

Springdale First School

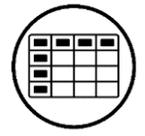


Imagine, Believe, Achieve

Science – Working scientifically (Disciplinary knowledge) Progression Map

Skill	Rec	Year 1	Year 2	Year 3	Year 4
<p>Ask scientific questions</p> 	<p>Ask questions to find out more Show curiosity about objects, events and people.</p> <p>Begin to ask questions about the immediate environment, including 'why' and 'how' questions.</p> <p>'Think out loud' in both play and adult-led opportunities, getting involved in a group's sustained, shared thinking. E.g. 'I see... I know... I wonder...'</p>	<p>asking simple questions and recognising that they can be answered in different ways 'Think out loud' using 'I see... I know... I wonder...'</p> <p>Following the teacher's modelling of asking questions, ask simple questions stimulated by their exploration of their world.</p> <p>With support, discuss in simple terms different ways in which a question could be answered.</p>	<p>asking simple questions and recognising that they can be answered in different ways Ask simple questions about their experiences and their observations of objects, living things or events.</p> <p>Suggest ways to discover an answer or solve a problem. Recognise questions can be answered in different ways and be able to suggest alternative ways to answer questions when appropriate.</p>	<p>asking relevant questions and using different types of scientific enquiries to answer them Within a group, suggest relevant questions that can be explored and investigated further using different types of scientific enquiry.</p> <p>Identify testable questions and those that aren't testable in the classroom.</p> <p>With guidance, discuss which type of scientific enquiry might be the most suitable for the question asked.</p> <p>Use results to...raise further questions With help, use results, observations or own experience to prompt new questions for a further test.</p>	<p>asking relevant questions and using different types of scientific enquiries to answer them Ask relevant questions that can be answered using different types of scientific enquiry.</p> <p>Discuss which type of scientific enquiry might be the most suitable for the question asked.</p> <p>With guidance, begin to refine questions asked so that a test can give a more appropriate outcome.</p> <p>Use results to...raise further questions With reduced scaffolding, use results, observations or own experience to prompt new questions for a further test.</p>
<p>Plan, set up and perform an enquiry</p> 	<p>Perform simple tests in whole class exploration that follow curiosities of the children.</p> <p>Investigation areas and curiosity cube available for exploration in continuous provision.</p>	<p>Performing simple tests With support and modelling, perform simple tests to explore a question or idea suggested to them, or to answer a simple question created in class discussion.</p>	<p>Performing simple tests Suggest a practical way of how to find things out, or collect data to answer a question or idea they are investigating.</p> <p>Through scaffolding that decreases over the year, identify things to measure or observe</p>	<p>Setting up simple practical enquiries, comparative and fair tests With support and modelling, plan and carry out simple practical enquires, comparative and fair tests relevant to the questions or ideas they are investigating.</p>	<p>Setting up simple practical enquiries, comparative and fair tests Plan and carry out simple practical enquires, comparative and fair tests relevant to the questions or ideas they are investigating with increasing independence.</p>

