

## The Summerbank Approach to developing our children as scientists

Science is about exploring and discovering the world. Children engage in exciting, practical, hands on experiences which encourages their natural curiosity and develops their ability to question, investigate, work scientifically and learn. These opportunities will ensure that our children become confident, life-long learners, who are well-equipped to explore the world around them.

Our children will achieve this through a combination of:

- working scientifically
- a question-based curriculum
- spiral coverage of scientific concepts and skills

### Working Scientifically Progression

Year	Questioning & Enquiry	Observing and Measuring	Investigating	Recording & Reporting Findings	Identifying & classifying	Conclusions	Key Vocab
1	Ask simple relevant questions about the world around us	Observe changes and make comments about them	Perform simple tests with support Begin to say what happened in investigations	Begin to record simple data (e.g. complete a provided table)	To begin to use simple features to compare objects, materials and living things, and, with help, decide how to sort and group them	Begin to talk about what they found out and how they found it out	<b>Question</b> <b>Answer</b> <b>Observe</b> <b>Equipment</b> <b>Sort</b> <b>Group</b> <b>Record</b>
2	Ask questions of a scientific nature about the world around us	Observe closely using simple equipment (rulers, egg timers, stop watches) including observing over time  Use observations and ideas to suggest answers to questions	Perform simple tests independently To be able to describe what happened in the investigation	Record findings in different ways (e.g. provided table, tally chart, pictograms)	Use simple features to compare objects, materials and living things, and decide how to sort and group them	Talk about what they found out, how they found it out, if anything surprised them and changes they might make if they did the investigation again	<b>Identify</b> <b>Classify</b> <b>Describe</b> <b>Compare</b> <b>Contrast</b> <b>Diagram</b> <b>Chart</b> <b>Data</b>

3	Begin to ask questions about the world around us, exploring everyday phenomena and the relationships between living things	Learn to measure using scientific equipment (thermometers, data loggers)  Begin to decide what data to collect and measure to investigate simple patterns and relationships	Begin to recognise when a simple fair test is necessary and help to decide how to set it up  Help to decide which variable to keep the same and which to change	Begin to record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.	Help to decide criteria for grouping, sorting and classifying including grouping by behaviour or properties based on testing.	Begin to use results to draw simple conclusions, make predictions, suggest improvements and raise further questions.	<b>Research Scientific enquiry</b>  <b>Comparative Test</b> <b>Fair Test</b>  <b>Observation Thermometer</b>  <b>Gather/record data</b>
4	Raise their own questions about the world around us and make some decisions about which types of enquiry will be the best ways of answering these	Take systematic and accurate measurements using standard units and a range of equipment (thermometers, data loggers)  Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used.	Set up simple practical enquiries, comparative and fair tests  Decide which variables to keep the same and which to change	Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.	Decide criteria/use keys for grouping, sorting and classifying including by behaviour or properties based on testing	Start to use scientific evidence to answer questions and support findings beginning to look for patterns, similarities and differences in the data	<b>Present</b>  <b>Key Bar chart Table</b>  <b>Prediction Evidence Interpret Conclusion</b>

5	Begin to plan different types of scientific enquiries to answer questions, including recognising and controlling variables	Take systematic and accurate measurements with increasing accuracy using a range of different units (mass, time, weight, area)  Identify what data needs to be collected and choose the most appropriate equipment to use	Start to use test results to make predictions and set up further comparative and fair tests  Identify independent and dependent variables in an investigation	Begin to record data and results of increasing complexity using scientific diagrams and labels, classification keys and graphs.	Learn to develop keys and other information records to identify, classify and describe living things and materials.	Begin to draw conclusions based on their data, observations and scientific evidence, using their findings to make predictions and to set up further comparative tests	<b>Plan</b>  <b>Variable</b>  <b>Accuracy</b> <b>Precise</b> <b>Repeat readings</b>  <b>Scientific diagram</b> <b>Classification key</b> <b>Scatter graph</b> <b>Line graph</b>
6	Select the most appropriate ways to answer science questions using different types of scientific enquiry (e.g. observing over time, noticing patterns, grouping or classifying, comparative/fair testing, using secondary sources).	Make own decisions about what observations to make, how to make them and the most appropriate equipment to use  Take systematic and accurate measurements accurate to the nearest unit using a range of different units (mass, time, weight, area) and repeating reading where appropriate	Use test results to make predictions and to shape further enquiries  To identify when a control is needed within an investigation and how this can be achieved.	Decide how to record data from a choice of familiar approaches and how best to present the data.	Develop own keys and other information records to identify, classify and describe living things and materials.	Draw conclusions based on their data, justifying ideas and using scientific knowledge and understanding to explain their findings.  Identify evidence that refutes or supports their ideas.  Raise further questions that could be investigated based on data and observations	<b>Causal relationship</b> <b>Explanation</b>  <b>Support</b> <b>Refute</b>  <b>Pattern</b>  <b>Quantitative measurements</b>

