

St Julian's Knowledge Organiser - SCIENCE- Everyday Materials - Year 1/2

National Curriculum learning objective (Chemistry)	<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 ● 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 	
Vocabulary:	materials, wood, wooden, plastic, metal, glass, water, rock, brick, paper, writing, wrapping, shiny, drawing, display, greaseproof, kitchen towel, handkerchief, wallpaper, sand paper, fabric, wool, nylon, silk, fleece fibre, properties, hard, soft, fluffy, rough, smooth, shiny, dull, light, heavy, transparent (see-through), opaque (can't see-through), translucent (see something through), harder, lighter, rougher, stretch, stretchy, elastic, stiff, bend, bendy, not bendy, press, squash, twist, shape, waterproof, absorb, absorbent, soak up, mop up; frozen, freeze, melt, salt, tissue paper, button, glass bead, marble, pebble, pasta	
Essential prior knowledge / vocabulary to check:	For Year 2: check prior learning from Year 1 Cycle B 20-21 For Year 1: check prior learning from Reception Cycle B 20-21	
National Curriculum learning objective (Working Scientifically)	<ul style="list-style-type: none"> ● 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 question 	Suggested enquiries: Asking Questions Patterns seeking: Is metal always rigid? Are rocks always hard? Are shiny materials always waterproof? Comparative & Fair testing: What material is best to build a dragon house from? (comparative). Which material mops up the 'wee' best (school dog)? (comparative). Which materials are the most stretchy / flexible; absorbent / waterproof? Identify, classify and group: sort and group materials according to their properties Research using Secondary Sources: use photos to discover how different materials are used in our world.

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Vocabulary:	<p>question, find out, answer, 'change one thing', predict, 'what do you think will happen', compare, observe, pattern, results, happened, table, measure, record, graph, chart</p> <ul style="list-style-type: none"> ● I would like to find out? ● How will I do this? ● What will I measure or observe? ● What will I change? ● What must I keep the same? ● What do I think will happen? ● What have I noticed? ● What does this tell me? ● What will I do differently next time? <p>questions, answers, gather, measure, explore, observe, bigger/smaller, longer/shorter, warmer/colder</p> <p>look, notice, observe, compare, describe, similar, different, features, sort, group, notice, biggest/smallest, best/worst, Venn diagram</p> <p>find out, look up, investigate, research, photo, website, leaflet, information obook</p>
Essential prior knowledge/skills to check:	<p>For Year 2: check prior learning from Year 1 Cycle B 20-21</p> <p>For Year 1: check prior learning from Reception Cycle B 20-21</p>
Suggested sequence of learning	<p>Suggest following Snap Science lessons</p> <ol style="list-style-type: none"> 1. Prior learning check, mind map 2. Lessons 1&2 combined - identifying everyday materials 3. Lessons 5 & 6 combined - distinguishing from the object and the materials from which it is made 4. Lesson 7 - describe properties of materials 5. Lesson 8 and/or 9 - comparing materials on the basis of their property 6. Lesson 9 or own lesson plan - choosing suitable materials on the basis of their properties
Useful facts to support teaching this unit	<p>Everything around us and that we use is made of some form of material. All materials come from animals or plants, are dissolved in the sea or are mined from the ground. Today some materials are artificially made in commercial chemical plants. Some of these materials are used as they are and others are altered to make new, manufactured materials.</p> <p>For this module the basic classification can be shown as:</p> <p>Natural: rocks, soil, water, wood</p> <p>Manufactured: metals, plastic, glass, rubber, paper, fabrics, bricks</p>

