

Mendell Primary School Aspire Challenge Achieve





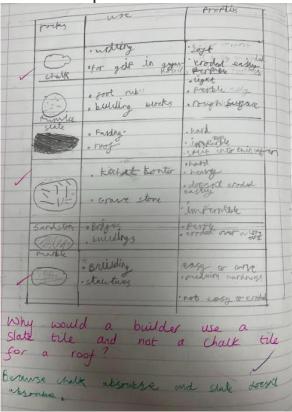
Year Group: 3 Common Misconceptions: Some children may think: • rocks are all hard in nature • rock-like, man-made substances such as concrete or brick are rocks • materials which have been polished or shaped for use, such as a granite worktop, are not rocks as they are no longer 'natural' • certain found artefacts, like old bits of pottery or coins, are fossils • a fossil is an actual piece of the extinct animal or plant • soil and compost are the same thing.		Teacher: Jess Hindley Subject lead: Sarah Bride Unit key Vocabulary: 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		childre 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. Identifying grouping and classifying Making observations to name, sort and organic terms. Observation over time Using secondary sources of information to answer scientific questions. Comparative / fair testing Co		nd Points: By the end of this unit ren will be able to: a about how the Earth is constantly g and reshaping itself & how rock cion is dynamic ne some famous rock formations, ains and volcanoes around the world cribe how rocks are formed in a simple ore the environment and identify things from rocks. E.g. stone erve, describe and compare rocks. up and order rocks (hardness, weight,) ain why rocks have been used for a c purpose. E.g. Marble for statues cribe how fossils were formed. erve, describe and compare soils		
Links to other learnin g:	Prior Learning: 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)	Future Learning: Recognise that living things time and that fossils provide living things that inhabited years ago. (Y6 - Evolution • The composition of the Earth. • The rock cycle and the for sedimentary and metamorph	e information about the Earth millions of and inheritance) rth. (KS3) (KS3) mation of igneous,	High Quality Text: Stone Girl Bone Girl The Pebble in my Pocket Scientist to study: Anjana Khatwa (Geologist who collects roc and fossils from the beach and studies them t learn about the creatures that lived in the sec on Earth over 150 million years ago) Brianna Green (Biogeochemist who collects to see what kind of living things are in it to so the effects of climate change)	I studies them to lived in the sea and rs ago) ist who collects soil		Teacher CPD: ASE plan exemplification — Na'ilah Reach out CPD https://www.reachoutcpd.c om/ sign up for free.	

		• 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)			
	Learning	Lesson Outline	Resources	Vocabulary	Lowest 20%
	<u>Intention</u>	(Key Questions in colour)			Adaptations
1	L.I. I car compare and	lesson is observing	Rocks presentatio	Rocks, grain, crystals,	
	group rocks	Complete vocabulary check as pre assessment — repeat at the end of the unit.	n.	layers, hard, soft,	
	based or their appeara nce, propertion	about rocks? Use the following questions to prompt the children who struggle to recall prior key learning. What materials can you name?	Class rock packs.	texture, sedimentar y, igneous, metamorp hic,	
	s and	What properties do rocks have?		marble,	
	uses	What rocks can you name?		chalk,	
		What objects are made from a type of rock?		granite,	
		Big Question: How do we use different types of rock?		sandstone, slate	
		Explorify — Zoom in, Zoom out — Mysterious material. What do they think the image is and why? What does the image remind them of and why? Every time you zoom out, ask the class: Can they describe the colours, shapes and textures? What do			
		they think the image is now — have they changed their minds?			
		Teacher CPD: 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.			
		Word of the week: permeable – a material that allows water to pass through it.			
		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.			
		Method 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			

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:



CH: see example.

2 L.I. I can observe rocks in the local area and explain how some rocks change over time.

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.

Prior learning:

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. Can the children match the correct type to its properties and example?

Big Question: How have gravestones and building around us changed over time?

