



Science Skills Progression To investigate materials

Essential characteristics of scientists	<ul style="list-style-type: none">•The ability to think independently and raise questions about working scientifically and the knowledge and skills that it brings.•Confidence and competence in the full range of practical skills, taking the initiative in, for example, planning and carrying out scientific investigations.•Excellent scientific knowledge and understanding which is demonstrated in written and verbal explanations, solving challenging problems and reporting scientific findings.•High levels of originality, imagination or innovation in the application of skills.•The ability to undertake practical work in a variety of contexts, including fieldwork.•A passion for science and its application in past, present and future technologies.	
	Key Knowledge	Key Vocabulary
EYFS	Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes.	
Y1/2	<p>Y1 learning challenge - Which materials should the 3 Little Pigs have used to build their house?</p> <p>Science Bug - Y1 Comparing materials Identifying materials</p> <ul style="list-style-type: none">• Distinguish between an object and the material from which it is made.• Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock.• Describe the 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.	<ul style="list-style-type: none">• properties• materials• liquid• surface• object• reflect• wood• plastic• glass• metal• rock• water
Y1/2	<p>Y2 learning challenge - What is our school made of?</p> <p>Science Bug - Y2 Changing shape Uses of materials</p> <p>Focus text links - The Tin Forest</p> <ul style="list-style-type: none">• Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock, and paper/cardboard for particular uses.	<ul style="list-style-type: none">• various• rubber• inflatable• fabric• transparent• squash• bend• twist• stretch



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Y3/4	<p>Y3 learning challenge - What do rocks tell us about the way the Earth was formed? (Rocks and soils)</p> <p>Science Bug - Y3 Rocks and soils</p> <ul style="list-style-type: none">• Compare and group together different kinds of rocks on the basis of their simple, physical properties.• Relate the simple physical properties of some rocks to their formation (igneous or sedimentary).• Describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock.• Recognise that soils are made from rocks and organic matter.	<ul style="list-style-type: none">• erosion• magma• tectonic plates• solidify• dissolve• sedimentary• metamorphic• igneous
Y3/4	<p>Y4 learning challenge - How would we survive without water? (States of Matter)</p> <p>Science Bug - Y4 Changes of state</p> <ul style="list-style-type: none">• Compare and group materials together, according to whether they are solids, liquids or gases.• Observe that some materials change state when they are heated or cooled, and measure the temperature at which this happens in degrees Celsius (°C), building on their teaching in mathematics.• Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	<ul style="list-style-type: none">• temperature• Celsius• boils• container• evaporate• condensate/condensation• melt• freeze
Y5/6	<p>Y5 learning challenge - Could you be the next CSI investigator?</p> <p>Science Bug - Y5 Separating materials Types of change Materials</p> <p>Focus text links - Tuesday</p> <ul style="list-style-type: none">• Compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, conductivity (electrical and thermal), and response to magnets.• Understand how some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.• Use knowledge of solids, liquids and gases to decide how	<ul style="list-style-type: none">• dissolve• separating• evaporate/evaporation• properties• solution• mixture• reversible• irreversible



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	<p>mixtures might be separated, including through filtering, sieving and evaporating.</p> <ul style="list-style-type: none">• Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.• Demonstrate that dissolving, mixing and changes of state are reversible changes.• Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning, oxidation and the action of acid on bicarbonate of soda.	
KS3	<ul style="list-style-type: none">• Chemical reactions as the rearrangement of atoms.• Representing chemical reactions using formulae and using equations.• Combustion, thermal decomposition, oxidation and displacement reactions.• Defining acids and alkalis in terms of neutralisation reactions.• The pH scale for measuring acidity/alkalinity; and indicators.	