Year 3 – Rocks, Fossils & Soils



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| National Curriculum Outcomes: Knowledge* 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 organic matter
 | National Curriculum Outcomes: Working Scientifically* Asking simple questions and recognising that they can be answered in different ways
* Observing closely, using simple equipment
* Performing simple tests
* Identifying and classifying
* Using their observations and ideas to suggest answers to questions
* Gathering and recording data to help in answering questions
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| Children might work scientifically by: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. |
| Links to prior learning**Year 1:** distinguish between an object and the material form which it is made. Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock. Describe simple physical properties of a variety of everyday materials. Compare and group together a variety of everyday materials on the basis of their simple physical properties.**Year 2:** identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses | Links to future learning**Year 6:** Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago |
| Key Vocabularyrock, igneous, sedimentary, metamorphic, fossil, organic, soil | Common Misconceptions* Children may think that all rocks are the same
* Children may think ‘rocks’ and ‘stones’ are different things
* Children may think ‘soil’ and ‘dirt’ are synonymous
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| Important scientists**Mary Anning** – English fossil collector who discovered many fossils in the cliffs at Lyme Regis | STEM Career Links**Agronomist** (studies soil)**Architect** (designs buildings)**Builder** (builds structures)**Geologist**  (studies the Earth and what it is made of, including rocks)**Palaeobotanist** (studies plant fossils)**Palaeontologist** (studies fossils)**Seismologist** (studies earthquakes)**Volcanologist** (studies volcanoes) | Links to real life* How have rocks have been used in our local environment? What different kinds of rocks can you find around the school/local park/churchyard?
* What if there was no soil?
* What kind of soil is there in our school grounds?
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| Important knowledge/facts that the children need to know* Rocks can have a range of properties, including shiny, dull, hard, soft, rough, smooth, absorbent and impermeable.
* Rocks can also be sorted according to whether they have crystals or bubbles visible in them.
* Fossils are formed when things that have lived are trapped within sediment that that turns into rock around the fossil.
* Over time the bones of the dead animal dissolve and are replaced with stone, creating a fossil
* Soils are made from rocks and organic matter (parts of dead animals and plants). Different soils have different properties depending on their composition.
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| Suggested Enquiry Activities |
| Identifying and Classifying* How can we sort and group together these different rock cycles?
* Create a classification key to help others identify different kinds of rock
 | Comparative and Fair Testing* Compare the hardness/absorbency of different rocks
* Which type of soil is the most absorbent? Which will be the best to grow plants in?
 | Observation over Time* How do things change over time in our composter/wormery?
* Observe how soil separates into different layers in water.
 | Pattern Seeking | Research using Secondary Sources* How are rocks formed?
* How are fossils formed?
* Who was Mary Anning and what did she discover?
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| **National Curriculum Statements** | **Outdoor Learning Activities** |
| * Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.
* Recognise that soils are made from rocks and organic matter.
 | Pupils talk about the properties of rocks in the playground or local environment.Pupils dig in the soil in the playground to look for rocks and organic matter. Check CLEAPSS for health and safety guidance. |

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| Wow Factor Experiences* Create a composter or wormery
* Visit a local farm or engage with the ‘Farmer Time’ scheme (see useful websites below)
* Visit a local town centre and/or churchyard and see how rocks have been used. Church yards are especially useful for showing how rocks have eroded over time
* Make first hand observations of real fossils
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| Maths Links* Create Venn Diagrams to sort rocks according to their properties
* Soil samples can be sorted according to how much water they can absorb (measurement link)
* Create a scaled timeline showing when different dinosaurs walked the Earth
 | Literacy Links* Write a ‘Pebble in my Pocket’ style story about the journey of a rock
* Write a biography of Mary Anning
 | Broader Curriculum Links**Geography:** Link learning about rocks to learning about the layers of Earth, volcanoes and earthquakes.**Art:** Create pet rocks!**History:** Learn about the life and work of Mary Anning, and why she was dismissed by eminent scientists of her own time because she was a woman. |
| Story LinksA Pebble in My Pocket – Meredith Hooper Pebble: A Story about Belonging – Susan MilfordStone Girl, Bone Girl – Laurence Anholt Dinosaurs and All That Rubbish – Michael Foreman  |
| Helpful WeblinksAssessment exemplification (could also be useful with planning ideas) – <https://www.ase.org.uk/resources/y3-rocks-jr>Teacher CPD for this unit (free) – <https://www.reachoutcpd.com/courses/upper-primary/rocks-and-soils/>BBC Class Clips (useful videos) – <https://www.bbc.co.uk/bitesize/topics/z9bbkqt/resources/1> Geological Society rocks & fossils resources (includes lesson plans) – <https://www.geolsoc.org.uk/rocksfossils>Farmer Time (free Skype chats with farmers) - <https://leafuk.org/farmertime/home>STEM Learning’s online resource library for Rocks, Fossils and Soils - <https://www.stem.org.uk/resources/community/collection/12367/year-3-rocks> |