Word of the week: erode - be gradually worn away by natural agents



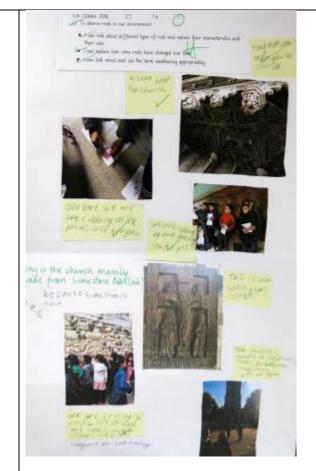
Take the children are a walk of the local area and Bromborough church cemetery. Whilst walking to the church ask the children to make observations of different rock as and how they are being used in building or in the local area. Observe the range of rocks used for gravestones, naming any that they knew, 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.

Once back in class ask the children to note down their observations and what they noticed about how rocks change over time. **Outcome example:**

Risk assessment for local walk.

Additional adults for ratio needed.

Erode,
permeable,
impermea
ble,
sedimentar
y, igneous,
metamorp
hic,
marble,
chalk,
granite,
sandstone,
slate



Flint from St. Dunstan's Church
What type of rock is this and how do you know?

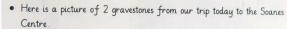
This is strong because
So what type of rock

is this?



Please Frish
Originally, this grave at St
Dunstan's had cherubs on
the sides Over time what





One of the gravestones is made from granite and one of them is
made from limestone. Which is which? The left DNR is limestone and
the scient is a range.

• What has happened to them and why The limestone, ones words have worn away and the grainite ones haven't because granite is not and west hering wares non-water groof roch.



3 I can investiga te soil from my local environm ent

 $\nabla_{\mathbf{A}} \nabla$

Prior learning:

using this lesson is making observations and asking questions

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.

This is a Science lesson. In Science, we study nature and the behaviour of natural things. The skill we will be



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 soil, dig soil organic matter, samples particles, from (or sand, silt 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 presentatio n. Teacher CPD:

https://ww w.nhm.ac.u k/schools/t eachingresources/k ey-stage-2/rocksfossils-anddinosaurs// practicalobservation

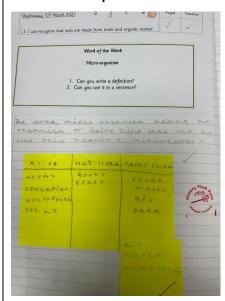
	http://www.soil-net.com/dev/page.cfm?pageid=casestudies_jamjar&loginas=anon_casestudies_soil jar explanation. CH: If you looked at soil from a very different location such as a beach, riverbed, volcano or a rainforest, what differences might there be compared to the soil you looked at today?	-whats-in- soil.html& Backgroun dScience		
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	

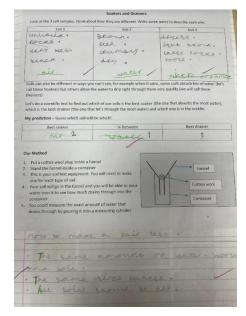
Share and explain: Soils can also be different in ways you can't see, for example when it rains, some soils absorb lots of water (Soakers) but others allow the water to drip right through them very quickly (Drainers). Let's do a scientific test to find out which of our soils is the best soaker (the one 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.

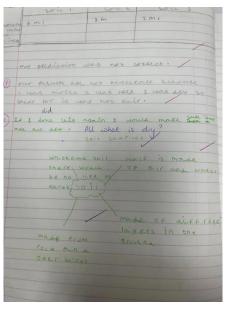
Ask the children to consider how they will keep this a fair test and take feedback — ask the children to record ideas.

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

Outcome example:







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

lanetscience.com/c ategories/exp eriments/mes sy/2011/10/ make-a-fake-

fossil.aspx&:~

explanation:

http://www.p

Making

fossils

Fossil, fossilisatio n, 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%2 Oa%20quart er%20of%2 Oa,any%20le ftover%20bit s%20of%20 clay

additional example of making fossils: https://rainyd aymum.co.uk /how-tomake-castfossils-withkids/

zigzag example: https://www. twinkl.co.uk/r esource/order ing-thestages-offossilisationks2-activity-ttp-2550624