			that are relevant to the questions or ideas they are investigating using a simple test.	Begin to identify some variables that need to be kept the same. Begin to recognise when a test isn't fair and suggest improvements. Through scaffolded discussion, choose an appropriate line of enquiry.	Identify one or more control variables when conducting a fair test. Choose an appropriate line of enquiry through discussion.
Observe closely 	Use senses of sight, hearing and touch to observe the natural world	<p>Observe closely, using simple equipment.</p> <p>Observe objects, living things, events and the world around them closely, using their senses and simple equipment such as magnifying glasses.</p>	<p>Observe closely, using simple equipment.</p> <p>Correctly use equipment that has been provided (such as magnifying glasses, beakers and rulers) for observation and measuring).</p>	<p>Make systematic and careful observations</p> <p>Make systematic and careful observations of objects, living things and events</p>	<p>Make systematic and careful observations</p> <p>Make systematic and careful observations of objects, living things and events</p>
Take measurements 	Compare numbers, length, weight and capacity Use comparative language such as 'more than', 'less than', 'fewer', 'the same as', 'equal to'. 'this is heavier than that' and 'more than', less than' in scientific contexts.	Make measurements using non-standard units of measure, e.g. cubes. Use senses and simple equipment.	<p>Make increasingly accurate measurements using non-standard and standard units of measure (e.g. to the nearest cm or nearest or nearest 100 ml).</p> <p>Correctly use equipment that has been provided (such as magnifying glasses, beakers and rulers) for observation and measuring).</p>	<p>Where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Take simple accurate measurements using whole number standard units relevant to questions or ideas under investigation</p> <p>Use a range of equipment for measuring and observing, including thermometers and data loggers</p> <p>Use standard units over an increasing range, including length, time, capacity, mass, force and light. With support, begin to measure using standard units and parts of units (e.g. cm and mm).</p> <p>Newtons,lux etc</p>	<p>Where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Take accurate measurements using more complex standard units and parts of units over a wide range, including length, time, capacity, mass, heat and sound.</p> <p>Identify when repeated results may be appropriate.</p> <p>Decibels etc</p>

<p>Gather and record results</p> 	<p>Draw pictures of what they have observed of the natural world</p> <p>Describe what they see, hear and feel whilst outside</p>	<p>Gather and record data to help in answering questions.</p> <p>Record evidence they have collected in simple templates provided for them to help in answering questions.</p> <p>Record observations e.g. using photographs, videos, drawings, labelled diagrams or in writing.</p> <p>Record their measurements in prepared tables, tick charts or tally charts.</p> <p>Record identifying and classifying enquiries through the use of using simple prepared tables and sorting rings.</p>	<p>Gather and record data to help in answering questions.</p> <p>Gather and record data in appropriate ways (e.g. record with labelled drawings or photographs; fill out tables, Venn diagrams, and graphs such as pictograms, using a scale of 1 or a scale of 2, 5 or 10 for GDS) with increasing independence to help in answering questions.</p>	<p>Gather, record, classify and present data in a variety of ways to help in answering questions.</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Gather and present evidence and data using simple scientific language and vocabulary as writing, drawing, labelled diagrams, display, through ICT, keys, bar charts or tables (using ranges and intervals chosen for them) to help in answering questions.</p> <p>Discuss and begin to select the most useful ways of presenting information given a range of choices.</p>	<p>Gather, record, classify and present data in a variety of ways to help in answering questions.</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Gather and present simple scientific data in a variety of ways as Year 3 including tables and bar charts where intervals and ranges agreed through discussion, to help in answering questions.</p> <p>With increasing independence, select the most useful ways of presenting information given a range of choices.</p>
<p>Interpret results – Answer the question</p> 	<p>They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.</p> <p>Sort/match objects, living things and events in their own way.</p> <p>With help say why they sorted objects, living things and events in the way that they did</p>	<p>With help discuss what they have seen or found out.</p> <p>Use appropriate scientific language to communicate ideas (from Interim Teacher Assessment Framework) Recognise basic features, similarities and differences of objects or living things.</p> <p>Answer questions by ordering data on a scale, e.g. from most to least, biggest to smallest. Children use their experiences of the world around them to suggest appropriate answers to questions. They are supported to relate these to their evidence e.g. observations they have made, measurements they have taken or information they have gained from secondary sources.</p>	<p>Discuss what they have seen or found out with increasing independence.</p> <p>Use appropriate scientific language to communicate ideas (from Interim Teacher Assessment Framework) Answer questions by ordering data on a scale, e.g. from most to least, biggest to smallest and explain why using appropriate scientific language.</p>	<p>Use straightforward, scientific evidence to answer questions or to support their findings.</p> <p>Use some scientific vocabulary and refer to simple scientific facts when describing processes and observations.</p> <p>Identify differences, similarities or changes related to simple scientific ideas and processes. Identify and group objects, living things, processes or events by linking them to the characteristics of known objects, living things, processes or events. Use Venn and Carroll diagrams, as well as sorting data along a scale.</p> <p>Explain which characteristics have caused them to identify or classify objects, living things</p>	<p>Use straightforward, scientific evidence to answer questions or to support their findings.</p> <p>Use a wider range of scientific vocabulary and refer to scientific facts when describing processes and observations.</p> <p>Identify differences, similarities or changes related to simple scientific ideas or processes and more complex groups of objects, living things and events.</p> <p>Complete sorting diagrams or simple tables, keys or databases to classify objects, living things or events</p>

