



# Mendell Primary School


*Aspire Challenge Achieve*

## Medium Term Plan Science



<b>Year Group:</b> 3	<b>Term:</b> Summer 2	<b>Teacher:</b> Jess Hindley	<b>Subject lead:</b> Sarah Bride	<b>Overview: Plants</b>		<b>Key End Points: By the end of this unit children will be able to:</b>	
<p><b>Common Misconceptions:</b> <b>Some children may think:</b></p> <ul style="list-style-type: none"> <li>rocks are all hard in nature</li> <li>rock-like, man-made substances such as concrete or brick are rocks</li> <li>materials which have been polished or shaped for use, such as a granite worktop, are not rocks as they are no longer 'natural'</li> <li>certain found artefacts, like old bits of pottery or coins, are fossils</li> <li>a fossil is an actual piece of the extinct animal or plant</li> <li>soil and compost are the same thing.</li> </ul>		<p><b>Unit key Vocabulary:</b> Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, soil, peat, sandy/chalk/clay soil</p>		<ul style="list-style-type: none"> <li><input type="checkbox"/> compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</li> <li><input type="checkbox"/> describe in simple terms how fossils are formed when things that have lived are trapped within rock</li> <li><input type="checkbox"/> recognise that soils are made from rocks and organic matter.</li> </ul>		<ul style="list-style-type: none"> <li><input type="checkbox"/> Talk about how the Earth is constantly moving and reshaping itself &amp; how rock formation is dynamic</li> <li><input type="checkbox"/> Name some famous rock formations, mountains and volcanoes around the world</li> <li><input type="checkbox"/> Describe how rocks are formed in a simple way</li> <li><input type="checkbox"/> Explore the environment and identify things made from rocks. E.g. stone</li> <li><input type="checkbox"/> Observe, describe and compare rocks.</li> <li><input type="checkbox"/> Group and order rocks (hardness, weight, length)</li> <li><input type="checkbox"/> Explain why rocks have been used for a specific purpose. E.g. Marble for statues</li> <li><input type="checkbox"/> Describe how fossils were formed.</li> <li><input type="checkbox"/> Observe, describe and compare soils</li> </ul>	
<b>Links to other learning:</b>	<b>Prior Learning:</b> Distinguish between an object and the material from which it is made. <b>(Y1 - Everyday materials)</b> • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. <b>(Y1 - Everyday materials)</b> • Describe the simple physical properties of a variety of everyday materials. <b>(Y1 - Everyday materials)</b>	<b>Future Learning:</b> Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. <b>(Y6 - Evolution and inheritance)</b> • The composition of the Earth. <b>(KS3)</b> • The structure of the Earth. <b>(KS3)</b> • The rock cycle and the formation of igneous, sedimentary and metamorphic rocks. <b>(KS3)</b>		<b>High Quality Text:</b> Stone Girl Bone Girl The Pebble in my Pocket <b>Scientist to study:</b> <b>Anjana Khatwa</b> (Geologist who collects rocks and fossils from the beach and studies them to learn about the creatures that lived in the sea and on Earth over 150 million years ago) <b>Brianna Green</b> (Biogeochemist who collects soil to see what kind of living things are in it to study the effects of climate change)		<b>Risk Assessment:</b>  Trip – local walk  Handling of soil risk assessment.	<b>Teacher CPD:</b>  ASE plan exemplification – Na'ilah  Reach out CPD <a href="https://www.reachoutcpd.com/">https://www.reachoutcpd.com/</a> sign up for free.






- Identifying, grouping and classifying**  
 Making observations to name, sort and organise items.
- Observation over time**  
 Observing changes that occur over a period of time ranging from minutes to months.
- Research**  
 Using secondary sources of information to answer scientific questions.
- Comparative / fair testing**  
 Changing one variable to see its effect on another, whilst keeping all others the same.

