



# Science Progression Map

EYS	KS1 – Year1/Year 2	LKS2 - Year 3/Year 4	UKS2 - Year 5/Year 6
<b>Working Scientifically</b>			
<b>Progression in fair-test, pattern-seeking and observation/measurement over time</b>			
<p>-explore during their play and repeat an action / test making it obvious they are trying to find something out and see if it always results in the same result</p> <p>-recognise when a simple comparison is unfair</p>	<ul style="list-style-type: none"> <li>▪ <b>asking simple questions and recognising that they can be answered in different ways</b></li> <li>- with help begin to choose ways to try and answer a question</li> <li>-take a few guided planning decisions</li> <li>- recognise when simple tests are unfair</li> <li>-make own suggestions on how to collect data once the data needed has been outlined</li> <li>-make simple prediction if appropriate (based on something they have observed before but without an explanation)</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>ask relevant questions and use different types of scientific enquiries to answer them</b></li> <li>▪ <b>set up simple practical enquiries, comparative and fair tests</b></li> </ul> <p>-begin to choose ways to try and answer a question</p> <p>- put forward own ideas and make some planning decisions</p> <p>- suggest ways of making the test fair or if it can't be fair how they will answer it by looking for a pattern</p> <p>- from a selection say what equipment is needed</p> <p>- suggest the type of data needed to be collected</p> <p>- make simple predictions based on everyday experience and knowledge</p>	<ul style="list-style-type: none"> <li>▪ <b>plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary to</b></li> </ul> <p>-ask a variety of types of scientific questions</p> <p>-choose the most appropriate scientific enquiry method to answer a question and outline the method</p> <p>-list all the equipment needed</p> <p>-decide what data to collect and how much of it is needed</p> <p>- make predictions based on scientific knowledge</p>
<p>- observe closely using all of their senses as appropriate</p> <p>- during their play repeat an action/test making it obvious they are try to find something out and see if it always results in the same result</p> <p>- compare 2 (3) things by direct observation</p>	<ul style="list-style-type: none"> <li>▪ <b>observe closely, using simple equipment</b></li> <li>▪ <b>perform simple tests</b></li> </ul> <p>- make observations related to the task or test</p> <p>- use simple equipment provided</p> <p>-measure using uniform non-standard units (e.g. straws) or simple standard units and measuring equipment - meter stick, cm, kg masses, l, jugs &amp; second timer</p> <p>-compare 3 or more things</p> <p>-read scales to nearest labelled division.</p>	<ul style="list-style-type: none"> <li>▪ <b>Make systematic and careful observations and where appropriate take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</b></li> </ul> <p>- carry out a fair test or pattern seeking enquiry with help</p> <p>-compare 3 or more things</p> <p>-use simple standard measures; m, cm, mm, kg, g, cm<sup>3</sup>, minutes, seconds, Newton.</p> <p>-measure to the nearest whole or half unit or mixed units.</p> <p>-read scales to the nearest division labelled and unlabelled.</p>	<ul style="list-style-type: none"> <li>▪ <b>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, take repeat readings when appropriate</b></li> </ul> <p>- make a series of measurements adequate for the task</p> <p>- select appropriate measuring equipment</p> <p>- use standard measures as in including use of fractions and mixed units and decimals to one place.</p> <p>-read scales with increased accuracy</p> <p>-compare 5 or more things</p> <p>- select apparatus and use with care</p> <p>-read scales with precision and accuracy appropriate to the task</p> <p>-repeat readings &amp; find averages</p>
