



## KS2 Working Scientifically Progression

KS1		LKS2		UKS2	
1	2	3	4	5	6
<p><b>Identifying and classifying</b></p> <p><u>Implementation</u></p> <p>Year 1</p> <ul style="list-style-type: none"> <li>• <b>Sorting</b> materials into type e.g. natural or man-made</li> <li>• <b>Identifying</b> which materials can float or sink.</li> <li>• <b>Identifying</b> which materials can absorb.</li> <li>• <b>Group and sort</b> animals according to their structures and features</li> <li>• <b>Group and sort</b> carnivores, herbivore and omnivores</li> </ul> <p>Year 2:</p> <ul style="list-style-type: none"> <li>• <b>Identifying and classifying</b>- alive, dead or never alive</li> <li>• <b>Sorting</b> some food into their food groups</li> <li>• <b>Group and sort</b> bulbs from seeds</li> </ul>		<p><b>Identifying differences, similarities or changes related to simple scientific ideas and processes</b></p> <p><u>Implementation</u></p> <p>Year 3:</p> <ul style="list-style-type: none"> <li>• <b>Sorting</b> food items into food groups according to a criteria of their food groups</li> <li>• <b>Identifying</b> the different health benefits of food by designing menus for specific purposes</li> <li>• <b>Grouping</b> rocks according to differences and similarities- describing the properties.</li> <li>• <b>Identifying</b> and describing the difference between vertebrate and invertebrates</li> </ul> <p>Year 4:</p> <ul style="list-style-type: none"> <li>• <b>Identifying</b> the difference in materials and <b>describing</b> their properties. <b>Describing</b> the similarities and differences in between different animal groups.</li> <li>• <b>Testing and comparing</b> circuits to see if a bulb will light.</li> </ul>		<p><b>Identifying scientific evidence that has been used to support or refute ideas or arguments</b></p> <p><u>Implementation</u></p> <p>Year 5:</p> <ul style="list-style-type: none"> <li>• <b>Researching and explaining</b> how scientists understood the solar system including Galileo and Kepler.</li> <li>• <b>Reasoning whilst using evidence</b> Condensation problem solving using concept cartoons</li> <li>• <b>Researching and comparing</b> reproduction and gestation facts in different animals</li> </ul> <p>Year 6:</p> <ul style="list-style-type: none"> <li>• <b>Explaining</b> different theories of evolution</li> <li>• <b>Debating and evaluating</b> theories of evolution</li> </ul>	
<p><b>Asking simple questions and recognising that they can be answered in different ways</b></p> <p><u>Implementation</u></p> <p>Year 1:</p> <ul style="list-style-type: none"> <li>• <b>Asking simple questions</b> about which material will make a good boat.</li> <li>• <b>Asking simple questions</b> about which</li> </ul>		<p><b>Asking relevant questions and using different types of scientific enquiries to answer them</b></p> <p><u>Implementation</u></p> <p>Year 3:</p> <ul style="list-style-type: none"> <li>• <b>Asking questions</b> during pre-assessments of topics. Children investigating as the term proceeds e.g. What would you like to find out about rocks?</li> <li>• <b>Asking questions</b> that scientists from the past would have</li> </ul>		<p><b>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</b></p> <p><u>Implementation</u></p> <p>Year 5:</p> <ul style="list-style-type: none"> <li>• <b>Planning and investigating</b> how to separate materials from a mixture (muddy cocktail).</li> </ul>	