	<ul style="list-style-type: none"> <li>• Compare and group together a variety of everyday materials on the basis of their simple physical properties. <b>(Y1 - Everyday materials)</b></li> <li>• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. <b>(Y2 - Uses of everyday materials)</b></li> </ul>					
<u>Learning Intention</u>	<u>Lesson Outline</u> (Key Questions in colour)			<u>Resources</u>	<u>Vocabulary</u>	<u>Lowest 20% Adaptations</u>
<p>1 L.I. I can compare and group rocks based on their appearance, properties and uses</p> 	<p><b>This is a Science lesson. In Science, we study nature and the behaviour of natural things. The skill we will be using this lesson is observing</b></p> <p>Complete vocabulary check as pre assessment – repeat at the end of the unit.</p> <p>Prior learning/pre assessment thought shower children will add to this at the end of the unit – <i>what do you already know about rocks?</i></p> <p>Use the following questions to prompt the children who struggle to recall prior key learning.</p> <p><i>What materials can you name?</i>  <i>What properties do rocks have?</i>  <i>What rocks can you name?</i>  <i>What objects are made from a type of rock?</i></p> <p><b>Big Question: How do we use different types of rock?</b></p> <p><b>Explorify</b> – Zoom in, Zoom out – Mysterious material. <i>What do they think the image is and why? What does the image remind them of and why?</i> Every time you zoom out, ask the class: <i>Can they describe the colours, shapes and textures? What do they think the image is now – have they changed their minds?</i></p> <p><b>Teacher CPD:</b> There are three different rock types: sedimentary, igneous and metamorphic. Sedimentary rocks form from mud, sand and particles that have been squashed together over a long time to form rock. Examples include sandstone and limestone. Igneous rocks are made from cooled magma or lava. They usually contain visible crystals. Examples include pumice and granite. Metamorphic rocks are formed when existing rocks are heated by the magma under the Earth’s crust or squashed by the movement of the Earth’s tectonic plates. They are usually very hard. Examples include slate and marble.</p> <p><b>Word of the week:</b> permeable – a material that allows water to pass through it.</p> <p>Provide each table with a class rock pack and allow the children time to identify the different rocks from the class pack using observational skills.</p> <p><b>Method</b> 1. Choose a rock to examine. 2. Use the hand lens to look closely at the rock’s appearance. Record whether it is shiny or dull, has layers, holes, crystals or fossils. 3. Use the nail to scrape the surface of the rock. Soft rocks will scratch easily and</p>			<p>Rocks presentation.</p> <p>Class rock packs.</p>	<p><b>Rocks, grain, crystals, layers, hard, soft, texture, sedimentary, igneous, metamorphic, marble, chalk, granite, sandstone, slate</b></p>	

hard rocks will not. Record whether the rock is soft or hard. 4. Use the water and pipette to add a droplet of water onto the surface of the rock. Permeable rocks will absorb the water and impermeable will not. Record whether the rock is permeable or impermeable. 5. Decide and record if the rock is sedimentary, igneous (extrusive or intrusive) or metamorphic. 6. Repeat steps 2-5 with all the rocks available. – recording to be completed as a group using the resource provided.

Share the properties of rocks presentation with the children and discuss why certain rocks are used for making certain objects. Using the information gained from their observations and the presentation ask the children to create a table for the rocks they have explored. Ask the children to make an observational drawing of each rock, list of properties and an example of what is made from the rock. The children can also identify the type of rock it is.


**Outcome example:**

rocks	use	properties
 chalk	<ul style="list-style-type: none"> <li>writing</li> <li>for gift in gym</li> </ul>	<ul style="list-style-type: none"> <li>soft</li> <li>erodes easily</li> <li>permeable</li> <li>light</li> <li>porous</li> </ul>
 limestone	<ul style="list-style-type: none"> <li>foot path</li> <li>building blocks</li> </ul>	<ul style="list-style-type: none"> <li>hard</li> <li>erodes slowly</li> <li>split into thin layers</li> </ul>
 slate	<ul style="list-style-type: none"> <li>Roofing</li> <li>roof</li> </ul>	<ul style="list-style-type: none"> <li>hard</li> <li>heavy</li> <li>doesn't erode easily</li> <li>impermeable</li> </ul>
 sandstone	<ul style="list-style-type: none"> <li>bridges</li> <li>buildings</li> </ul>	<ul style="list-style-type: none"> <li>hard</li> <li>erodes over a long time</li> </ul>
 marble	<ul style="list-style-type: none"> <li>building</li> <li>statues</li> </ul>	<ul style="list-style-type: none"> <li>easy to carve</li> <li>medium hardness</li> <li>not easy to erode</li> </ul>

Why would a builder use a slate tile and not a chalk tile for a roof?