	<ul style="list-style-type: none"> <li>▪ <b>gather and record data to help in answering questions</b></li> </ul> <p>- draw pictures of results/ take photos</p> <p>- help teacher make a class table or chart</p> <p>- complete a simple chart or two column table</p> <p>- make practical block graphs/pictograms</p> <p>- make/draw a block graph with a 1:1 scale</p>	<ul style="list-style-type: none"> <li>▪ <b>gather, record, classify and present data in a variety of ways to help in answering questions</b></li> <li>▪ <b>record findings using simple scientific language, drawings, labelled diagrams, bar charts, and tables</b></li> </ul> <p>- construct a simple 2 column table</p> <p>-draw bar charts 1:1, 1:2, 1:5 and 1:10 scale &amp; begin to plot line graphs</p>	<ul style="list-style-type: none"> <li>▪ <b>record data and results of increasing complexity using scientific diagrams, labels, classification keys tables, scatter graphs, bar and line graphs</b></li> </ul> <p>- present information clearly in tables including for repeat readings</p> <p>- record observations and measurements systematically</p> <p>-draw bar graphs more complex scales possibly involving fractions or decimals e.g. 1:2.5</p> <p>- draw line graphs, possibly involving fractions and decimals</p>
<p>- Make comparisons</p> <p>- say what happened</p> <p>-order results (first, second, third)</p> <p>-spot similarities and differences</p>	<ul style="list-style-type: none"> <li>▪ <b>use their observations and ideas to suggest answers to questions</b></li> </ul> <p>- describe observations</p> <p>- say what they have found out</p> <p>-say whether what happened was what they expected</p>	<ul style="list-style-type: none"> <li>▪ <b>report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions, making predictions for new values</b></li> <li>▪ <b>use results to draw simple conclusions and suggest improvements, and raise further questions</b></li> <li>▪ <b>identifying differences, similarities or changes related to simple scientific ideas and processes</b></li> <li>▪ <b>use straightforward scientific evidence to answer questions or support their findings</b></li> </ul> <p>- say what they have found out and give an explanation for observations and simple patterns based on everyday experience</p>	<ul style="list-style-type: none"> <li>▪ <b>report and present findings from enquiries, including conclusions, causal relationships and explanations of results, explanations of the degree of trust in results, in oral and written forms such as displays and other presentations</b></li> <li>▪ <b>use test results to make predictions to set up further comparative and fair tests</b></li> <li>▪ <b>identify scientific evidence that has been used to support or refute ideas or arguments.</b></li> </ul> <p>- use graphs to spot and interpret patterns/trends in results</p> <p>- draw conclusions using these patterns and begin to relate conclusions to scientific knowledge and understanding consistent with the evidence</p> <p>- offer simple explanations for differences in repeated measurements/ observations</p>
<b>Progression in Identifying and classifying over time</b>			
<p>-use <b>all</b> senses to match and sort things as appropriate</p> <p>-match things that are the same</p> <p>-sort and group a collection of things with differing observable features in their own way/s</p> <p>-find things that are similar and describe the similarities (and spot any differences)</p> <p>-Identify things that are different and describe the differences (and spot any similarities)</p> <p>-talk about their choices</p>	<ul style="list-style-type: none"> <li>- <b>identifying and classifying</b></li> </ul> <p>-compare observable and behavioural features of living things, materials and objects</p> <p>-sort and group in own way using both observable and behavioural features even when differences are slight</p> <p>-answer simple yes/no questions about a mystery object they have chosen</p> <p>-sort into two groups in which one group has a feature and the other doesn't</p> <p>-once they have decided sorting criteria explain where further additional items could</p>	<ul style="list-style-type: none"> <li>- <b>gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</b></li> </ul> <p>-use Carroll and Venn diagrams to help sort things and record the groupings, sometimes re-sorting using different criteria</p> <p>-make simple branching data bases/ classification keys to for a few (3-6) things with easily observable differences and that I can name</p> <p>-use simple classification keys/ branching data bases to identify unknown items that have easily observable differences in their features</p> <p>-carry out simple tests and sort and group based on the evidence of the results found.