## Year Group Science Focus

Year	Autumn	Spring	Summer
Year 1	<p><b>Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>&gt; identify and name human body parts</li> <li>&gt; identify and name common animals</li> <li>&gt; describe and compare structure of a variety of common animals</li> </ul>	<p><b>Plants</b></p> <ul style="list-style-type: none"> <li>&gt; name a variety of common plants</li> <li>&gt; basic structure of plants</li> <li>&gt; seasonal change</li> </ul>	<p><b>Everyday Materials</b></p> <ul style="list-style-type: none"> <li>&gt; everyday materials</li> <li>&gt; identify and group together physical properties of materials</li> <li>&gt; suitability of materials for different uses</li> <li>&gt; how materials can be changed</li> </ul>
Year 2	<p><b>Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>&gt; Basic needs (water, food and air)</li> <li>&gt; simple food chains (including predators and prey)</li> <li>&gt; different habitats</li> <li>&gt; carnivore, omnivore, herbivore</li> </ul>	<p><b>Plants</b></p> <ul style="list-style-type: none"> <li>&gt; observe and describe how seeds/bulbs grow into mature plants</li> <li>&gt; conditions needed for growth (water, light, temperature)</li> </ul>	<p><b>Light</b></p> <ul style="list-style-type: none"> <li>&gt; what is light/dark</li> <li>&gt; how reflection occurs</li> <li>&gt; the formation and factors affecting shadows</li> </ul>
Year 3	<p><b>Rocks</b></p> <ul style="list-style-type: none"> <li>&gt; compare and group rocks based on appearance and physical properties</li> <li>&gt; formation of fossils</li> <li>&gt; recognise soils are made from rocks and organic matter</li> </ul>	<p><b>Forces and magnets</b></p> <ul style="list-style-type: none"> <li>&gt; that magnets attract/repel</li> <li>&gt; compare and group magnetic and non-magnetic materials</li> <li>&gt; investigate the properties of magnets</li> </ul> <p>North/South poles</p>	<p><b>Animals including humans</b></p> <ul style="list-style-type: none"> <li>&gt; Nutrition</li> <li>&gt; Skeletons and muscles</li> <li>&gt; Effect of exercise on the body</li> <li>&gt; Teeth</li> </ul>
Year 4	<p><b>Sound</b></p> <ul style="list-style-type: none"> <li>&gt; identify how sounds are made and how they travel to the ear</li> <li>&gt; find patterns in pitch and volume</li> <li>&gt; explain changes in sound</li> </ul>	<p><b>Plants</b></p> <ul style="list-style-type: none"> <li>&gt; functions of parts of plants</li> <li>&gt; variations in requirements for life/growth</li> <li>&gt; water transportation</li> <li>&gt; life cycle</li> </ul> <p>Life cycle (pollination, seed formation, seed dispersal)</p>	<p><b>States of matter</b></p> <ul style="list-style-type: none"> <li>&gt; compare and group together materials based on whether solid, liquid, gas</li> <li>&gt; observe changes in state (heating, cooling)</li> <li>&gt; evaporation, condensation and its part in the water cycle</li> </ul>
Year 5	<p><b>Properties and changes of materials</b></p> <ul style="list-style-type: none"> <li>&gt; compare/group together materials based upon their properties (hardness, solubility, transparency, conductivity, magnetism)</li> <li>&gt; reversible and irreversible change</li> <li>&gt; suitability of materials for different uses</li> </ul>	<p><b>Animals including humans</b></p> <ul style="list-style-type: none"> <li>&gt; Life cycles (mammal, amphibian, insect, bird)</li> <li>&gt; Life processes and reproduction</li> <li>&gt; Classification</li> </ul>	<p><b>Earth and Space</b></p> <ul style="list-style-type: none"> <li>&gt; describe the movement of the Earth and other planets relative to the sun</li> <li>&gt; describe the movement of the moon relative to the Earth</li> <li>&gt; explain day and night linked to rotation</li> </ul>

Year 6	<p><b>Light</b></p> <ul style="list-style-type: none"><li>&gt; recognise how light travels</li><li>&gt; explain how we see things linked to how light travels</li><li>&gt; explain shadows using the concept of how light travels</li></ul>	<p><b>Animals including humans</b></p> <ul style="list-style-type: none"><li>&gt; Digestive system</li><li>&gt; Circulatory system</li><li>&gt; Impact of diet, exercise and drugs</li></ul>	<p><b>Forces</b></p> <ul style="list-style-type: none"><li>&gt; explain why unsupported objects fall towards the earth in terms of gravity</li><li>&gt; identify the effects of air resistance/water resistance and friction</li><li>&gt; recognise how mechanisms including levers, pulleys and gears can allow a smaller force to have a greater effect</li></ul>
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