Because chalk absorbs water and slate doesn't absorb.

CH: see example.

2	<p>L.I. I can observe rocks in the local area and explain how some rocks change over time.</p> 	<p><b>This is a Science lesson. In Science, we study nature and the behaviour of natural things. The skill we will be using this lesson is making observations.</b></p> <p><b>Prior learning:</b> Provide the children with the three types of rocks and a definition of each plus examples. E.g. Igneous - made from cooled magma or lava - pumice and granite. <b>Can the children match the correct type to its properties and example?</b></p> <p><b>Big Question: How have gravestones and building around us changed over time?</b></p> <p><b>Word of the week: erode</b> - be gradually worn away by natural agents</p> <p>Take the children are a walk of the local area and Bromborough church cemetery. Whilst walking to the church ask the children to make observations of different rock as and how they are being used in building or in the local area. Observe the range of rocks used for gravestones, naming any that they knew, and also observe how damaged or worn the gravestones were and considered this in relation to their age. – If permitted the children can take rubbings of the gravestones. Take pictures of the children investigating different types of rocks they encounter on their work and in the church grounds in order to comment on their findings back in class. Encourage the children to identify different rocks form their prior learning and encourage them to describe them in terms of their properties.</p> <p>Once back in class ask the children to note down their observations and what they noticed about how rocks change over time.</p> <p><b>Outcome example:</b></p>	<p>Risk assessment for local walk.</p> <p>Additional adults for ratio needed.</p>	<p><b>Erode, permeable, impermeable, sedimentary, igneous, metamorphic, marble, chalk, granite, sandstone, slate</b></p>	
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18th October 2018 CF 18  
 To show rocks in our surroundings

Can you talk about different types of rock and explain their characteristics and their uses?  
 Can you explain how some rocks have changed over time?  
 Can you talk about and use the term 'weathering' appropriately?

415048 1404  
 The church





Why is the church mainly made from limestone? Because limestone is...



This is the...




We are looking at...




Flint from St. Dunstan's Church

What type of rock is this and how do you know?





This is what happens! Look at the layers. So what type of rock is this?



Please finish

Originally, this grave at St Dunstan's had cherubs on the sides. Over time what has happened to them?

- Here is a picture of 2 gravestones from our trip today to the Soanes Centre.
- One of the gravestones is made from granite and one of them is made from limestone. Which is which? The left one is limestone and the right is granite.
- What has happened to them and why? The limestone ones words have worn away and the granite ones haven't because granite is waterproof and limestone is not and weathering wears non-waterproof rock.



3

I can investigate soil from my local environment



This is a Science lesson. In Science, we study nature and the behaviour of natural things. The skill we will be using this lesson is making observations and asking questions

**Prior learning:**

What are the three types of rock?

What does erode mean?

What does living, non-living and never lived mean?

**Word of the week: organic matter** -Organic matter is a small but vital part of soil. It's made up of: living organisms, such as bacteria, fungi, plant roots and tiny animals. Ask the children to identify the organic matter in the image below.



**Big Question:** What type of soil do we have on our school field?

**What is soil? What might you expect to find within it?** Take feedback from the children then watch the following video: <https://www.youtube.com/watch?v=5b9o7yM7YGE> and share the information presentation.

Ask the children to go and take a sample from the school field – provide trowels and ask the children to measure 10cm deep to collect a subsoil sample to bring back into the classroom. Collect soil for jam jar experiment and for soil identification.

Back in class ask each group to set up their jam jar of soil ready for later in the lesson.