</p>	<ul style="list-style-type: none"> <li>- <b>recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</b></li> </ul> <p>-be aware of the term kingdom and know that most scientists classify things into five kingdoms.</p> <p>-through direct observations where possible classify animals into vertebrates and invertebrates.</p> <p>-make keys and branching databases with 4 or more items</p> <p>-evaluate how well keys and databases work and make changes to improve them</p> <p>-explain why it is important to classify and why it is useful to scientists</p> <p>- plan what to test, how to test and collect evidence in order to classify</p>



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	<p>be placed</p> <p>-use simple Venn diagrams to help sort things and record the groupings</p>				
<p><b>Knowledge and Understanding progress – EYS – Early Learning Goals</b></p> <p><i>Can they explore the natural world around them, making observations and drawing pictures of animals and plants?</i></p> <p><i>Do they know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class?</i></p> <p><i>Do they understand some important processes and changes in the natural world around them, including the seasons and changing states of matter?</i></p>		<p><b>Knowledge and Understanding progress – Year 1</b></p> <p><i>Can they name and describe the petals, stem, leaf, bulb, flower, seed, stem and root of a plant?</i></p> <p><i>Can they identify and name a range of common plants and trees?</i></p> <p><i>Can they recognise deciduous and evergreen trees?</i></p> <p><i>Can they name the trunk, branches and root of a tree?</i></p> <p><i>Can they identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals?</i></p> <p><i>Can they identify and name a variety of common animals that are carnivores, herbivores and omnivores?</i></p> <p><i>Can they describe and compare the structure of common animals including fish amphibians, reptiles, birds, mammals and pets?</i></p> <p><i>Can they name the parts of the human body that they can see? Can they draw &amp; label basic parts of the human body?</i></p> <p><i>Can they identify, name, draw and label the basic parts of the human body and link them to their senses?</i></p> <p><i>Can they observe changes across the four seasons?</i></p> <p><i>Can they observe and describe weather associated with the seasons?</i></p> <p><i>Can they distinguish between an object and the material from which it is made?</i></p> <p><i>Can they identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock?</i></p> <p><i>Can they describe the simple physical properties of a variety of everyday materials?</i></p> <p><i>Can they compare and group together a variety of everyday materials on the basis of their simple physical properties?</i></p>			
<p><b>Biology - Living things and their habitats</b></p>					
<p>Year 1</p> <p><i>Can they name and describe the petals, stem, leaf, bulb, flower, seed, stem and root of a plant?</i></p> <p><i>Can they identify and name a range of common plants and trees?</i></p> <p><i>Can they recognise deciduous and evergreen trees?</i></p> <p><i>Can they name the trunk, branches and root of a tree?</i></p>	<p>Year 2</p> <p><i>Can they explain the differences between living and non-living things and things that have never been alive?</i></p> <p><i>Can they identify that most living things live in habitats that they are suited to?</i></p> <p><i>Can they describe how a habitat provides for the basic needs of things living there and how they depend on each other?</i></p> <p><i>Can identify and name a variety of plants and animals in their habitats, including micro habitats?</i></p> <p><i>Can they describe how animals obtain their food from plants and animals using simple food chains?</i></p> <p><i>Can they identify and name different food sources?</i></p>	<p>Year 3</p> <p><i>Can they identify and describe the functions of different parts of flowering plants? (roots, stem/trunk, leaves and flowers)?</i></p> <p><i>Can they explore the requirement of plants for life and growth (air, light, water, nutrients from soil, and room to grow)?</i></p> <p><i>Can they explain how they vary from plant to plant?