

<b>Subject: Science</b>	Rocks and Soils - Hamilton Trust	
<b>Class: Eagles</b>	<b>Teacher: SW</b>	<b>Term: 5</b>
<b>Key Vocabulary:</b> Rocks – limestone, chalk, granite, marble, sandstone, soil, organic matter, hard, soft, acid	<b>Alternative Learning Environments</b>  Playground, Forest School, Local Environment – Longfield.	<b>Resources: Pencils, Rulers, Rubbers, Clipboards, camera, rock samples, soil samples, pipettes, vinegar, fossils, plasticene,</b> .

### Learning Intentions.

Current Unit	Prior Learning	Future Learning
<ul style="list-style-type: none"> <li>compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</li> <li>describe in simple terms how fossils are formed when things that have lived are trapped within rock</li> <li>recognise that soils are made from rocks and organic matter</li> </ul>	<ul style="list-style-type: none"> <li>asking simple questions and recognising that they can be answered in different ways</li> <li>observing closely, using simple equipment</li> <li>performing simple tests</li> <li>identifying and classifying</li> <li>using their observations and ideas to suggest answers to questions</li> <li>gathering and recording data to help in answering questions</li> </ul>	<ul style="list-style-type: none"> <li>asking relevant questions and using different types of scientific enquiries to answer them</li> <li>setting up simple practical enquiries, comparative and fair tests</li> <li>making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>gathering, recording, classifying and presenting data in a variety of</li> </ul>

		<p>ways to help in answering questions</p> <ul style="list-style-type: none"> <li>• recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>• using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>• identifying differences, similarities or changes related to simple scientific ideas and processes</li> <li>• using straightforward scientific evidence to answer questions or to support their findings.</li> </ul>

Week	Session 1		Session 2	
	<b>Learning Objective</b>  <b>Science Objectives</b> i) Compare and group together different kinds of rocks on the basis of appearance and simple physical properties.  <b>Working Scientifically</b>  1. Ask relevant questions and use different types of scientific enquiries to answer them. 2. Make systematic and careful observations. 3. Record findings using simple scientific language, drawings and labelled diagrams.  <b>Planning and Activities</b>  <b>Teaching</b> <ul style="list-style-type: none"> <li>Observe rocks closely and discover that they have different qualities and features.</li> <li>Group rocks in different ways according to their observable features.</li> </ul>		<b>Learning Objective</b>  <b>Science Objectives</b> i) Compare and group together different kinds of rocks on the basis of appearance and simple physical properties.  <b>Working Scientifically</b>  1. Set up simple practical enquiries and comparative and fair tests. 2. Make systematic and careful observations. 3. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.  <b>Planning and Activities</b>  <b>Teaching</b> <ul style="list-style-type: none"> <li>Understand that rocks are formed in 3 different ways.</li> <li>Devise comparative tests for rocks, record and evaluate observations and results.</li> </ul> <b>Activities</b>	

	<ul style="list-style-type: none"> <li>Be able to name 6 common rocks.</li> </ul> <p><b>Activities</b></p> <ol style="list-style-type: none"> <li>Collectively make a list of questions on rocks that can be answered through a range of scientific enquiries during the course of the topic.</li> <li>Undertake <b>The Hard Rock Challenge</b> – a game that requires them to begin to observe rocks carefully and group them in different ways according to their features.</li> <li>Make detailed labelled drawings of 6 common rocks and write descriptions of their observable features.</li> <li>Learn the names of 6 common rocks whilst playing an active game – <b>Rock Stars!</b></li> </ol> <p><b>Investigation - exploring, classifying and identifying</b> Explore a variety of rocks and group them in different ways according to their observable features and attributes.</p> <p><b>Vocabulary</b> Rock, sandstone, limestone, chalk, granite, slate, marble, classification, observation</p>	<ol style="list-style-type: none"> <li>Devise their own fair test for the hardness of rocks and put a group of samples in rank order of hardness.</li> <li>Devise a fair test for permeability and record results and observations in tabular form.</li> <li>Test rocks with acid (vinegar) to discover if they are made of the shells of dead creatures.</li> <li>Use a rock identification key to discover what type of rock each sample is.</li> </ol> <p><b>Investigation - exploring, fair testing, classifying and identifying</b> Investigate the properties of different rocks with fair testing e.g. permeability, hardness and an acid test for the presence of calcium carbonate. Use a rock identification key.</p> <p><b>Vocabulary</b> Petrologist, man-made rocks, brick, tile, concrete, igneous, sedimentary, metamorphic, permeable, impermeable, acid, erosion, marble, chalk, limestone, slate, granite, sandstone, identification key</p>
	<p><b>Session 3</b></p> <p><b>Learning Objectives</b></p> <p><b>Science Objectives</b> i) Compare and group together different kinds of rocks on the basis of appearance and simple physical properties.</p> <p><b>Working Scientifically</b></p> <ol style="list-style-type: none"> <li>Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment.</li> <li>Gather, record, classify and present data in a variety of ways to help answer questions.</li> </ol>	<p><b>Session 4</b></p> <p><b>Learning Objective</b></p> <p><b>Science Objectives</b> i) Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p> <p><b>Working Scientifically</b></p> <ol style="list-style-type: none"> <li>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</li> </ol> <p><b>Planning and Activities</b></p> <p><b>Teaching</b></p>