Observation. Ask the children to look closely at the different soil samples. This can be done in groups with magnifying glasses. Ask the children to think about what they see. Pose the question what type of soil is it? Provide the children with the soil key, after adding a small amount of water to their soil sample ask them to follow the soil key flow hart and determine what type of soil we have on our school field e.g. sandy, silty or clay. Ask the children to record what they did and what they found out.

Ask them to observe what happened to the soil sample – can the children explain what is happening? Ask the children to record using a labelled diagram.

An area to dig soil samples from (or purchase compost, sand etc) Shallow trays to hold soil samples (one per sample) Soil samples dug from separate locations Trowel Magnifying glasses Gloves Optional: Litter pickers/leaf claws Soil key. Soil presentation.

**Teacher CPD:** <https://www.nhm.ac.uk/schools/teaching-resources/key-stage-2/rocks-fossils-and-dinosaurs/practical-observation>

soil, organic matter, particles, sand, silt



[http://www.soil-net.com/dev/page.cfm?pageid=casestudies\\_jamjar&loginas=anon\\_casestudies](http://www.soil-net.com/dev/page.cfm?pageid=casestudies_jamjar&loginas=anon_casestudies) soil jar explanation.

CH: If you looked at soil from a very different location such as a beach, riverbed, volcano or a rainforest, what differences might there be compared to the soil you looked at today?

[-whats-in-soil.html&BackgroundScience](#)

4 L.I. I can set up a test to find out how soils are different



**This is a Science lesson. In Science, we study nature and the behaviour of natural things. The skill we will be using this lesson is setting up simple tests and recording data.**

**Prior learning:**

**What did we find out about soil last week?**

**What are the three types of soil?**

**What did we find within our soil samples?**

Show a soil sample on the computer and ask them to write down everything they can identify.

Play the quiz – What am I? – see resources. What is missing from our list? Air, water and micro-organisms.

**Word of the week – micro-organism**

**Big Question: Is all soil the same?**

Explain these micro-bugs are crucial because they rot down leaves and the bodies of dead creatures and this makes the soil rich for growing things. Ask the children to look at their list of things found within the soil sample – can they sort them into the following headings: alive, has lived and never lived.

**Do you think all soils are the same?** - <http://www.bbc.co.uk/education/clips/z7rb4wx>

Provide each table with three different soil samples. Ask the children to look at the soil samples and think about how they are different. Ask the children to write some notes to describe each one on the resource sheet – do children remember air, water and microorganisms?

3 different soil samples.

Soakers and drainers resource.

Funnels, containers, cotton wool.

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

Share and explain: Soils can also be different in ways you can't see, for example when it rains, some soils absorb lots of water (Soakers) but others allow the water to drip right through them very quickly (Drainers). Let's do a scientific test to find out which of our soils is the best soaker (the one that absorbs the most water), which is the best drainer (the one that let's through the most water) and which one is in the middle. Ask the children to make predictions. Ask the children to consider how they will keep this a fair test and take feedback – ask the children to record ideas.

Extension challenge: mind map what they have found out about soil over the last two weeks.

**Outcome example:**

Wednesday 10<sup>th</sup> March 2021

L.I. I can recognise that soils are made from rocks and organic matter.

**Word of the Week**  
Micro-organism

- Can you write a definition?
- Can you use it in a sentence?

The word micro organism means an organism or being that can be seen only through a microscope.

ALIVE	HAS LIVED	NEVER LIVED
WORMS	ROOTS	ROCKS
CENTIPEDS	GRASS	WATER
MITE COLONY		AIR
SEEDS		SAND

air  
water  
microorganism

**Soakers and Drainers**

Look at the 3 soil samples. Think about how they are different. Write some notes to describe each one.

