

Specific 'Working Scientifically' skills are taught across classes.

Skill	EYFS	Year 1	Years 2 and 3 For year 2 ensure year 1 skills are secure	Years 4 / 5 / 6 For year 4 ensure year 3 skills are secure
<p><i>Asking questions and recognising that they can be answered in different ways</i></p>	<p>Developing curiosity</p>	<p>Asking simple questions and recognising that they can be answered in different ways</p>	<p>Asking relevant questions and using different types of scientific enquiries to answer them</p>	<p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p>
	<p>Show curiosity about objects, events and people. Playing & Exploring</p> <p>Question why things happen. Speaking: 30-50 months</p>	<p>Ask simple questions (Where appropriate, they answer these questions).</p> <p>Answer questions developed with the teacher often through a scenario.</p> <p>Involved in planning how to use resources provided to answer the questions using different types of enquiry.</p> <p>Recognise that there are different ways in which questions can be answered.</p>	<p>Consider prior knowledge when asking questions.</p> <p>Independently use a range of question stems to ask questions. (Where appropriate, they answer these questions).</p> <p>Answer questions posed by the teacher.</p> <p>Given a range of resources, decide how to gather evidence to answer the question.</p> <p>Recognise when secondary sources can be used to answer questions that cannot be answered through practical work.</p> <p>Identify the type of enquiry that they have chosen to answer their question</p>	<p>Independently ask scientific questions.</p> <p>Given a wide range of resources decide for themselves how to gather evidence to answer a scientific question.</p> <p>Choose a type of enquiry to carry out and justify their choice.</p> <p>Recognise how secondary sources can be used to answer questions that cannot be answered through practical work</p>
<p><i>Making observations and taking measurements</i></p>	<p>Engage in open-ended activity</p>	<p>Observing closely, using simple equipment</p>	<p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p>	<p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p>
	<p>Take a risk, engage in new experiences and learn by trial and error. Playing & Exploring</p>	<p>Explore the world around them.</p> <p>Make careful observations to support identification, comparison and noticing change.</p>	<p>Children make systematic and careful observations.</p> <p>Use a range of equipment for measuring length, time, temperature and capacity.</p>	<p>Select measuring equipment to give the most precise results e.g. ruler, tape measure or trundle wheel, force meter with a suitable scale.</p> <p>Make decisions</p>

	<p>Choose the resources needed for chosen activities. ELG: Self Confidence & Self Awareness</p> <p>Handle equipment and tools effectively. ELG: Moving & Handling</p>	<p>Use appropriate senses, aided by equipment such as magnifying glasses or digital microscopes, to make their observations.</p> <p>Take measurements, initially by comparisons then using non-standard units e.g. number of cubes/straws etc.</p>	<p>Use standard units for taking measurements</p>	<p>E.g. whether they need to: take repeat readings (fair testing); increase the sample size (pattern seeking); adjust the observation period and frequency (observing over time); or check further secondary sources (researching); in order to get accurate data (closer to the true value)</p>
<p>Engaging in practical enquiry to answer questions</p>	<p>Find ways to solve problems / find new ways to do things / test their ideas</p>	<p>Performing simple tests</p>	<p>Setting up simple practical enquiries, comparative and fair tests</p>	<p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p>
	<p>Creating & Thinking Critically</p> <p>Develop ideas of grouping, sequences, cause and effect. Creating & Thinking Critically</p> <p>Know about similarities and differences in relation to places, objects, materials and living things. ELG: The World</p>	<p>Use practical resources provided to gather evidence to answer questions generated by themselves or the teacher.</p> <p>Carry out the 5 types of enquiry: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time.</p> <p>Identifying and classifying Children use their observations and testing to compare objects, materials and living things.</p> <p>Sort and group these objects, materials and living things, identifying their own criteria for sorting.</p> <p>Use simple secondary sources (e.g. identification sheets) to name living things.</p> <p>Describe the characteristics they used to identify a living thing.</p>	<p>Select from a range of practical resources to gather evidence to answer questions generated by themselves or the teacher.</p> <p>Follow their plan to carry out the 5 types of enquiry: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking</p>	<p>Select from a range of practical resources to gather evidence to answer their questions.</p> <p>Carry out fair tests, recognising and controlling variables.</p> <p>Decide what observations or measurements to make over time and for how long.</p> <p>Look for patterns and relationships using a suitable sample (at least 4)</p>
<p>Recording and presenting evidence</p>	<p>Comment and ask questions about aspects of their familiar world such as the place where they live or the</p>	<p>Gathering and recording data to help in answering questions</p>	<p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</p>	<p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p>

