to heat and pressure inside the earth. *Carraig a cruthaíodh nuair a tháinig athrú ar bhruthcharraig, nó ar charraig dhríodair, de bharr teasa agus brú laistigh de screamh an domhain.*
- Limestone/*Aolchloch:* A sedimentary rock which formed when organic remains such as shells and corals were compressed. *Carraig dhríodair a cruthaíodh tar éis do shliogáin agus do choiréil a bheith comhbhrúite.*
- Granite/*Eibhear:* A granular, igneous rock. *Carraig ghráinneach atá ina bruthcharraig.*
- Fossil/*Iontaise:* The preserved remains or traces of ancient life. *Iarsmaí agus rianta buanaithe de bheathra ársa.*

Rocks through the ages

Flint	Hunters/Gatherers (Mesolithic)
Porcellanite; Stone Walls; Megalithic tombs	First Farmers (Neolithic)
Copper and Tin; Stone Circles	Bronze Age People
Stone Forts; Ogham Stones	Iron Age People
Stone Churches; Towers; High Crosses	Early Christian People
Stone Castles; Monasteries; Walled Towns	Normans
Stone Tower Houses	Medieval People
Big Houses; Cottages	Landlords and Tenants



Burren landscape



Jurassic coast, Lyme Regis

Paddy Madden *lectures on SESE in Marino Institute of Education. He is the author of two books on school gardening,* **Go Wild at School** *and* **The School Garden – What to do and when to do it.** *Available from paddy.madden@mie.ie . Podcast on teaching about spring: Programme 129 on seandelaney.com/podcasts/ Buíochas do* **Marie Whelton**, *MIE, don aistriúchán.*