</i></p> <p><i>Can they investigate the way in which water is transported within plants?</i></p> <p><i>Can they explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal?</i></p>	<p>Year 4</p> <p><i>Can they recognise that living things can be grouped in a variety of ways?</i></p> <p><i>Can they explore and use a classification key to group, identify and name a variety of living things in their local and wider environment?</i></p> <p><i>Can they recognise that environments can change and this can sometimes pose a danger to living things?</i></p>	<p>Year 5</p> <p><i>Can they describe the differences in the life cycles of a mammal, amphibians, insects and a bird?</i></p> <p><i>Can they describe the life process of reproduction of common plants?</i></p>	<p>Year 6</p> <p><i>Can they describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences including microorganisms, plants and animals based on specific characteristics?</i></p> <p><i>Can they give reasons for classifying plants and animals based on specific characteristics?</i></p>
<p><b>Biology - Plants</b></p>					
<p>Year 1</p> <p><i>Can they name and describe the petals, stem, leaf, bulb, flower, seed, stem and root of a plant?</i></p> <p><i>Can they identify and name a range of common plants and trees?</i></p> <p><i>Can they recognise deciduous and evergreen trees?</i></p> <p><i>Can they name the trunk, branches and root of a tree?</i></p>	<p>Year 2</p> <p><i>Can they observe and describe how seeds and bulbs grow into mature plants?</i></p> <p><i>Can they find out &amp; describe how plants need water, light and a suitable temperature to grow and stay healthy?</i></p>	<p>Year 3</p> <p><i>Can they identify and describe the functions of different parts of flowering plants? (roots, stem/trunk, leaves and flowers)?</i></p> <p><i>Can they explore the requirement of plants for life and growth (air, light, water, nutrients from soil, and room to grow)?</i></p> <p><i>Can they explain how they vary from plant to plant?</i></p> <p><i>Can they investigate the way in which water is transported within plants?</i></p> <p><i>Can they explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal?</i></p>			
<p><b>Biology – Animals, Including Humans</b></p>					
<p>Year 1</p> <p><i>Can they identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals?</i></p> <p><i>Can they identify and name a variety of common animals that are carnivores, herbivores and omnivores?</i></p> <p><i>Can they describe and compare the structure of common animals including fish amphibians, reptiles, birds, mammals and pets?</i></p> <p><i>Can they name the parts of the human body that they can see?</i></p> <p><i>Can they draw &amp; label basic parts of the human body?</i></p> <p><i>Can they identify, name, draw and label the basic parts of the human body and link them to</i></p>	<p>Year 2</p> <p><i>Can they notice that animals, including humans, have offspring that grow into adults?</i></p> <p><i>Can they find out about the basic needs of animals, including humans, for survival (water, food and air)?</i></p> <p><i>Can they describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene?</i></p>	<p>Year 3</p> <p><i>Can they identify that animals, including humans need the right types and amounts of nutrition, they cannot make their own food: they get nutrition from what they eat?</i></p> <p><i>Can they identify that humans and some other animals have skeletons and muscles for support, protection and movement?</i></p>	<p>Year 4</p> <p><i>Can they describe the simple functions of the basic parts of the digestive system in humans?</i></p> <p><i>Can they identify the different types of teeth in humans and their simple functions?</i></p> <p><i>Can they construct and interpret a variety of food chains, identifying producers, predators and prey?</i></p>	<p>Year 5</p> <p><i>Can they describe the changes as humans develop to old age?</i></p>	<p>Year 6</p> <p><i>Can they identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood?</i></p> <p><i>Can they recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function?</i></p> <p><i>Can they describe the ways in which nutrients and water are transported within animals, including humans?</i></p>



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their senses?					
