

Year 2 - Uses of Everyday Materials

Prior Learning	In Year 2 What they need to know	Later learning: Children do not need to be taught this year.	Key Vocabulary ASE
• Know about similarities and differences in relation to materials and objects • 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	• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting, and stretching	In Year 3 pupils will be taught to: • 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	object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see through, not see through (as Year 1) Opaque, transparent, translucent, reflective, non-reflective, flexible, rigid, shape, push, pull, twist, squash, bend, stretch reflective, flexible, rigid <i>tentative language: perhaps, maybe, I was wondering, Does anyone else think.....?</i>
		In Year 4 pupils will be taught to: • 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: measure or research the temperature at which this happens in degrees C (°C) • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	
		In Year 5 pupils will be taught: • Compare and group everyday materials based on their properties, including hardness, solubility, transparency, conductivity (electrical and thermal) and magnetism • Know some materials dissolve in liquid to form a solution and describe how to recover a substance from solution • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating	

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		• 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 these changes are not usually reversible eg: changes from burning or the action of acid on bicarbonate of soda	
Common Misconceptions Some children may think: • only fabrics are materials • only building materials are materials • only writing materials are materials • the word rock describes an object rather than a material • solid is another word for hard.		Possible Famous Scientists to study within unit Charles Macintosh-Waterproof material John MacAdam- Tarmac	
Working Scientifically - What they need to be able to do			
1. Ask simple questions			
2. Recognise that questions can be answered in different ways			
3. Perform simple tests			
4. Observe closely			
5. Use simple equipment			
6. Talk about what they have found out			

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Images taken from Primary-Science and PSTT.org

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Identifying and Classifying	Comparative Testing Fair Testing	Pattern Seeking	Research	Observation over time				
Which materials are shiny and which are dull? Which materials will let electricity go through them, and which will not? Based on children's own criteria - samples of materials classified.	Which shapes make the strongest paper bridge? Which material would be best for the roof of the little pig's house? What would be the best material to build a castle from? Test materials for different uses (e.g. Which material can you use to make an aeroplane? Which fabric would you use for curtains? Which materials are best for Cinderella's mop? Which fabric would you choose for Elastigirl's costume? Which paper can be used for a book, fabrics for a child's dungarees, materials for aeroplanes etc?)	N/A	How are plastics made? How is paper made? How is a wooly jumper made? Come Outside - Pippin link	How long do bubble bath bubbles last for? What will happen to our snowman? Would a paper boat float forever? What will happen to a jelly baby after 24 hours?				
Snap Science link to subject content - Good Choices 7 lessons: lessons 1,2,3,4,6 & EL 1 & 2 Snap Science link to subject content - Shaping Up lessons 1,2,3,4 & EL 1 (5lessons) Main Enquiry type covered by SS: Identifying and Classifying, Research, Observations over time.		Book Links Billy Goat's Gruff 3 Little Pigs Dragon in a Wagon Big Cat book links <table><tr><td>From Tree To Book Sarah Lewson 978-0-00-759111-4 Band 7 Turquoise</td><td>Find out how a tree turns into a book, and learn about the properties of all the materials along the journey.</td></tr></table> Big Cat book links <table><tr><td>Bounce, Catch, Kick, Throw Janice Marriott 978-0-00-718602-0 Band 6 Orange</td><td>What makes a ball bounce? How is a football made? Which ball can't bounce?</td></tr></table>			From Tree To Book Sarah Lewson 978-0-00-759111-4 Band 7 Turquoise	Find out how a tree turns into a book, and learn about the properties of all the materials along the journey.	Bounce, Catch, Kick, Throw Janice Marriott 978-0-00-718602-0 Band 6 Orange	What makes a ball bounce? How is a football made? Which ball can't bounce?
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Pupils could work scientifically by:

- Classify materials.
- Make suggestions about alternative materials for a purpose that are both suitable and unsuitable
- Test the properties of materials for particular uses e.g. compare the stretchiness of fabrics to select the most appropriate for Elastigirl's costume, test materials for waterproofness to select the most appropriate for a rain hat

By the end of the unit children should know that.... (Sticky Knowledge)

- Materials can be changed by physical force (twisting, bending, squashing and stretching)



_____ has shown consistently that they can name the materials from which different objects are made and talk about properties using a wide vocabulary, although their written work does not always reflect this. _____ recognises suitable and unsuitable choices of material. _____ can identify what properties a material needs for a particular purpose and is able to test those properties before making their choice. _____ can change the shape of objects using named actions and can choose different purposes for the same material, showing they recognise that shaping it in a different way affects the rigidity of the object.

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Secure learning indicators **PLAN knowledge matrices**

- Can name an object, say what material it is made from, identify its properties and make a link between the properties and this particular use.
- For a given object can identify what properties a suitable material needs to have
- Whilst changing the shape of an object can describe the actions used.
- Can use the words flexible and/or stretchy to describe materials that can be changed in shape and stiff and/or rigid for those that cannot
- Can explain using the key properties why they chose a particular material for a purpose.
- For unusual combinations of material and object can explain, using key properties, why the material is suitable or unsuitable
- Can justify their choice of a material for a purpose by referring to the results of simple tests they have carried out on relevant properties.
- Can describe more than one use for a given material.
- Can describe differences in the properties of objects made from the same material.

Please see www.ase.org.uk for PLAN supporting science assessment resources (found also in TEAMS)

Assessment Indicators for working scientifically in Year 2 - Ask simple questions and recognising that they can be answered in different ways.
(context- testing waterproof materials)

Working Towards: Describes their idea/test but it may not help to answer the question and does not consider alternative methods.

Secure: Explains different tests, e.g. you can find out which is waterproof by --- or ---

Mastery: Comments on the best way to find out and understands that a comparison has to be fair, e.g. I need to add the same amount of water.

Assessment Indicators for working scientifically in Year 2 - Perform simple tests to answer questions (changing materials for a design purpose)

Working Towards: Say which object went the furthest e.g. it was Abi's.

Secure: Able to explain how they know which one went furthest e.g. it went up to there on the wall/floor, it went higher than the metre stick.

Mastery: Systematic in testing - may record measurements independently or note accuracy e.g. we struggled to measure it because we didn't have time to measure before they came down.

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Expected - from memory, names a number of objects that are made out of a particular material, <i>e.g. glass - marbles, windows, drinking glasses, vases</i> - explains why a material is used for a particular use, <i>e.g. glass for windows because you can see through it and it is strong and waterproof</i> - compares which is the most effective material for a particular purpose and says why some materials would not be suitable for certain uses, <i>e.g. wood would not be suitable for making a window because....., cardboard would not make a good bicycle wheel because...</i> Expected - knows that the shape of certain solids, <i>e.g. a sponge, plasticene, clay</i> can be changed by either squashing, bending twisting or stretching - demonstrates the different forces (squash, bend, twist, stretch) by - applying them to a solid that will change shape	Exceeding - recognises that some items can be made from a variety of different materials, <i>e.g. a spoon can be made from either wood, metal or plastic.</i> <i>A toy train can be made from plastic, tin or wood.</i> - compares two (or more) materials and explains which they think would be best to make, <i>e.g. a chair</i> Exceeding - knows that it is difficult to change the shape of many solid objects and can name a selection of these, <i>e.g. a metal bar, a coin, a wooden table, a glass marble</i>	<i>Please see primary science consultancy enrichment activities for additional resources in TEAMs, consider use of Activities - Explorify: Big Question, Mission Survive, problem Solvers, Mystery bag for challenging more able pupils.</i>
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