

# Science

## Year Group Expectations for Working Scientifically Skills (Grid 1)

<p><b>Year3</b></p>	<ul style="list-style-type: none"> <li>Observe and record relationships between structure and function (linked to Y3 PoS).</li> <li>Observe and record changes /stages over time (linked to Y3 PoS).</li> <li>Explore / observe things in the local environment / real contexts and record observations (linked to Y3 PoS) – see 'Communicating' section also re links to vocabulary.</li> </ul>	<ul style="list-style-type: none"> <li>Decide ways and give reasons for sorting, grouping, classifying, identifying things / objects, living things, processes or events based on specific characteristics.</li> <li>Compare and contrast and begin to consider the relationships between different things (e.g. structures of plants, functions of plant parts, diets, skeletons of humans and other animals, changes over time, etc.).</li> <li>Record similarities as well as differences (e.g. what do all skeletons have? as well as the differences between skeletons).</li> </ul>	<ul style="list-style-type: none"> <li>Explore their own ideas about 'what if....?' scenarios e.g. humans did not have skeletons.</li> <li>Ask questions such as 'What if we tried....?' or 'What if we changed...?'</li> <li>Begin to understand that some questions can be tested in the classroom and some cannot.</li> <li>Within a group suggest questions that can be explored, observed, tested or investigated further.</li> <li>Within a group suggest relevant questions about what they observe and about the world around them.</li> </ul>	<ul style="list-style-type: none"> <li>Find things out using a range of secondary sources of information (e.g. books, photographs, videos and other technology).</li> </ul>	<ul style="list-style-type: none"> <li>Act out or make a model of something to represent something in the real world using appropriate scientific vocabulary verbally.</li> </ul>	<ul style="list-style-type: none"> <li>Begin to make some decisions about an idea within a group from a list of choices (e.g. let's put them all in a pile first OR I think we should try...).</li> <li>With help; support, listen to and acknowledge others in the group (e.g. Yes. I prefer that one too).</li> <li>Build on / add to someone else's idea. (e.g. we could use x as well as y).</li> <li>Begin to understand that it is okay to disagree with their peers and offer a reason for their opinion.</li> </ul>
<p><b>Year2</b></p>	<ul style="list-style-type: none"> <li>Use simple scientific language from the Y2 PoS to talk about / record what they have noticed.</li> <li>Use observations to make suggestions and / or ask questions.</li> <li>Observe and describe simple processes / cycles / changes with several steps (e.g. growth cycle, simple food chain, saying how living things depend on one another).</li> <li>Observe closely and communicate with increasing accuracy the features or properties of things in the real world.</li> </ul>	<ul style="list-style-type: none"> <li>Name / identify common examples, some common features or different uses.</li> <li>Sort and group objects, materials or living things by observable and/or behavioural features.</li> <li>Compare and contrast... a variety of things [objects, materials or living things] - focusing on the similarities as well as the differences.</li> </ul>	<ul style="list-style-type: none"> <li>Raise their own logical questions based on or linked to things they have observed.</li> <li>With help / scaffolds, begin to ask questions such as 'What will happen if...?'</li> </ul>	<ul style="list-style-type: none"> <li>Talk about how useful the information source was and express opinion about findings.</li> <li>Make suggestions about who to ask or where to look for information.</li> <li>Ask people questions to help them answer their questions.</li> <li>Use simple and appropriate secondary sources (such as books, photographs, videos and other technology) to find things out / find answers.</li> </ul>	<ul style="list-style-type: none"> <li>Act out something to represent something else about the world around us (e.g. a life cycle).</li> </ul>	<ul style="list-style-type: none"> <li>Share ideas in a group and listen to the ideas of others.</li> <li>Work cooperatively with others on a science task making some choices.</li> </ul>
<p><b>Year1</b></p>	<ul style="list-style-type: none"> <li>Begin to use simple scientific language (from Y1 PoS) to talk about or record what they have noticed.</li> <li>Use observations to make suggestions and / or ask questions.</li> <li>Look / observe closely and communicate changes over time.</li> <li>Look / observe closely and communicate the features or properties of things in the real world.</li> <li>Observe closely using their senses.</li> </ul>	<ul style="list-style-type: none"> <li>Name / identify common examples and some common features.</li> <li>With help, decide how to sort and group objects, materials or living things.</li> <li>Name basic features of objects, materials and living things.</li> <li>Say how things are similar or different.</li> <li>Compare and contrast simple observable features / characteristics of objects, materials and living things.</li> </ul>	<ul style="list-style-type: none"> <li>Ask simple questions about what they notice about the world around them.</li> <li>Demonstrate curiosity by the questions they ask.</li> </ul>	<ul style="list-style-type: none"> <li>Ask people questions (e.g. an expert or hot-seating).</li> <li>Use simple primary and secondary sources (such as objects, books and photographs) to find things out.</li> </ul>	<ul style="list-style-type: none"> <li>With help, follow movements (dance / drama) to act out their science.</li> </ul>	<ul style="list-style-type: none"> <li>Share ideas in a group and listen to the ideas of others.</li> <li>Work with others on a science task.</li> </ul>
<p><b>EXPLORING / OBSERVING</b> LKS2 - Developing their own ideas and their understanding of the world around them. KS1 - Observing closely Using their observations and ideas to suggest answers to questions.</p>	<p><b>GROUPING AND CLASSIFYING</b> LKS2 - Compare and contrast a variety of examples linked to LKS2 PoS. KS1 - Compare and contrast a variety of examples linked to KS1 PoS.</p>	<p><b>QUESTIONING</b> LKS2 - Asking relevant questions. KS1 - Asking simple questions.</p>	<p><b>RESEARCH</b> LKS2 - Finding things out using a wide range of secondary sources of information. KS1 - Finding things out using secondary sources of information.</p>	<p><b>MODELLING</b> Non Statutory Using dance, drama or a visual aid to represent science in the real world.</p>	<p><b>COLLABORATING</b> Non Statutory Interacting effectively as part of a group.</p>	

