# St. Mary's Scientific Skills Progression document

**At St Mary's,**

We want our children to develop a deep sense of curiosity and desire to question the ways the world around them works, through the progression of skills in enquiry to compliment learning in Biology, Physics and Chemistry.

We use the National Curriculum guidelines in order to support our Plymouth Science Scheme, but our aim is to make science relevant and exciting to our children, with purposeful outcomes that they care about achieving.

We aim to inspire our children by modelling an approach of curiosity, questioning and scientific working with a love of learning more about how and why things happen.

We accept that to understand scientific terminology and apply its vocabulary to learning, pupils need to access experiences in their learning to commit skills to long term memory.

Through our Scheme, we have placed equal emphasis upon the study of key theories and practical skills in the sciences alongside the skills to work scientifically.

We endeavour to ensure that all children can draw upon prior learning as they progress through each year group, from EYFS to the end of Key Stage Two. We aim to meet the needs of all learners in our curriculum - challenging them and enabling them to problem solve and undertake learning at a deeper level.

We encourage our children to talk about their learning within wider contexts, beyond the scientific classroom

| **Reception** | |
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| Communication and Language | • Learn new vocabulary.<br>• Ask questions to find out more and to check what has been said to them expanding to 'why' questions<br>• Articulate their ideas and thoughts in well-formed sentences.<br>• Describe events in some detail.<br>• Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.<br>• Use new vocabulary in different contexts. |
| Personal, Social and Emotional Development | • Know and talk about the different factors that support their overall health and wellbeing:<br>• regular physical activity<br>• healthy eating<br>• tooth brushing<br>• sensible amounts of 'screen time'<br>• having a good sleep routine<br>• being a safe pedestrian |
| Understanding the World | • Explore the natural world around them.<br>• Describe what they see, hear and feel while they are outside.<br>• Recognise some environments that are different to the one in which they live.<br>• Understand the effect of changing seasons on the natural world around them. |
| **Reception ELG** | |
| Communication and Language | • Make comments about what they have heard and ask questions to clarify their understanding. |
| Personal, Social and Emotional Development | • Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. |
| Understanding the World | • Explore the natural world around them, making observations and drawing pictures of animals and plants.<br>• 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.<br>• Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. |

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| Working Scientifically | • asking simple questions and recognising that they can be answered in different ways;<br>• observing closely, using simple equipment;<br>• performing simple tests;<br>• identifying and classifying;<br>• using their observations and ideas to suggest answers to questions;<br>• gathering and recording data to help in answering questions. | • asking simple questions and recognising that they can be answered in different ways;<br>• observing closely, using simple equipment;<br>• performing simple tests;<br>• identifying and classifying;<br>• using their observations and ideas to suggest answers to questions;<br>• gathering and recording data to help in answering questions. | • asking relevant questions and using different types of scientific enquiries to answer them;<br>• setting up simple practical enquiries, comparative and fair tests;<br>• making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers;<br>• gathering, recording, classifying and presenting data in a variety of ways to help in answering questions;<br>• recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables;<br>• reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions;<br>• using results to draw simple conclusions, make predictions for | • asking relevant questions and using different types of scientific enquiries to answer them;<br>• setting up simple practical enquiries, comparative and fair tests;<br>• making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers;<br>• gathering, recording, classifying and presenting data in a variety of ways to help in answering questions;<br>• recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables;<br>• reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions;<br>• using results to draw simple conclusions, make predictions for | • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary;<br>• taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate;<br>• recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs;<br>• using test results to make predictions to set up further comparative and fair tests;<br>• reporting and presenting findings from enquiries, including | • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary;<br>• taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate;<br>• recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs;<br>• using test results to make predictions to set up further comparative and fair tests;<br>• reporting and presenting findings from enquiries, including |

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| | | | new values, suggest improvements and raise further questions;<br>• identifying differences, similarities or changes related to simple scientific ideas and processes; | new values, suggest improvements and raise further questions;<br>• identifying differences, similarities or changes related to simple scientific ideas and processes | conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations;<br>• identifying differences, similarities or changes related to simple scientific ideas and processes;<br>• identifying scientific evidence that has been used to support or refute ideas or arguments | conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations;<br>• identifying differences, similarities or changes related to simple scientific ideas and processes;<br>• identifying scientific evidence that has been used to support or refute ideas or arguments |
| Asking Questions and Carrying Out Fair and Comparative Tests | • Asking simple questions and recognising that they can be answered in different ways.<br>• Performing simple tests | • Asking simple questions and recognising that they can be answered in different ways.<br>• Performing simple tests | • Asking relevant questions and using different types of scientific enquiries to answer them.<br>• Setting up simple practical enquiries, comparative and fair tests. | • Asking relevant questions and using different types of scientific enquiries to answer them.<br>• Setting up simple practical enquiries, comparative and fair tests. | • Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.<br>• Using test results to make predictions to set up further comparative and fair tests. | • Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.<br>• Using test results to make predictions to set up further comparative and fair tests |
| Observing and Measuring changes | • Observing closely, using simple equipment. | • Observing closely, using simple equipment. | • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, | • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, | • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat | • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat |

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| | | | including thermometers and data loggers. | including thermometers and data loggers. | readings when appropriate. | readings when appropriate. |
| Identifying, Classifying, Recording and Presenting Data | • Identifying and classifying.<br>• Gathering and recording data to help in answering questions. | • Identifying and classifying.<br>• Gathering and recording data to help in answering questions. | • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.<br>• Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. | • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.<br>• Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. | • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. | • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. |
| Drawing Conclusions, Noticing Patterns and Presenting Findings | • Using their observations and ideas to suggest answers to questions. | • Using their observations and ideas to suggest answers to questions. | • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.<br>• Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. | • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.<br>• 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 a degree of trust in results, in oral and written forms such as displays and other presentations. | • Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations. |
| Using Scientific Evidence and Secondary Sources of Information | | | • Identifying differences, similarities or changes related to simple scientific ideas and processes.<br>• Using straightforward scientific evidence to answer questions or to support their findings. | • Identifying differences, similarities or changes related to simple scientific ideas and processes.<br>• 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. | • Identifying scientific evidence that has been used to support or refute ideas or arguments. |