Soil 1	Soil 2	Soil 3
<ul style="list-style-type: none"> <li>coloured</li> <li>rocks</li> <li>very wet</li> <li>black</li> <li>oil</li> </ul>	<ul style="list-style-type: none"> <li>Brown</li> <li>dry</li> <li>crumbly</li> <li>dry</li> <li>water</li> </ul>	<ul style="list-style-type: none"> <li>desert</li> <li>large rocks</li> <li>large rocks</li> <li>rocks</li> <li>nick to orange</li> </ul>

Soils can also be different in ways you can't see, for example when it rains, some soils absorb lots of water (let's call these Soakers) but others allow the water to drip right through them very quickly (we will call these Drainers).

Let's do a scientific test to find out which of our soils is the best soaker (the one that absorbs the most water), which is the best drainer (the one that let's through the most water) and which one is in the middle.

**My prediction** – Guess which soil will be which!

Best soaker	In between	Best drainer
2	1	3

**Our Method**

- Put a cotton wool plug inside a funnel
- Stand the funnel inside a container
- This is your soil test equipment. You will need to make one for each type of soil
- Your soil will go in the funnel and you will be able to pour water over it to see how much drains through into the container
- You could measure the exact amount of water that drains through by pouring it into a measuring cylinder

**How to make a fair test:**

- The same amount of water, water and soil.
- The same size funnel.
- All soils should be dry.

Soil 1 6 ml, Soil 2 3 ml, Soil 3 2 ml

my prediction was not correct.

our results are not accurate because I was moist 2 was wet 3 was dry so they are not fair.

did

If I done this again I would make sure they are all dry. All what is dry?

soil samples

WHENEVER SOIL HALF IS MADE THERE WOULD OF AIR AND WATER BE NO LIKE AN EARTH SOIL

MADE OF DIFFERENT LAYERS IN THE GROUND

MADE FROM ROCK AND OTHER THINGS

5 L.I. I can describe how fossils are formed.



**This is a Science lesson. In Science, we study nature and the behaviour of natural things. The skill we will be using this lesson is asking questions and recording information.**

**Big Question: How are fossils formed?**

**Prior learning:**

**What are the three types of soil?**

**What are the three types of rock?**

**What does erode mean?**

**Word of the week: fossilisation**

Making fossils explanation :

<http://www.planet-science.com/categories/experiments/mesy/2011/10/make-a-fake-fossil.aspx>

**Fossil, fossilisation, decompose, sediment, seedbed, minerals, particles, skeleton.**

Give children the pictures to sort and the correct information typed up to create a matching and sorting activity.



Read the story Stone Girl Bone Girl and ask them why they think Mary Anning is a significant scientist. **Why is Mary Anning important to palaeontologists?**

Ask the children what they already know about fossils. Do they know any names or types? Do they know how they are formed? Show the children the following BBC video about how fossils are made:  
<https://www.bbc.co.uk/bitesize/topics/z9bbkqt/articles/z2ym2p3>

Together as a class have a go at making their own fossil, this can be done as a whole class demonstration or in groups – see information link in resources column. If completed as a group ensure the teacher is modelling at the front and linking each stage to how fossils are really formed. E.g. clay at the bottom of the cup represents the sea bed. This will reinforce the process for the children after watching the video and support their main task work.

Main Task: ask children to order the stages of fossilisation and write a sentence to describe each stage. Provide word bank to those who need it for support. Children can draw their own images if they wish. Present information in a zigzag book form see example in resources.

Extension challenge: **Explorify** – frozen in time – odd one out. <https://www.dkfindout.com/uk/dinosaurs-and-prehistoric-life/fossils/types-fossil/> to support.

**CPD:** The images show three different types of fossils. The first is an ammonite, which is an example of a cast fossil. The footprint is an example of a trace fossil and the final image is a mosquito trapped in tree resin, which is a true form fossil.

**At the end of the unit repeat vocabulary assessment and add to pre assessment thought shower in green pen.**

[:text=Mix%20quarter%20of%20any%20bits%20of%20clay](https://www.bbc.com/news/science-environment-550624)

additional example of making fossils:  
<https://rainydaymum.co.uk/how-to-make-cast-fossils-with-kids/>

zigzag example:  
<https://www.twinkl.co.uk/resource/ordering-the-stages-of-fossilisation-ks2-activity-tp-2550624>