<p>Draw conclusions – Explain the results using knowledge</p> 	<p>They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.</p> <p>Talk about what they have found out or what they think might happen based on their own experiences and with support or prompting.</p>	<p>The children recognise ‘biggest and smallest’, ‘best and worst’ etc. from their data.</p> <p>Use their observations and ideas to suggest answers to questions. Use their ideas to suggest answers to questions.</p> <p>Say what has changed when observing objects, living things or events.</p> <p>Begin to recognise links between observations and answers to questions.</p>	<p>Use their observations and ideas to suggest answers to questions. Use understanding of what has been observed or own experience to predict outcomes of further actions or observations.</p>	<p>processes or events by indicating similarities or differences in components or properties.</p> <p>Use results to draw simple conclusions</p> <p>With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions.</p> <p>With help, use results of enquiries to consider whether they meet predictions and explain why.</p> <p>Recognise the connection between the original question, enquiry results and whether they answer the question.</p>	<p>Use results to draw simple conclusions</p> <p>With reduced scaffolding, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions.</p> <p>Use results of enquiries to consider whether they meet predictions and explain why.</p> <p>Recognise the connection between the original question, enquiry results and whether they answer the question.</p>
<p>Present and report findings</p> 	<p>They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.</p> <p>Talk to an adult about what has been found/found out.</p> <p>Draw or choose photographs to show what has been found with appropriate support.</p>	<p>Record evidence they have collected in simple templates provided for them or orally to help in answering questions.</p> <p>Draw or photograph evidence and label with support.</p>	<p>Record data in appropriate ways (e.g. record with labelled drawings or photographs; fill out tables, Venn diagrams, and graphs such as pictograms, using a scale of 1 or a scale of 2, 5 or 10 for GDS) with increasing independence to help in answering questions.</p> <p>Present their knowledge using using appropriate scientific language to communicate ideas (from Interim Teacher Assessment Framework).</p>	<p>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables</p> <p>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions with support/as a group.</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables with support/as a group.</p>	<p>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables</p> <p>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.</p>

				Participate actively in reporting on findings as part of a group Make suggestions on appropriate ways to record findings either as a group or individually.	Display increasing independence in choices of how to report on or record findings Use more complex scientific language in reporting and recording findings.
Make a prediction 	Children talk about what they think might happen.	Children consider in advance, what might happen or what they might find Through supported discussion, articulate simple reasons for their prediction	In discussion, children consider in advance, what might happen or what they might find and know this as a prediction Orally, give a simple reason for their prediction	Use results to...make predictions for new values...and raise further questions With help use results, observations or own experience to prompt new questions and predictions for a further test. Consider if further results can be predicted from present data.	Use results to...make predictions for new values...and raise further questions With reduced scaffolding, use results, observations or own experience to prompt new questions and predictions for a further test. Consider if further results can be predicted from present data.
Evaluate an enquiry 	Where necessary, listen to an adult modelling talking about what went well and what went wrong	Where necessary, talk about what went well and what went wrong through supported discussion	Where necessary, talk about what went well and what went wrong through supported discussion	Reflect on the enquiry and suggest improvements As part of a supported discussion, recall what went well, what went wrong and why, why results were unexpected and how you could avoid this in future	Reflect on the enquiry and suggest improvements