



Welwyn St. Mary's Progression Ladder for **working scientifically**

Year 1 and 2	<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">• explore the world around them and raise their own simple questions• experience different types of science enquiries, including practical activities• begin to recognise different ways in which they might answer scientific questions• carry out simple tests• use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying)• ask people questions and use simple secondary sources to find answers• observe closely using simple equipment• with help, observe changes over time• with guidance, they should begin to notice patterns and relationships• use simple measurements and equipment (e.g. hand lenses, egg timers) to gather data• record simple data• use their observations and ideas to suggest answers to questions• talk about what they have found out and how they found it out• with help, they should record and communicate their findings in a range of ways and begin to use simple scientific language
Year 3 and 4	<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">• raise their own relevant questions about the world around them• should be given a range of scientific experiences including different types of science enquiries to answer questions• start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions• Set up simple practical enquiries, comparative and fair tests• recognise when a simple fair test is necessary and help to decide how to set it up• talk about criteria for grouping, sorting and classifying; and use simple keys• recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations• make systematic and careful observations• 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• begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them• take accurate measurements using standard units• learn how to use a range of (new) equipment, such as data loggers / thermometers appropriately• collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data• with help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions.• use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions• with support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done.

Year 5 and 6

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:

- use their science experiences to explore ideas and raise different kinds of questions
- talk about how scientific ideas have developed over time
- select and plan the most appropriate type of scientific enquiry to use to answer scientific questions
- recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why
- use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment
- recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact
- make their own decisions about what observations to make, what measurements to use and how long to make them for
- look for different causal relationships in their data and identify evidence that refutes or supports their ideas
- choose the most appropriate equipment to make measurements with increasing precision and explain how to use it accurately. Take repeat measurements where appropriate.
- decide how to record data and results of increasing complexity from a choice of familiar approaches: scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- identify scientific evidence that has been used to support or refute ideas or arguments
- use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas,
- use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degree of trust in results
- use their results to make predictions and identify when further observations, comparative and fair tests might be needed