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	<p>Natural materials can be identified in the physical environment – soil, rocks and water – or the biological environment – wood.</p> <p>Manufactured materials have been processed in some way from raw materials, for example, metals are processed from the refining of metal ores, paper is produced from wood pulp and fabrics are produced from plant and animal fibres. Other materials are produced from the chemicals extracted from natural materials, for example, plastics.</p> <p>The properties of materials that Year 1 children experience are largely based on their direct sensory experience of the materials, how they feel and how they look. They look for similarities and differences, and make comparisons, for example, smoother, harder, shinier, etc.</p>		
<p>Common misconceptions</p>	<p>There are few misconceptions at this level of work with materials. The major potential for confusion is the distinction between the properties of materials and the objects they are made into. It is important that, in this module especially, children are encouraged to focus on the material, not the object when describing properties. It is important that they explore off cuts or samples of different materials before they investigate objects they have been made into.</p> <p>Adults as well as children may mis-use the word “material” to describe what should be called fabric. In science a material is something that is made from matter and this includes solids, liquids and gases. Non-materials are things not consisting of matter, for example energy.</p> <p>Children often think that absorbent materials such as paper towels are waterproof – confusing absorbent (soaks water up) with waterproof (keeps water out).</p>		
<p>Threshold Concept</p>	<p>Learning</p>	<p>Scientific enquiry skills to teach, use, apply and deepen</p>	<p>Milestone expectations</p>
<p>Chemistry - materials</p> <p>Throughout this unit children should be using the skills of asking questions:</p> <p><i>While exploring the world, the children develop their ability to ask questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen). Where appropriate, they answer these questions.</i></p> <p><i>The children answer questions developed with</i></p>	<p>(Suggest SS Lessons 1 & 2 combined)</p> <p>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock.</p> <p>Begin to explore wood, metal and plastic.</p> <p>By the end of the lesson they are able to name these materials and identify places where they are used, and sort objects into groups according to whether they are made of wood, plastic or metal.</p> <p>In this lesson they are introduced to four more everyday materials: water, glass, rock and brick.</p> <p>By the end of the lesson they are able to name these materials and identify them in the classroom.</p> <p>NB. SS Lessons 3 and 4 explore paper and fabric in more detail. You may wish to extend learning by taking some ideas from these lessons</p> <p>(suggest SS Lesson 5 and 6 combined)</p> <p>Distinguish between an object and the material from which it is made.</p>	<p>Identify, classify and group: sort and group objects according their material</p> <p><i>Observe and identify, compare and describe, sort and classify.</i></p> <p><i>Children use simple features to compare objects, materials and living things and, with help, decide how to sort and group them.</i></p> <p><i>The children recognise ‘biggest and smallest’, ‘best and worst’ etc. from their data.</i></p> <p><i>Children classify using simple prepared tables and sorting rings</i></p> <p>Identify, classify and group: sort and group objects by the materials they are made</p>	<p>1) Distinguish between an object and the material from which it is made.</p> <p><i>B: Match an object to its original material. Name the object and its original material.</i></p> <p><i>A: Explain how a bottle is made from sand. Choose some objects and explain how they were made from their original material.</i></p> <p><i>D: True or false? Some fleece jackets start as plastic bottles.</i></p> <p>2) Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock.</p> <p><i>B: Observe and name everyday materials. Arrange objects made of the same materials and label the materials.</i></p> <p><i>A: Group objects based on the materials they are made from. Explain your groupings</i></p> <p><i>D: Investigate which objects started off as a plant.</i></p>