# Science

## Year Group Expectations for Working Scientifically Skills (Grid 2)

<p><b>Year 6</b></p>	<ul style="list-style-type: none"> <li>Predict what a graph might look like before collecting results.</li> <li>Make a hypothesis where they say how one thing will affect another and give a reason for their suggestion with a developing understanding of the scientific concept.</li> <li>Identify <b>variables to change, measure and keep the same in order for a test to be fair</b>.</li> <li>Independently plan investigations and explain planning decisions.</li> <li>Decide when it is appropriate to carry out a <b>fair test</b> investigation, comparative test or alternative.</li> </ul>	<ul style="list-style-type: none"> <li>Decide whether to <b>repeat any readings and justify the reason for doing so</b>.</li> <li>Make their own decisions about what measurements to take (and begin to identify the ranges used).</li> <li>Make, and act on, suggestions to control / reduce risks to themselves and others.</li> <li>Use equipment fit for purpose to take measurements which are increasingly <b>accurate and precise</b>.</li> <li>Decide the most appropriate equipment to use to collect data.</li> </ul>	<ul style="list-style-type: none"> <li>Articulate understanding of the concept using scientific language and terminology when describing abstract ideas, observations and findings (linked to the Y6 PoS).</li> <li>Record data and results of increasing complexity using scientific diagrams and labels, recognised symbols, classification keys, tables, bar and line graphs, and models.</li> <li>Make decisions about how to present and explain their findings through talk, in written forms or in other ways (e.g. using technology).</li> </ul>	<ul style="list-style-type: none"> <li>Spot unexpected results that do not fit the pattern (anomalies).</li> <li>Identify patterns in results collected and describe them using the <b>change and measure variables</b> (causal relationships) (e.g. as we increased the number of batteries the brightness the bulb increased).</li> </ul>	<ul style="list-style-type: none"> <li>Identify <b>evidence</b> that refutes or <b>supports</b> their ideas.</li> <li>Independently form a conclusion which draws on the <b>evidence from the test</b> (linked to Y6 PoS).</li> <li>Use scientific language and terminology (linked to Y6 PoS) to explain why something happened.</li> </ul>	<ul style="list-style-type: none"> <li>Be able to suggest reasons for unexpected results (anomalies).</li> <li>Describe how to improve planning to produce more <b>reliable results</b>.</li> <li>Say how confident they are that their results are <b>reliable</b> and give a reason.</li> </ul>
<p><b>Year 5</b></p>	<ul style="list-style-type: none"> <li>Carry our <b>fair tests</b> and other investigations with increasing independence.</li> <li>Suggest more than one possible prediction and begin to suggest which is the most likely. Justify their reason with some knowledge and understanding of the scientific concept.</li> <li>Make decisions about which <b>variables to change, measure and keep the same</b> (linked to the appropriate units in the Y5 PoS).</li> <li>Make most of the planning decisions for an investigation.</li> <li>Recognise when it is appropriate to carry out a <b>fair test</b>.</li> </ul>	<ul style="list-style-type: none"> <li>Make their own decisions about what observations to make or measurements to use and how long to take them for (recognising the need for repeat readings on some occasions).</li> <li>Take measurements using a range of scientific equipment with increasing accuracy and using more complex scales / units.</li> <li>Identify possible risks to themselves and others and suggest ways of reducing these.</li> <li>Choose the most appropriate equipment and make <b>accurate</b> measurements.</li> </ul>	<ul style="list-style-type: none"> <li>Use their developing scientific knowledge and understanding and relevant scientific language and terminology to communicate more abstract concepts (linked to Y5 PoS).</li> <li>Present and explain their findings through talk, in written forms or in other ways (e.g. using technology) for a range of audiences / purposes.</li> <li>Record data and results of increasing complexity using different formats e.g. tables, annotated scientific diagrams, classification keys, graphs and models.</li> <li>Make decisions about the most appropriate way of recording data.</li> </ul>	<ul style="list-style-type: none"> <li>Describe straightforward patterns in results linking cause and effect e.g. using or the word 'more' (e.g. the longer, thinner shapes move through the water more quickly OR the larger the wings, the longer it takes the spinner to fall).</li> <li>Look for / notice relationships between things and begin to describe these.</li> <li>Comment on the results and whether they <b>support</b> the initial <b>prediction</b>.</li> </ul>	<ul style="list-style-type: none"> <li>Use their scientific knowledge and understanding and appropriate scientific language and terminology (linked to Y5 PoS) to explain their findings and data and answer their initial question.</li> <li>Draw a valid <b>conclusion</b> (explain why it happened) based on their data and observations (from Y5 PoS).</li> </ul>	<ul style="list-style-type: none"> <li>Begin to recognise how repeated readings improve the <b>reliability</b> of results.</li> <li>Compare results with others and comment on how <b>reliable</b> they are.</li> </ul>