<p>material can mop up a spillage.</p> <ul style="list-style-type: none"> <li>• <b>Asking simple questions and answering</b> them about the difference between animals</li> <li>• <b>Asking simple questions</b> about materials- what material is best for a window?.</li> </ul> <p>Year 2:</p> <ul style="list-style-type: none"> <li>• <b>Asking a questions and answering them</b> by testing, about which material is suitable for a particular tool, road, bridge etc.</li> <li>• <b>Asking questions</b> about where food comes from and answering them.</li> <li>• <b>Asking questions</b> about what a plant needs to be healthy and answering them by growing a plant.</li> <li>• <b>Asking questions</b> about the animals and plants within their local habitat and investigating to answer them.</li> </ul>	<p>asked.</p> <ul style="list-style-type: none"> <li>• <b>Comparing</b> body parts in length- pupils deciding on body parts to compare and measure using equipment.</li> </ul> <p>Year 4:</p> <ul style="list-style-type: none"> <li>• <b>Asking questions</b> for experiments by deciding the variables to keep the same and how to measure them. <b>Asking questions</b> about solids, liquids and gases and researching and conducting tests to find out the answers via padlet.com</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Planning</b> a fair test and <b>investigating</b> air resistance by designing parachutes and testing them.</li> <li>• <b>Planning</b> questions, variables, method for an investigation into balloons.</li> </ul> <p>Year 6:</p> <ul style="list-style-type: none"> <li>• <b>Planning a series of exercises and investigating how they affect the pulse rate of an individual by carrying out a test.</b></li> <li>• <b>Planning and investigating</b> how voltage affects the component output in a circuit.</li> <li>• <b>Planning and investigating</b> how shadows change depending on how close an object is to a light source and</li> </ul>
<p><b>Using their observations and ideas to suggest answers to questions</b></p> <p><u>Implementation</u></p> <p>Year 1</p> <ul style="list-style-type: none"> <li>• <b>Observing</b> different materials and <b>answering</b> associated questions by handling them and testing them for absorbancy, floating sinking etc.</li> <li>• <b>Observing</b> the differences between animals by looking at their structures and features and then grouping them.</li> <li>• <b>Observing</b> what different parts of the body do by testing them.</li> <li>• <b>Observing</b> the different parts of a plant by handling them and discuss the similarities between plants.</li> <li>• <b>Observing</b> the changes to seasons over</li> </ul>	<p><b>Using straightforward scientific evidence to answer questions or to support their findings.</b></p> <p><u>Implementation</u></p> <p>Year 3:</p> <ul style="list-style-type: none"> <li>• <b>Using evidence</b> in the form of dinosaur bones, to create a full skeleton and describe body parts.</li> <li>• <b>Using experiment results</b> to support their conclusion</li> </ul> <p>Year 4:</p> <ul style="list-style-type: none"> <li>• <b>Using results</b> of experiments to draw a <b>describe how</b> evaporation is affected by heat.</li> <li>• <b>Using results</b> of circuit test to answer the question 'will a circuit light'</li> </ul>	



<p>the course of the year- weather, plants, clothing .</p> <p>Year 2</p> <ul style="list-style-type: none"> <li>• <b>Observing</b> how objects change when manipulated and <b>answering questions</b> about their uses.</li> <li>• <b>Observing</b> which animals live in microhabitats.</li> <li>• <b>Observing</b> how a plant grows and <b>answering questions</b> about what it needs to be healthy.</li> </ul>		
<p><b>Performing simple tests</b></p> <p><u>Implementation</u></p> <p>Year 1</p> <ul style="list-style-type: none"> <li>• <b>Testing</b> floating, sinking and absorbancy</li> <li>• <b>Testing</b> the taste and smell of different objects</li> <li>• <b>Testing</b> different clothing in different seasons.</li> </ul> <p>Year 2</p> <ul style="list-style-type: none"> <li>• <b>Testing</b> materials by manipulating them- twisting, bending, squashing and stretching.</li> <li>• <b>Testing</b> materials- melting</li> <li>• <b>Testing</b> the change to their body when exercising- observing effects</li> <li>• <b>Testing</b> how a plant grows</li> </ul>	<p><b>Setting up simple practical enquiries, comparative and fair tests</b></p> <p><u>Implementation</u></p> <p>Year 3:</p> <ul style="list-style-type: none"> <li>• <b>Testing</b> permeable and impermeable rocks</li> <li>• <b>Testing</b> force of friction on different surfaces.</li> </ul> <p>Year 4:</p> <ul style="list-style-type: none"> <li>• <b>Testing</b> evaporation rates within the classroom.</li> <li>• <b>Testing</b> melting rates of materials</li> </ul>	
<p><b>Observing closely, using simple equipment</b></p> <p><u>Implementation</u></p> <p>Year 1:</p> <ul style="list-style-type: none"> <li>• <b>Observing</b> by using a <b>handheld microscope</b> to look closely at materials.</li> </ul>	<p><b>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</b></p> <p><u>Implementation</u></p>	<p><b>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</b></p> <p><u>Implementation</u></p> <p>Year 5:</p>

