Science Project Overview Year 3 Rocks and Fossils			
Subject Knowledge (PoS)	Working Scientifically (PoS+Overview)	Working Scientifically Methods	
Substantive knowledge	Disciplinary knowledge	Using different types of scientific	
Rocks have different properties dependent on the type	During years 3 and 4, pupils should be taught to use the following practical scientific	enquiry to answer their own	
of rock.	methods, processes and skills through the teaching of the programme of study	questions, including:	
• There are three types of rock. Sedimentary, igneous and	content:	 observing changes over time, 	
metamorphic.	 ask their own questions about what they observe 	 noticing patterns, 	
 Sedimentary rocks are formed when layers of sediment become compacted over years and form a rock. Examples of sedimentary rocks include sandstone and 	• Make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including: observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and	 grouping and classifying things, carrying out simple 	
chalk.	fair tests and finding things out using secondary sources.	comparative and fair tests	
 Igneous rocks are formed when magma cools. Examples of igneous rock include basalt and granite. 	 asking relevant questions and using different types of scientific enquiries to answer them 	 and finding things out using secondary sources 	
Metamorphic rocks are formed when rocks are changed	 setting up simple practical enquiries, comparative and fair tests 		
due to heat or pressure. Examples of metamorphic	 making systematic and careful observations and, where appropriate, taking 		
rocks include slate and marble.	accurate measurements using standard units, using a range of equipment,		
• Fossils are formed when things that have lived are	including thermometers and data loggers		
trapped within rock.	• gathering, recording, classifying and presenting data in a variety of ways to help		
After an animal dies, the soft parts of its body	In answering questions		
behind.	 recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables 		
 This becomes buried by small particles of rock called sediment. 	 reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions 		
 As more layers of sediment build up on top, the sediment around the skeleton begins to compact and 	 using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions 		
turn to rock. • Fossils are not animal bones. They are the cast of the	 identifying differences, similarities or changes related to simple scientific ideas and processes 		
bones that have formed through this process.Soil is a mixture of tiny particles of rock, dead plants	 using straightforward scientific evidence to answer questions or to support their findings. 		
and animals, air and water.	 draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. 		

Previous learning:	Preparing for:	
 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) 	 Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. (Y6 - Evolution and inheritance) The composition of the Earth. (KS3) The structure of the Earth. (KS3) The rock cycle and the formation of igneous, sedimentary and metamorphic rocks. (KS3) 	Bespoke to our school There is a big emphasis placed on teaching the children tier 2 and 3 vocabulary as many children come into school with limited vocabulary.

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, organic matter, sedimentary rock

Misconceptions:

• 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.

English Links:

Stig of the Dump

Maths links:

Measurement: Use the appropriate units of length (m/cm/mm), mass (kg/g) and volume/capacity (l/ml) to measure, compare, add and subtract – when calculating water in soil sample, size of fossils, scaling up fossil samples

Famous Scientists to possibly study:

Mary Anning 1799 – 1847 (Fossil hunter) Found the first complete ichthyosaur skeleton, aged 12, and helped prove that animals could become extinct. Mary Anning, one of the first paleontologists, on how her fossilised findings helped her gain an insight into the Jurassic past.

http://bpes.bp.com/primary-resources/science/ages-7-to-9/rocks/super-scientists-mary-anning/

Holly Betts-Palaeobiologist Holly is researching whether fossils are best for establishing a timescale for recent and ancient episodes in our evolutionary history.

http://www.geologists.org.uk/famous-geologists/

The website above is a good place to search for more information on famous geologists

Adriana Ocampo (1955 -) Space geologist <u>http://iwaswondering.org/inez_homepage.html</u>

History/ Geography links:

Why do people live near volcanoes? What makes a mountain?

Explorify links:

Sandcastle

Bubbly water

Mysterious material

Kaleidoscope of colour

Surprising surface

Which rock would be best for a skate ramp?

Do rocks stay the same for ever?

Possible careers/jobs:

Archaeologist (studies history using artefacts), Architect (designs buildings), Builder (builds structures), Geologist (studies the Earth and what it is made of, including rocks), Palaeontologist (studies fossils), Seismologist (studies earthquakes), Volcanologist (studies volcanoes), Farmer (grows crops and raises animals for food),