<p><b>Year 4</b></p>	<ul style="list-style-type: none"> <li>Carry out simple <b>fair tests</b> with increasing confidence investigating the effect of something on something else (linked to Y4 PoS).</li> <li>Start to make their own decisions about the most appropriate type of science enquiry they might use to answer scientific questions (is a fair test the best way to investigate their question?)</li> <li>Make a <b>prediction</b> based on the knowledge acquired from previous explorations / observations and apply it to a new situation.</li> <li>Explain their planning decisions and choices.</li> <li>Make some of the planning decisions about what to change and measure / observe.</li> <li>Begin to recognise when a <b>fair test</b> is necessary.</li> </ul>	<ul style="list-style-type: none"> <li>Begin to identify where patterns might be found and use this to begin to identify what data to collect.</li> <li>Make more of the decisions about what observations to make, how long to make them for and the type of equipment that might be used.</li> <li>Recognise obvious risks and how to keep themselves and others safe.</li> <li>Learn how to use new equipment, such as data loggers and measure temperature in degrees Celsius (°C) using a thermometer.</li> <li>Collect data from their own observations and measurements, using notes / simple tables / standard units.</li> <li>Make <b>accurate</b> measurements using standard units [and more complex units and parts of units] using a range of equipment and scales.</li> </ul>	<ul style="list-style-type: none"> <li>Record findings using relevant scientific language and vocabulary (from Y4 PoS), including discussions, oral and written explanations, notes, drawings (annotated), pictorial representations, labelled diagrams, tables and bar charts [where intervals and ranges agreed through discussion], displays or presentations.</li> <li>Begin to select the most useful ways to collect, record, classify and present data from a range of choices.</li> <li>Make decisions on how best to communicate their findings in ways that are appropriate for different audiences.</li> </ul>	<ul style="list-style-type: none"> <li>Notice / find patterns in their observations and data. (Describe the effect of something on something else). (e.g. as I lengthen the ruler I notice that the pitch gets lower).</li> <li>With some independence, analyse results / observations by writing a sentence that matches the <b>evidence</b> i.e. deciding the important aspect of the result and summarising in a <b>conclusion</b> (e.g. metals tend to be good conductors of electricity).</li> </ul>	<ul style="list-style-type: none"> <li>Begin to develop their ideas about relationships and interactions between things and explain them.</li> <li>Use relevant scientific language and vocabulary (from Y4 PoS) to begin to say / explain why something happened.</li> </ul>	<ul style="list-style-type: none"> <li>Use results to suggest improvements, new questions and / or predictions for setting up further tests.</li> <li>Compare their results with others and give reasons why results might be different.</li> </ul>
<p><b>PLANNING AND TESTING</b> UKS2 - Using different types of scientific enquiry making decisions about and explaining choices for testing. LKS2 - Making decisions about and setting up simple practical enquiries, comparative tests and fair test.</p>		<p><b>USING EQUIPMENT AND MEASURES</b> UKS2 - Increasing complexity and increasing accuracy and precision Make their own decisions about the data to collect. LKS2 - Making accurate measurements and gathering data.</p>	<p><b>COMMUNICATING</b> UKS2 / LKS2 / KS1 Reporting findings, recording data, presenting findings. Read, spell and pronounce scientific vocabulary correctly linked to the relevant year group.</p>	<p><b>CONSIDERING THE RESULTS OF AN INVESTIGATION / WRITING A CONCLUSION</b></p> <p><b>DESCRIBING RESULTS / LOOKING FOR PATTERNS</b> UKS2 - Looking for patterns analysing functions, relationships and interactions more systematically. LKS2 - Describing their findings/</p> <p><b>EXPLAINING RESULTS</b> UKS2 - Draw conclusions based on / supported by evidence. LKS2 - Reporting on findings saying why something happened.</p> <p><b>TRUSTING RESULTS</b> UKS2 - Comment on how reliable the data is. LKS2 - Suggest improvements for further tests.</p>		



