

# Science Progression Framework, Working Scientifically

## Working Scientifically – Learning Progression

|                                       | EYFS   | Year 1  | Year 2  | Year 3   | Year 4  | Year 5  | Year 6  |
|---------------------------------------|--|---|---|--|---|---|---|
| <b>Asking and answering questions</b> | Use everyday language to begin to answer simple scientific questions about something they have seen/explored.  | Use everyday language/begin to use simple scientific words to ask or answer a scientific question. E.g. how something is similar/different, how something works, how things change etc. | Suggest ideas, ask simple questions and know that they can be answered/ investigated in different ways including simple secondary sources, such as books and video clips. | Use ideas to pose questions, independently, about the world around them using this prior knowledge to support their questions. | Suggest relevant questions and know that they could be answered in a variety of ways, including using secondary sources such as ICT. Answer questions using straight forward scientific evidence. | Raise different types of scientific questions, and Hypotheses based on prior knowledge and      | Pose/select the most appropriate line of enquiry to investigate scientific questions.   |
| <b>Making predictions</b>             | Begin to think about what could happen in their natural environment when prompted with a question. E.g. what do you think will happen if we put the ice in our hands? It could turn to water/melt. | Begin to say what might happen in an investigation.   | Begin to make predictions.  | Make predictions and begin to give a reason.   | Make predictions and give a reason using simple scientific vocabulary.  | Make predictions and give a reason using scientific vocabulary.                                 | Make predictions and give a reason using scientific vocabulary. Base predictions on findings from previous investigations.  |
| <b>Making observations</b>            | Begin to explain what they see, hear or feel in the natural environment.   | Observe objects, materials and living things and describe what they see.  | Observe something closely and describe changes over time.   | Make decisions about what to observe during an investigation.  | Make systematic and careful observations.   | Plan and carry out comparative and fair tests, making systematic and careful observations.      | Make their own decisions about which observations to make, using test results and observations to make predictions or set up further comparative or fair tests.                               |
| <b>Equipment and measurements</b>     | Use simple equipment (jugs, tweezers, sand timers) when exploring the natural environment in play.   | Use simple, nonstandard equipment and measurements in a practical task.   | Use simple equipment, such as hand lenses or egg timers to take measurements, make observations and carry out simple tests.   | Take accurate measurements using standard units.   | Take accurate measurements using standard units and a range of equipment, including thermometers and data loggers.  | Take measurements using a range of scientific equipment with increasing accuracy and precision. | Choose the most appropriate equipment in order to take measurements, explaining how to use it accurately. Decide how long to take measurements for, checking results with additional readings |