<b>Biology – Evolution and inheritance</b>					
					<p>Year 6</p> <p>Can they recognise that living things have changed over time and that fossils provide information about living things that inhabited the earth millions of years ago?</p> <p>Can they recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents?</p> <p>Can they identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution?</p>
<b>Chemistry</b>					
<p>Year 1</p> <p><b>Everyday materials</b></p> <p>Can they distinguish between an object and the material from which it is made?</p> <p>Can they identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock?</p> <p>Can they describe the simple physical properties of a variety of everyday materials?</p> <p>Can compare and group together a variety of everyday materials on the basis of their simple physical properties?</p>	<p>Year 2</p> <p><b>Uses of everyday materials</b></p> <p>Can they identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses?</p> <p>Can they find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching?</p>	<p>Year 3</p> <p><b>Rocks</b></p> <p>Can they compare and group together different rocks on the basis of their appearance and simple physical properties?</p> <p>Can they describe and explain how different rocks can be useful to us?</p> <p>Can they recognise that soils are made from rocks and organic matter?</p>	<p>Year 4</p> <p><b>States of matter</b></p> <p>Can they compare and group materials together, according to whether they are solids, liquids or gases?</p> <p>Can they observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)?</p> <p>Can they identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature?</p>	<p>Year 5</p> <p><b>Properties and changes</b></p> <p>Can they compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets?</p> <p>Do they now know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution?</p> <p>Can they use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating?</p> <p>Can they give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic?</p> <p>Can they demonstrate that dissolving, mixing and changes of state are reversible changes?</p> <p>Can they 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 and the action of acid on bicarbonate of soda?</p>	
<b>Physics - Light</b>					
		<p>Year 3</p> <p>Can they recognise that they need light in order to see things and that dark is the absence of light?</p> <p>Can they notice that light is reflected from surfaces?</p> <p>Can they recognise that light from the sun can be dangerous and that there are ways to protect their eyes?</p> <p>Can they recognise that shadows are formed when the light from a light source is blocked by an opaque object?</p> <p>Can they find patterns in the way that the size of shadows change?</p>			<p>Year 6</p> <p>Can they recognise that light appears to travel in straight lines?</p> <p>Can they use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye?</p> <p>Can they explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes?</p> <p>Can they use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them?</p>
<b>Physics - Sound</b>					
			<p>Year 4</p> <p>Can they identify how sounds are made, associating some of them with something vibrating?</p> <p>Can they recognise how vibrations from sound travel through a medium to the ear?</p>		



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			<p>Can they find patterns between the pitch of a sound and features of the object that produce it?</p> <p>Can they find patterns between the volume of the sound and the strength of the vibrations that produced it?</p> <p>Can they recognise that sounds get fainter as the distance from the sound source increases?</p>	
<b>Physics - Forces and magnets</b>				
		<p><i>Year 3</i></p> <p>Can they compare how things move on different surfaces?</p> <p>Can they notice that some forces need contact between two objects, but magnetic forces can act at a distance?</p> <p>Can they observe how magnets attract or repel each other and attract some materials and not others?</p> <p>Can they compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet and identify some magnetic materials?</p> <p>Can they describe magnets have having two poles (N &amp; S)?</p> <p>Can they predict whether two magnets will attract or repel each other depending on which poles are facing?</p>		<p><i>Year 5</i></p> <p>Can they explain that unsupported objects fall towards the earth because of the force of gravity acting between the earth and the falling object?</p> <p>Can they identify the effects of air resistance, water resistance and friction that act between moving surfaces?</p> <p>Can they recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect?</p>
<b>Physics</b>				
<p><b>Year 1</b></p> <p><b>Seasonal Changes</b></p> <p>Can they observe changes across the four seasons?</p> <p>Can they observe and describe weather associated with the seasons and how daylight varies?</p>				<p><b>Year 5</b></p> <p><b>Earth and Space</b></p> <p>Can they describe the movement of the Earth and other planets relative to the sun in the solar system?</p> <p>Can they describe and explain the movement of the Moon relative to the Earth?</p> <p>Can they describe the sun, earth and moon as approximately spherical bodies?</p> <p>Can they use the idea of the earth's rotation to explain day and night and the apparent movement of the sun across the sky?</p>
<b>Physics - Electricity</b>				
			<p><i>Year 4</i></p> <p>Can they identify common appliances that run on electricity?</p> <p>Can they construct a simple series electric circuit and identify and name the basic part in a series circuit, including cells, wires, bulbs, switches and buzzers?</p> <p>Can they identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery?</p> <p>Can they recognise that a switch opens and closes a circuit and associate a switch opening with whether or not a lamp lights in a simple series circuit?</p> <p>Can they recognise some common conductors and insulators and associate metals with being good conductors?</p>	<p><i>Year 6</i></p> <p>Can they associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit?</p> <p>Can they compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers, the on/off position of switches?</p> <p>Can they use recognised symbols when representing a simple circuit in a diagram?</p>