	natural world		Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	
	<p>Observe what animals, people and vehicles do. The World 8-20 months. Children use senses to explore the world around them. Playing & Exploring</p> <p>Create simple representations of events, people and objects. Being Imaginative: 40-60+ months</p>	<p>Record observations e.g. using photographs, videos, drawings, labelled diagrams or in writing. Record their measurements e.g. using prepared tables, pictograms, tally charts and block graphs. Classify using simple prepared tables and sorting ring</p>	<p>With support, decide how to record and present evidence. Record observation e.g. using photographs, videos, pictures, labelled diagrams or writing. Record measurements e.g. using tables, tally charts and bar charts (given templates, if required, to which they can add headings). Record classifications e.g. using tables, Venn diagrams, Carroll diagrams. With support, present the same data in at least 2 different ways in order to help with answering the question</p>	<p>Independently, decide how to record and present evidence. Record observations e.g. using annotated photographs, videos, labelled diagrams, observational drawings, labelled scientific diagrams or writing. Record measurements e.g. using tables, tally charts, bar charts, line graphs and scatter graphs. Record classifications e.g. using tables, Venn diagrams, Carroll diagrams and classification keys. Independently, present the same data in at least 2 different ways in order to help with answering the question.</p>
Answering questions and concluding	Make links and notice patterns in their experience. Creating & Thinking Critically	Using their observations and ideas to suggest answers to questions	Using straightforward scientific evidence to answer questions or to support their findings.	Identifying scientific evidence that has been used to support or refute ideas or arguments
	<p>Answer how and why questions about own experiences. ELG: Understanding</p> <p>Make observations of animals and plants and explain why some things occur, and talk about changes. ELG: The World</p> <p>Develop own narratives and explanations by connecting ideas or events. ELG: Speaking</p> <p>Build up vocabulary that reflects the breadth of own experience. Understanding: 30-50 months</p>	<p>Use their experiences of the world around them to suggest appropriate answers to questions.</p> <p>Supported to relate these to evidence e.g. observations pupils have made, measurements pupils have taken or information gained from secondary sources</p> <p>Recognise 'biggest and smallest', 'best and worst' etc. from data.</p>	<p>Answer their own and others' questions based on observations they have made, measurements they have taken or information they have gained from secondary sources (answers are consistent with the evidence gathered).</p> <p>Identify at least 2 differences, similarities or changes related to simple scientific ideas and processes.</p> <p>Interpret own data to generate simple comparative statements based on evidence.</p> <p>Begin to identify naturally occurring patterns and causal relationships.</p>	<p>Answer their own and others' questions based on observations they have made, measurements they have taken or information they have gained from secondary sources.</p> <p>When doing this, they discuss whether other evidence (e.g. from other groups, secondary sources and their scientific understanding), supports or refutes their answer.</p> <p>Talk about how their scientific ideas change due to new evidence that they have gathered. Talk about how new discoveries change scientific understanding.</p> <p>In conclusions, identify causal relationships and patterns in the natural</p>

				world from their evidence; identify results that do not fit the overall pattern and explain their findings using their subject knowledge.
			Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
			Draw conclusions based on their evidence and current subject knowledge	In conclusions, identify causal relationships and patterns in the natural world from their evidence; identify results that do not fit the overall pattern and explain their findings using their subject knowledge.
<i>Evaluating and raising further questions and predictions</i>			Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.
			Identify at least 1 way in which they adapted their method as they progressed or how they would do it differently, if they repeated the enquiry.	Evaluate the following: the choice of method used, the control of variables, the precision and accuracy of measurements and the credibility of secondary sources used. Identify any limitations that reduce the trust they have in their data.
<i>Communicating their findings</i>			Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.
				Communicate their findings to an audience using relevant scientific language and diagrams.

			Communicate findings to an audience both orally and in writing, using appropriate scientific vocabulary	
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