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<ul style="list-style-type: none"> <li>• Observing plants using magnifying glasses.</li> </ul> <p>Year 2:</p> <ul style="list-style-type: none"> <li>• Observing animals in a microhabitat using a magnifying glass and rulers to measure animals.</li> <li>• Observing the height of a healthy plant using a ruler to measure.</li> </ul>	<p>Year 3:</p> <ul style="list-style-type: none"> <li>• <b>Measuring</b> and comparing body parts using a ruler and tape measure</li> <li>• <b>Measuring</b> the distance travelled across different surfaces using ruler.</li> </ul> <p>Year 4:</p> <ul style="list-style-type: none"> <li>• <b>Measuring</b> rate of evaporation over time (1 week)</li> <li>• <b>Measuring</b> variety of variables to do with biscuits e.g. strength of biscuit when dropped, or dunked.</li> <li>• <b>Measuring</b> sound amplitude using datalogger</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Measuring and simulating</b> orbit rates by timing and counting rotations.</li> <li>• <b>Measuring</b> friction force using Newton Meters</li> <li>• Comparing seasons by <b>measuring angle</b> of the sun and shadows produced using protractor and area calculation</li> </ul> <p>Year 6:</p> <ul style="list-style-type: none"> <li>• <b>Measuring</b> the pulse rate by using a fixed variable of time with a stopwatch and counting the pulse beats.</li> <li>• <b>Measuring</b> the amount of light (Lux) emitted by lamps when varying the voltage using a Light Meter.</li> <li>• <b>Measuring</b> the size of a shadow using a ruler and protractor</li> <li>• <b>Measuring and simulating</b> how different bird beaks are more or less efficient at picking up seeds by using different utensils as beaks and counting the seeds.</li> </ul>
<p><b>Gathering and recording data to help in answering questions</b></p> <p><u>Implementation</u></p> <p>Year 1 and 2:</p> <ul style="list-style-type: none"> <li>• Using a camera to take photos or record videos of their observations</li> <li>• Recording observations by drawing</li> <li>• Recording observations by using labelled drawings</li> <li>• Record their observations or comparisons in writing.</li> <li>• Physically group objects, materials and living things or their images by a criterion.</li> <li>• Physically group objects or materials according to the data they gather (classifying).</li> <li>• Use data they gather to physically rank objects or materials (comparative testing).</li> <li>• Add their data to a prepared table or simple Venn diagram.</li> </ul>	<p><b>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</b></p> <p><u>Implementation</u></p> <p>Year 3:</p> <ul style="list-style-type: none"> <li>• <b>Using a scale</b> to compare and classify rocks</li> <li>• <b>Grouping</b> rocks according to characteristics</li> </ul> <p>Year 4:</p> <ul style="list-style-type: none"> <li>• <b>Grouping and classifying</b> materials e.g. electrical, solids, liquids, gases, animal groups etc.</li> <li>• Using tables to record data</li> </ul>	<p><b>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</b></p> <p><u>Implementation</u></p> <p>Year 5:</p> <ul style="list-style-type: none"> <li>• <b>Recording data using tables</b></li> <li>• <b>Recording data on line graphs</b></li> </ul> <p>Year 6:</p> <ul style="list-style-type: none"> <li>• <b>Recording data using tables including- 3x tests and calculating the mean average</b></li> <li>• <b>Recording data in a variety of graphs depending on the type of data- discrete data on a bar graph, continuous data on a line graph</b></li> </ul>