|  | EYFS   | Year 1  | Year 2  | Year 3   | Year 4   | Year 5  | Year 6   |
|--|--|---|---|--|--|---|--|
| <b>Identifying and classifying</b>                               | Sort and group objects and materials based on what they can feel/see.                    | Sort and group objects, materials and living things, with help, according to simple observational features. | Decide, with help, how to group materials, living things and objects, noticing changes over time and beginning to see patterns. | Talk about criteria for grouping, sorting and categorising, beginning to see patterns and relationships.               | Identify similarities/ differences/ changes when talking about scientific processes. Use and begin to create simple keys.                                  | Use and develop keys to identify, classify and describe living things and materials.  | Identify and explain patterns seen in the natural environment.   |
| <b>Engaging in practical enquiry (investigating)</b>             | Follow simple instructions to take part in an investigation in a small, adult-led group. | Follow instructions to complete a simple test individually or in a group.                                   | Do things in the correct order when performing a simple test and begin to recognise when something is unfair.                   | Discuss enquiry methods and describe a fair test. Children begin to suggest what resources could be needed.            | Make decisions about different enquiries, including recognising when a fair test is necessary and begin to identify variables.                             | Plan a range of science enquiries, including comparative and fair tests. Children should select the most appropriate equipment needed to conduct the investigation. | Select and plan the most suitable line of enquiry, explaining which variables need to be controlled and why, in a variety of comparative and fair tests. |
| <b>Recording and reporting findings</b>                          | Begin to draw images with labels or captions to explain what they found out.             | Begin to record simple data. Talk about their findings and explain what they have found out.                | Gather data, record and talk about their findings, in a range of ways, using simple scientific vocabulary.                      | Record their findings using scientific language and present in note form, writing frames, diagrams, tables and charts. | Choose appropriate ways to record and present information, findings and conclusions for different audiences (e.g. displays, oral or written explanations). | Record data and results of increasing complexity using scientific diagrams, labels, classification keys, tables, bar and line graphs and models.                    | Choose the most effective approach to record and report results, linking to mathematical knowledge.  |
| <b>Drawing conclusions</b>                                       | Talk about what they have found out in a scaffolded conversation with an adult.          | Explain, with help, what they think they have found out.  | Use simple scientific language to explain what they have found out.   | Draw, with help, a simple conclusion based on evidence from an enquiry or observation.                                 | Use recorded data to make predictions, pose new questions and suggest improvements for further enquiries.  | Use a simple mode of communication to justify their conclusions on a hypothesis. Begin to recognise how scientific ideas change over time.                          | Identify validity of conclusion and required improvement to methodology. Discuss how scientific ideas develop over time.                                 |
| <b>Analysing data</b>  | Use everyday language to begin to answer simple question about what they have found out. | Use every day or simple scientific language to answer a question on given data.                             | Identify simple patterns and/or relationships using simple comparative language.  | Gather, record and use data in a variety of ways to answer a scientific question.                                      | Identify, with help, changes, patterns, similarities and differences in data to help form conclusions. Use scientific evidence to support their findings.  | Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas.  | Identify and explain causal relationships in data and identify evidence that supports or refutes their findings, selecting fact from opinion.            |
| <b>Evaluating and raising further questions and predictions.</b> | The children show a natural curiosity when exploring what they have found out.           | Use every day or simple scientific language to ask a question about given data.                             | The children can use taught scientific language to ask a question about their findings.   | Children can raise further questions/ simple predictions based on their findings.                                      | Children begin to ask further questions/ predictions about changes, patterns, similarities and differences in data.  | Children raise further predictions/ questions and justify these with their existing scientific knowledge.   | Through discussion, raise further enquiry questions to offer explanations to deepen scientific understanding.  |

## National Curriculum Content

| EYFS  | KS1   | LKS2   | UKS2  |
|---|---|--|---|
| <p>During EYFS, pupils should be taught to do the following through, play, self-initiated investigation and planned adult-led sessions.</p> <ul style="list-style-type: none"> <li>• Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions.</li> <li>• Make comments about what they have heard and ask questions to clarify their understanding.</li> <li>• Hold conversation when engaged in back-and-forth exchanges with their teacher and peers.</li> <li>• Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary.</li> <li>• Offer explanations for why things might happen, making use of recently introduced vocabulary from stories, non-fiction, rhymes and poems when appropriate.</li> <li>• Use a range of small tools, including scissors, paint brushes and cutlery.</li> <li>• Explore the natural world around them, making observations and drawing pictures of animals and plants.</li> <li>• 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.</li> <li>• Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</li> </ul> | <p>During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> <li>• asking simple questions and recognising that they can be answered in different ways</li> <li>• observing closely, using simple equipment</li> <li>• performing simple tests</li> <li>• identifying and classifying</li> <li>• using their observations and ideas to suggest answers to questions</li> <li>• gathering and recording data to help in answering questions.</li> </ul> | <p>During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> <li>• asking relevant questions and using different types of scientific enquiries to answer them</li> <li>• setting up simple practical enquiries, comparative and fair tests</li> <li>• making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>• gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</li> <li>• recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>• using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>• identifying differences, similarities or changes related to simple scientific ideas and processes</li> <li>• using straightforward scientific evidence to answer questions or to support their findings.</li> </ul> | <p>During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> <li>• planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>• taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>• recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>• using test results to make predictions to set up further comparative and fair tests</li> <li>• 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</li> <li>• identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul> |