

## Science: values-linked progression of skills

❖ Love yourself / Independence & wellbeing

❖ Love learning / Knowledge & skills

❖ Love others / Inclusivity & respect

❖ Love the world you live in / Awe & wonder

❖ Love God / Spirituality & insight

Values & Intentions	Focus of development	Linked EYFS Outcomes	Y1-2 Progression	Y3-4 Progression	Y5-6 Progression
Love yourself  Independence and wellbeing	Self-knowledge  Self-esteem  Metacognition  Self-evaluation  Creativity  Courage  Resilience  Joy	Show curiosity and develop understanding about similarities and differences in relation to places, objects, materials and living things  Begin to talk about the features of their own immediate environment and how environments might vary from one another	<ul style="list-style-type: none"> <li>Take pride in your own efforts</li> <li>Begin to value effort over outcome</li> <li>Work independently</li> <li>Take inspiration from others</li> <li>Recognise your own successes</li> <li>Maintain a positive outlook in the face of unfavourable outcomes</li> <li>View the scientific process as an inherently joyful experience</li> <li>Be prepared to try something new</li> </ul>	<ul style="list-style-type: none"> <li>Recognise and celebrate your own efforts and the progression of your skills</li> <li>Understand the importance to your own wellbeing and self-image of valuing your effort and progress over your outcomes</li> <li>Work in an independent and focused way to develop skills you have been shown</li> <li>Judge your own work against your own past efforts, not the work of others</li> <li>Recognise how unfavourable outcomes can help guide future progression</li> <li>Take joy in the process of scientific research</li> <li>Be prepared to experiment and take risks, and ready to learn from the outcomes</li> </ul>	<ul style="list-style-type: none"> <li>Make links between all areas of working scientifically</li> <li>Recognise and value the scientific process in all its forms as an opportunity for discovery</li> <li>Demonstrate resilience and perseverance when faced with challenges</li> <li>View unfavourable outcomes as a step in a developmental journey, not as a failure</li> <li>Show understanding of the joy to be found in scientific research</li> <li>Demonstrate understanding that risk-taking and exploration are vital parts of the scientific process</li> </ul>

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*Let us consider how to stir up one another to love and good works*

<p><b>Love others</b></p> <p><b>Inclusivity &amp; respect</b></p>	<p>Critical thinking</p> <p>Collaboration</p> <p>Evaluation</p> <p>Respect</p> <p>Honesty</p> <p>Humility</p>	<p>Understand that different people have different beliefs, attitudes, customs and traditions and why it is important to treat them with respect</p> <p>Recognises and describes special times or events for family and friends</p>	<ul style="list-style-type: none"> <li>• Take inspiration from the skills of others</li> <li>• Contribute constructively to group experiments</li> <li>• Work with others in a positive way to predict and perform simple tests</li> </ul>	<ul style="list-style-type: none"> <li>• Actively seek opportunities to learn from others</li> <li>• Collaborate constructively on a range of scientific projects</li> <li>• Report constructively on group findings</li> </ul>	<ul style="list-style-type: none"> <li>• Take inspiration from of others</li> <li>• Demonstrate understanding of strategies for collaborating successfully with others</li> <li>• Record and conclude constructively on group findings</li> </ul>
<p><b>Love God</b></p> <p><b>Spirituality &amp; insight</b></p>	<p>Wisdom</p> <p>Spirituality</p> <p>Depth of reflection</p>	<p>Knows some of the things that make them unique and can talk about some of the similarities and differences in relation to friends and family</p>	<ul style="list-style-type: none"> <li>• Know that science can be used to communicate ideas</li> <li>• Know that science has been a vital form of human research for thousands of years</li> </ul>	<ul style="list-style-type: none"> <li>• Understand that science can be an important means of communicating ideas</li> <li>• Recognise how the use of science to communicate and research deep ideas has developed over time</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate understanding of the power of science as a means of proving ideas</li> <li>• Use scientific evidence to communicate knowledge and ideas on a range of fundamental themes and “Big Questions”</li> <li>• Use science as a means to express your own understanding of religious themes</li> </ul>
<p><b>Love learning</b></p> <p><b>Knowledge &amp; skills</b></p>	<p>Work Scientifically</p>	<p>Comments and asks questions of their familiar world such as the place where they live or the natural world</p>	<ul style="list-style-type: none"> <li>• Ask simple questions and recognise that they can be answered in different ways</li> <li>• Observe closely, using simple equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Ask relevant questions and use different types of scientific enquiries to answer them</li> <li>• Set up simple practical enquiries, comparative and fair tests</li> <li>• Make systematic and careful</li> </ul>	<ul style="list-style-type: none"> <li>• Plan 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,</li> </ul>