	<p><b>Extended Writing Opportunities</b>  Recount and letter: Write a letter to Dr Sarah Stone from the British Rock Society about the information you learnt during your rock survey of the local area</p> <p><b>Planning and Activities</b></p> <p><b>Teaching</b></p> <ul style="list-style-type: none"> <li>Collect evidence of the local bedrock and other rocks in the local area by doing a rock survey.</li> <li>Use knowledge of the properties of rocks to determine why particular rocks were selected for different tasks.</li> </ul> <p><b>Activities</b></p> <ol style="list-style-type: none"> <li>Take part in an active quiz game to assess and reinforce prior learning on rocks.</li> <li>Undertake a rock survey of the local area to answer questions on the local bedrock and other rocks seen.</li> <li>Determine why particular rocks and man-made rocks were used for particular purposes.</li> </ol> <p><b>Investigation - classifying and identifying</b>  Go on a rock walk in the local vicinity to identify different rocks for different purposes. Record findings.</p> <p><b>Vocabulary</b>  Survey, petrologist, data, database</p>	<ul style="list-style-type: none"> <li>Discover the contribution to science of the great 19th century fossil hunter Mary Anning.</li> <li>Understand the process of fossil formation and be able to describe it in simple terms.</li> </ul> <p><b>Activities</b></p> <ol style="list-style-type: none"> <li>Engage (through role play) with the great fossil hunter Mary Anning and ask questions to discover her story.</li> <li>Learn how fossils are made and record by writing and illustrating the stages or through sequencing a text.</li> <li>Make their own “fossil” of a shell using a plasticine mould and plaster of Paris.</li> <li>Handle real fossils and rehearse the stages of fossil formation through oral retelling.</li> </ol> <p><b>Investigation - analysing secondary sources</b>  Learn about how fossils are made and the life and contribution of the great fossil hunter Mary Anning.</p> <p><b>Vocabulary</b>  Fossil, ichthyosaur, plesiosaur, ammonite, sediment, minerals, mould, cast</p>
	<p><b>Session 5</b></p> <p><b>Learning Objective</b></p> <p><b>Science Objectives</b>  i) Recognise that soils are made from rocks and organic matter.</p> <p><b>Working Scientifically</b></p>	<p><b>Session 6</b></p> <p><b>Learning Objective</b></p> <p><b>Science Objectives</b>  i) Compare and group together different kinds of rocks on the basis of appearance and simple physical properties.  ii) Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p>

1. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment.
2. Gather, record, classify and present data in a variety of ways to help answer questions.
3. Identify differences, similarities or changes related to simple scientific ideas and processes.
4. Use straightforward scientific evidence to answer questions or to support findings.

## Planning and Activities

### Teaching

- Investigate, discover and classify the different components of soil.
- Gather evidence on how different soils can vary and suggest reasons for this.

### Activities

1. Play a guessing game to learn some amazing facts about soil and the crucial role it plays in supporting life.
2. Closely observe soil with hand lenses and list and classify the constituent parts.
3. Actively investigate and compare 3 different soils and their properties, recording findings.
4. With support, draw conclusions on the reasons for variation between soils.

### Investigation - exploring/classifying and identifying/fair testing

Investigate different soils, asking questions and seeking answers through a variety of scientific enquiries (exploring/ classifying and identifying /fair testing)

### Vocabulary

Soil, micro-organisms, organic matter, particles, sand, silt, fair test, compare, sort, predict

iii) Recognise that soils are made from rocks and organic matter.

### Working Scientifically

1. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.

### Extended Writing Opportunities

Persuasive writing: Create a poster advertising your Amazing Rock and Fossil Museum.

Non-chronological writing: Write a summary information piece about Rocks and Fossils and create an information booklet that you can give to all the visitors to your Amazing Rock and Fossil Museum.

## Planning and Activities

### Teaching

- Recap on all our previous learning and vocabulary by playing a Rock, Fossil and Soil Quiz.
- Work as a team to share learning with visitors by creating exhibits and activities.

### Activities

1. Recap on or assess all the learning in this block by doing a Rock, Fossil and Soil Quiz (see Teachers' Notes).
2. Work in a team to plan and prepare a display of exhibits and activities for visitors to the Amazing Rock and Fossil Museum.
3. Share learning through written and oral presentations to a real audience.

### Investigation - analysing secondary sources

Assemble a variety of exciting exhibits for the Rock and Fossil Museum.

### Vocabulary

All vocabulary previously learnt in this block