<ul style="list-style-type: none"> <li>• Add pictures to a pictogram.</li> <li>• Add tally marks to a tally chart and count up the total number.</li> <li>• Make a physical block graph or bar chart by using bricks, lolly sticks etc. or paper strips with which they</li> <li>• measured lengths or heights.</li> </ul>	<p><b>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</b></p> <p><u>Implementation</u></p> <p>Year 3:</p> <ul style="list-style-type: none"> <li>• <b>Venn diagrams</b> for magnetic and non-magnetic materials</li> <li>• Recording data in <b>tables</b></li> <li>• <b>Labelled diagrams</b> of skeletons and bones</li> </ul> <p>Year 4:</p> <ul style="list-style-type: none"> <li>• Recording data in <b>tables</b></li> <li>• <b>Using scales</b> to measure and record</li> <li>• Creating <b>food webs</b> and <b>branching tree diagrams</b> for animal classification</li> </ul>	
	<p><b>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</b></p> <p><u>Implementation</u></p> <p>Year 3:</p> <ul style="list-style-type: none"> <li>• Using scaffolded support, children to draw <b>simple conclusions</b></li> <li>• Making <b>simple predictions</b> using observations and prior learning.</li> </ul> <p>Year 4:</p> <ul style="list-style-type: none"> <li>• <b>Making simple predictions</b> based on prior learning and questions formed</li> <li>• Making <b>simple conclusions</b> based on findings from experiments</li> <li>• <b>Evaluating</b> the success of an experiment and planning what to do next time.</li> </ul>	<p><b>Using test results to make predictions to set up further comparative and fair tests</b></p> <p><u>Implementation</u></p> <p>Year 5:</p> <ul style="list-style-type: none"> <li>• Suggesting further tests into separation of materials following the dirty cocktail experiment and evaluation of the investigation.</li> </ul> <p>Year 6:</p> <ul style="list-style-type: none"> <li>• <b>Using results</b> from previous experiments into the effect components within a circuit, children make predictions about the effect of voltage upon a circuit and run a second test where the new variable is voltage rather than components.</li> </ul>
	<p><b>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and</b></p>	<p><b>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a</b></p>



	<p><b>conclusions</b></p> <p><u>Implementation</u></p> <p>Year 3:</p> <ul style="list-style-type: none"> <li>• <b>Diagrams</b> drawn showing findings and explanations. <b>Simple conclusions</b> explaining results</li> <li>• Creating <b>posters</b> to display findings</li> <li>• Using <b>simple tables</b> to display results</li> </ul> <p>Year 4:</p> <ul style="list-style-type: none"> <li>• <b>Verbal presentations</b> of findings e.g. videos in the style of youtube to explain conductors and insulators</li> <li>• <b>Labelled diagrams</b> of findings</li> <li>• <b>Written explanation</b> of findings</li> <li>• <b>Creating posters</b> to display findings</li> </ul>	<p><b>degree of trust in results, in oral and written forms such as displays and other presentations</b></p> <p><u>Implementation</u></p> <p>Year 5:</p> <ul style="list-style-type: none"> <li>• Written explanation of findings in the form of conclusions</li> <li>• Verbal presentations of findings</li> <li>• Computer presentation of findings- creating a poster using their results and answering the question.</li> </ul> <p>Year 6:</p> <ul style="list-style-type: none"> <li>• <b>Written explanations of findings and analysis of results in the form of a conclusion or applying this learning to letters to caretakers, adverts for new designs etc</b></li> <li>• <b>Combining their data and diagrams into their conclusions or</b></li> <li>• <b>Verbal presentations in the form of explanation videos</b></li> <li>• <b>Computer presentations of findings on Powerpoint.</b></li> </ul>
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