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<p><i>the teacher often through a scenario.</i></p> <p><i>The children are involved in planning how to use resources provided to answer the questions using different types of enquiry, helping them to recognise that there are different ways in which questions can be answered, including - observing changes over time, noticing patterns, grouping and classifying, carrying out simple comparative tests, finding things out from secondary sources).</i></p>	<p>To investigate objects made from several of the materials they have investigated in previous lessons, and use simple tables and overlapping sorting circles to classify them.</p> <p>By the end of the lesson children recognise that most objects are made from more than one material.</p> <p>Add learning to SS lesson to include looking at how different materials are used in our world around us</p>	<p><i>Observe and identify, compare and describe, sort and classify.</i></p> <p><i>Children use simple features to compare objects, materials and living things and, with help, decide how to sort and group them.</i></p> <p><i>The children recognise 'biggest and smallest', 'best and worst' etc. from their data.</i></p> <p><i>Children classify using simple prepared tables and sorting rings</i></p> <p>Research using Secondary Sources: use photos to discover how different materials are used in our world.</p> <p><i>Use simple secondary sources to find answers.</i></p> <p><i>Can find information to help from books and computers with help</i></p>	<p>3) Describe the simple physical properties of a variety of everyday materials.</p> <p><i>B: Observe and name the properties of everyday materials. Complete tables that describe the properties of materials.</i></p> <p><i>A: Explain why the properties of materials are useful for deciding which materials to use for an object. Give examples.</i></p> <p><i>D: Design an item of clothing to keep one dry.</i></p> <p>4) Compare and group together a variety of everyday materials on the basis of their simple physical properties.</p> <p><i>B: Place materials into groups under the headings given to you. Describe the different properties of materials.</i></p> <p><i>A: Decide how to group materials on the basis of their properties. Explain your reasons for your groups. Compare and contrast the different properties of materials.</i></p> <p><i>D: Create a 'guess the material' game based on the properties of materials.</i></p>
	<p>(Suggest SS lesson 7)</p> <p>Describe the simple physical properties of a variety of everyday materials.</p> <p>Children learn words to describe the observable, physical properties of these materials and sort them using different recording methods.</p> <p>By the end of the lesson children recognise that materials can have more than one property.</p>	<p>Identify, classify and group: sort and group materials according their properties</p> <p><i>Observe and identify, compare and describe, sort and classify.</i></p> <p><i>Children use simple features to compare objects, materials and living things and, with help, decide how to sort and group them.</i></p> <p><i>The children recognise 'biggest and smallest', 'best and worst' etc. from their data.</i></p> <p><i>Children classify using simple prepared tables and sorting rings</i></p>	<p>5) Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p> <p><i>B: Observe and describe changes to the shape of solid objects when they are squashed, bent, twisted or stretched.</i></p> <p><i>A: Experiment with changing the shape of solid objects. Organise and summarise your findings.</i></p> <p><i>D: Always, sometimes or never? The shape of wood can be changed through squashing, bending, twisting or stretching.</i></p>
	<p>Compare and group together a variety of everyday materials on the basis of their simple physical properties.</p> <p>Choose from these lessons:</p> <p>SS Lesson 8:</p> <p>Children learn that different materials stretch and bend.</p> <p>By the end of the lesson they are able to use a range of scientific words to describe the properties of materials.</p>	<p>Comparative & Fair testing: Which materials are the most stretchy / flexible?</p> <p>Comparative & Fair testing: Which material is the most waterproof or absorbent?</p>	<p>6) Identify and compare the suitability of a variety of everyday materials, including wood,</p>

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	<p>SS Lesson 9:</p> <p>Children compare different materials to find out whether they are waterproof or absorbent.</p> <p>By the end of the lesson children are able to use these properties to compare materials.</p>	<p><i>Children discuss ideas about how to find things out and/or how to answer a scientific question generated by themselves or a teacher.</i></p> <p><i>Children carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time.</i></p> <p><i>They gather and record data to help in answering questions.</i></p> <p><i>Children can say what happened / what they found out in an investigation and record and communicate findings in a range of ways.</i></p> <p><i>Children can show results in a table (could be provided)</i></p> <p><i>Children can say whether they were surprised at the results or not and what they would change about their investigation.</i></p>	<p>metal, plastic, glass, brick/rock, and paper/cardboard for particular uses.</p> <p><i>B: List different uses for everyday materials. List reasons for the suitability of materials for particular uses.</i></p> <p><i>A: Compare and contrast the properties of materials and use this to explain why certain materials are used for particular purposes.</i></p> <p><i>D: Paper is unsuitable for a model boat. Do you agree or disagree (reason, justify) Devise other hypotheses like this and test them</i></p>
	<p>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock, and paper/cardboard for particular uses.</p> <p>Use knowledge learnt in unit so far to devise a comparative test - ie paper is unsuitable for a model boat; do you agree or disagree?</p> <p>SS Lesson 9 could be adapted to have this learning outcome.</p>	<p>Comparative & Fair testing: which material is the best for...?</p> <p><i>Children discuss ideas about how to find things out and/or how to answer a scientific question generated by themselves or a teacher.</i></p> <p><i>Children carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time.</i></p> <p><i>They gather and record data to help in answering questions.</i></p> <p><i>Children can say what happened / what they found out in an investigation and record and communicate findings in a range of ways.</i></p> <p><i>Children can show results in a table (could be provided)</i></p> <p><i>Children can say whether they were surprised at the results or not and what they would change about their investigation.</i></p>	
<p>Assessment of learning task and/or</p>	<p>Teachers should assess children's learning of knowledge and vocabulary frequently throughout the unit.</p> <p>Use recap, refresh and revision to start the unit and each lesson.</p> <p>Use the BAD outcomes to assess depth of learning each lesson against the 4 expected outcomes for this unit.</p> <p>Teachers should refer to the milestone expected outcomes for scientific enquiry when assessing these skills (see St J's Science Progression Document)</p>		

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outcome**

Assessment of the
National Curriculum
Objective by
applying
understanding of
Threshold Concepts
and demonstrating
Milestones/Skills.

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