<p><b>Year 1</b></p>	<ul style="list-style-type: none"> <li>With help, <b>carry out</b> a simple test / comparative test.</li> <li>With help, make a simple prediction or suggestion about what might happen.</li> <li>Begin to suggest some ideas e.g. choose which equipment to use, choose which materials to test from a selection.</li> <li><b>Talk</b> about ways of setting up a test.</li> </ul>	<ul style="list-style-type: none"> <li><b>Measure</b> using non-standard units e.g. how many lolly sticks / cubes / handfuls, etc.</li> <li><b>Observe closely, using simple equipment</b> (e.g. hand lenses, egg timers).</li> <li>Use senses to <b>compare</b> different textures, sounds and smells.</li> </ul>	<ul style="list-style-type: none"> <li>Communicate their ideas to a range of audiences in a variety of ways.</li> <li>Complete a pre-constructed table / chart using picture records or simple words.</li> <li>Contribute to a class display.</li> <li><b>Add annotations to drawings or photographs.</b></li> <li><b>Begin to use some simple scientific language</b> from Y1 PoS.</li> <li><b>Record</b> simple visual representations of observations made.</li> </ul>	<ul style="list-style-type: none"> <li>Use <b>recordings to talk about and describe what happened.</b></li> <li>Sequence photographs of an event / observation.</li> </ul>	<ul style="list-style-type: none"> <li><b>Begin to use simple scientific language</b> (from Y1 PoS) to talk about what they have found out or why something happened.</li> </ul>	<ul style="list-style-type: none"> <li>▶ N/A in Y1.</li> </ul>		
	<p><b>PLANNING AND TESTING</b>  <i>LKS2 - Making decisions about and setting up simple practical enquiries, comparative tests and fair tests.</i>  <i>KS1 - Performing simple tests.</i></p>	<p><b>USING EQUIPMENT AND MEASURES</b>  <i>LKS2 - Making accurate measurements and gathering data.</i>  <i>KS1 - Using simple equipment and gathering data to help in answering their questions.</i></p>	<p><b>COMMUNICATING</b>  <i>UKS2 / LKS2 / KS1</i>  <i>Reporting findings, recording data, presenting findings.</i>  <i>Read, spell and pronounce scientific vocabulary correctly linked to the relevant Year Group.</i></p>	<p><b>CONSIDERING THE RESULTS OF AN INVESTIGATION / WRITING A CONCLUSION</b></p>		<p><b>DESCRIBING RESULTS / LOOKING FOR PATTERNS</b>  <i>LKS2 - Describing their findings / results.</i>  <i>KS1 - Talk about what happened / what they noticed.</i></p>	<p><b>EXPLAINING RESULTS</b>  <i>LKS2 - Reporting on findings saying why something happened.</i>  <i>KS1 - Talk about what they found out.</i></p>	<p><b>TRUSTING RESULTS</b>  <i>LKS2 - Suggest improvements for further tests.</i>  <i>KS1 - Beginning to spot when a method is not fair.</i></p>

