

<p>Scientific Model (KS2): Particle Model</p> <ul style="list-style-type: none"> - Introduce the model midway through the unit by demonstrating that when you rub softer rocks, such as sandstone, smaller pieces are come away from the rock. - Explain that can be broken down into smaller and smaller pieces of rock. Once these are as small as they can become, they are known as particles. 	<p>Scientific Skills Taught:</p> <p>ASK</p> <ul style="list-style-type: none"> - To ask relevant questions - To decide when to use secondary sources to find answers - To make simple predictions based on knowledge of science <p>BREAKDOWN</p> <ul style="list-style-type: none"> - To set up simple tests - To decide what equipment to use - To make decisions about the type of enquiry - To use different enquiry types to test questions <p>CAPTURE</p> <ul style="list-style-type: none"> - To observe carefully - To measure accurately using standard units - To measure using a range of equipment - To gather data and record in different ways - To make systematic observations - To identify differences, similarities and changes - To group, sort and classify using different criteria <p>DESCRIBE</p> <ul style="list-style-type: none"> - To draw simple conclusions - To present data in different ways - To explain what they have found out using correct scientific language - To record finding using correct language in varied ways - To answer questions based on evidence orally and in writing 	
<p>Scientific Investigations:</p> <ul style="list-style-type: none"> - Looking for Naturally- Occurring Patterns and Relationships - Identifying and Classifying Things - Researching Using Secondary Sources - Comparative and Fair Testing 		
<p>Scientists:</p> <ul style="list-style-type: none"> - Mary Anning - was born in 1799. She made important discoveries about fossils. Mary is one of the greatest fossil hunters to have ever lived. - William Smith – was born 1769. He was an English geologist, credited with creating the first detailed, nationwide geological map of any country 		
<p>Prior Learning:</p> <ul style="list-style-type: none"> - Distinguish between an object and the material from which it is made. (Y1 - Everyday materials) - Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 - Everyday materials) - Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials) - Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials) - Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper, and cardboard for particular uses. (Y2 - Uses of everyday materials) 		
<p>Curriculum</p>	<p>Learning Intention</p>	<p>Knowledge and Key Vocabulary</p>
<p><u>Making links to learning and discuss the model (if needed)</u></p>	<p>What do we know about rocks and soils? Begin with a mind map of known facts using key questions from SGAPs to organise and activate such prior knowledge.</p>	

<p><u>Knowledge and skills through investigations</u> Pupils should be taught to:</p> <ul style="list-style-type: none"> - compare and group together different kinds of rocks on the basis of their appearance and simple physical properties - describe in simple terms how fossils are formed when things that have lived are trapped within rock - recognise that soils are made from rocks and organic matter <p>Notes and guidance (non-statutory):</p> <ul style="list-style-type: none"> - Linked with work in geography, pupils should explore different kinds of rocks and soils, including those in the local environment. <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> - observing rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time; using a hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them. - Pupils might research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed. - Pupils could explore different soils and identify similarities and differences between them and investigate what happens when rocks are rubbed together or what changes occur when they are in water. - They can raise and answer questions about the way soils are formed. 	<p>What can you see when you magnify the surface of rocks?</p> <ul style="list-style-type: none"> • name the three different types of rocks • explain the difference between natural and human-made rocks • use the appearance of rocks to group and compare them <p>How do rocks differ?</p> <ul style="list-style-type: none"> • name the different types of rocks • identify features of different rocks • group rocks based on their properties • use a systematic approach to recognise similar features of different rocks <p>Introduce the particle model midway through the unit by demonstrating that when you rub softer rocks, such as sandstone, smaller pieces are come away from the rock.</p> <p>How are fossils formed?</p> <ul style="list-style-type: none"> • explain the difference between a bone and a fossil • order the steps of how a fossil is formed • explain how fossils are formed <p>What could a palaeontologist be?</p> <ul style="list-style-type: none"> • explain what a palaeontologist does. I can understand why Mary Anning's fossil findings were important • explain Mary Anning's contribution to palaeontology <p>What are soils made of?</p> <ul style="list-style-type: none"> • explain that soil is composed of different things • describe the 4 processes of soil formation <p>How do soils differ?</p> <ul style="list-style-type: none"> • identify how to make careful observations • observe how much water has filtered through different types of soil • use the same equipment and length of time for each observation • record observations accurately in a table 	<p><u>Knowledge:</u></p> <ul style="list-style-type: none"> - To know that rock is a naturally occurring material. - To name and describe three types of rocks and how they are formed. - To use scientific vocabulary to describe the properties of rocks. - To name the five layers of soil - To name four soils and their properties - To know some rocks contain fossils. These will be sedimentary rocks by nature. - Name the type of rock which would contain fossils - Describe how fossils were formed. <p><u>Vocabulary:</u></p> <ul style="list-style-type: none"> - rock; soil; appearance; grain; crystal; particle; permeable; impermeable; porous; sedimentary; metamorphic; igneous; rock cycle; bedrock; weathering; erosion; organic; peat; humus; loam; absorbent; impervious; molten; lava; fossil; texture; sand; gravel; clay; Moh's scale; sandstone; granite; marble; limestone; flint; slate; chalk; characteristics; volcano; inorganic; organic
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- contribute to creating a group presentation
- use simple scientific language accurately

Application and Assessment Activity:

- Twinkl end of unit assessment for Rocks and Soils
- Science Sample Test 2016

The image shows two pages from a science sample test. Page 30 shows a jar with soil and water, and a diagram of a soil profile with layers labeled 'sand', 'clay', and 'gravel'. Page 31 shows the same jar after shaking, with a diagram of the soil profile showing the layers separated. The diagrams include labels for 'sand', 'clay', and 'gravel'.

Thinking Deeper:

- Children research the uses of different soil types.

Links to other subjects:

- Subject Specific links –
 - Literacy – non-chronological reports, explanations,
 - Maths in classifying
- Personal Development – discussing making sensible decisions and remaining safe around areas rocks are found (quarries, cliff tops, rock pools etc.)
- SMSC – Challenging the stereotypes of women as scientists and opportunities available to Victorian women
- Cultural Capital – Famous marble sculptures i.e. The Parthenon Frieze (Elgin Marbles); Standing Stone circles

- Careers – Palaeontologist, Geologist, Horticulture based careers – Farmer, Gardener, Sculptor, Civil Engineer, Builder

- British Values – Working together in groups valuing contributions and ideas to develop an investigation

- Equality – Mary Anning was not recognised in her own time because she was working class and a woman. Promotion of both male and female scientists.