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		<p>Can talk about some of the things they have observed such as plants, animals, natural and found objects</p> <p>Talks about why things happen and how things work</p>	<ul style="list-style-type: none"> <li>• Perform simple tests</li> <li>• Identify and classify</li> <li>• Use their observations and ideas to suggest answers to questions</li> <li>• Gather and record data to help answer questions</li> </ul>	<p>observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <ul style="list-style-type: none"> <li>• Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</li> <li>• Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• Report 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>• Identify differences, similarities or changes related to simple scientific ideas and processes</li> <li>• Use straightforward scientific</li> </ul>	<p>with increasing accuracy and precision, taking repeat readings when appropriate</p> <ul style="list-style-type: none"> <li>• Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>• Use test results to make predictions to set up further comparative and fair tests</li> <li>• Report and present 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</li> <li>• Identify scientific evidence that has been used to support or refute ideas or arguments.</li> </ul>
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				evidence to answer questions or to support their findings	
	Ask questions and carry out fair and comparative tests	<p>Talks about why things happen and how things work</p> <p>Knows how to operate simple equipment</p>	<ul style="list-style-type: none"> <li>• Begin to performing simple tests</li> <li>• Explore the world around them, leading them to ask some simple scientific questions about how and why things happen</li> <li>• Begin to recognise ways in which they might answer scientific questions</li> <li>• Ask people questions and use simple secondary sources to find answers</li> <li>• Carry out simple practical tests, using simple equipment</li> <li>• Experience different types of scientific enquiries, including practical activities</li> <li>• Talk about the aim of</li> </ul>	<ul style="list-style-type: none"> <li>• Start to raise their own relevant questions about the world around them in response to a range of scientific experiences</li> <li>• Start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions</li> <li>• Recognise when a fair test is necessary</li> <li>• Help decide how to set up a fair test, making decisions about what observations to make, how long to make them for and the type of simple equipment that might be used</li> <li>• Set up and carry out simple comparative and fair tests.</li> </ul>	<ul style="list-style-type: none"> <li>• Use test results to make predictions to set up further comparative and fair tests</li> <li>• With growing independence, raise their own relevant questions about the world around them in response to a range of scientific experiences</li> <li>• With increasing independence, make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions</li> <li>• Explore and talk about their ideas, raising different kinds of scientific questions</li> <li>• Ask their own questions about scientific phenomena</li> <li>• Select and plan the most appropriate type of scientific enquiry to use to answer scientific questions</li> <li>• Make their own decisions about what observations to make, what measurements to</li> </ul>

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			scientific tests they are working on		use and how long to make them for, and whether to repeat them <ul style="list-style-type: none"><li>• Plan, set up and carry out comparative and fair tests to answer questions, including recognising and controlling variables where necessary</li><li>• Use their test results to identify when further tests and observations may be needed</li></ul>
Observe and manage changes	Developing an understanding of growth, decay and changes over time  They make observations of animals and plants and explain why some things occur, and talk about changes	<ul style="list-style-type: none"><li>• Observe the natural and humanly constructed world around them</li><li>• Observe changes over time</li><li>• Use simple measurements and equipment</li><li>• Make careful observations, sometimes using equipment to help them observe carefully</li></ul>	<ul style="list-style-type: none"><li>• Make systematic and careful observations</li><li>• Observe changes over time</li><li>• Use a range of equipment, including thermometers and data loggers</li><li>• Ask their own questions about what they observe</li><li>• Where appropriate, take accurate measurements using standard units using a range of equipment</li></ul>	<ul style="list-style-type: none"><li>• Choose the most appropriate equipment to make measurements and explain how to use it accurately</li><li>• Take measurements using a range of scientific equipment with increasing accuracy and precision</li><li>• Make careful and focused observations</li><li>• Know the importance of taking repeat readings and take repeat readings where appropriate</li></ul>	
Identify, calssify, record and predict	Looks closely at similarities, differences and change	<ul style="list-style-type: none"><li>• Use simple features to compare objects, materials and living</li></ul>	<ul style="list-style-type: none"><li>• 5iscuss criteria for grouping, sorting and classifying and then group and classify objects,</li></ul>	<ul style="list-style-type: none"><li>• Independently group, classify and describe living things and materials</li></ul>	

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		<p>Know the properties of some materials and can suggest some of the purposes they are used for</p> <p>Be familiar with basic scientific concepts such as floating, sinking, experimentation</p>	<p>things</p> <ul style="list-style-type: none"> <li>Decide how to sort and classify objects into simple groups with some help</li> <li>Record and communicate findings in a range of ways with support</li> <li>Sort, group, gather and record data in a variety of ways to help in answering questions such as in simple sorting diagrams, pictograms, tally charts, block diagrams and simple tables.</li> </ul>	<p>materials and living things</p> <ul style="list-style-type: none"> <li>Collect data from their own observations and measurements</li> <li>Present data in a variety of ways to help in answering questions</li> <li>Use, read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge</li> <li>Record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables.</li> </ul>	<ul style="list-style-type: none"> <li>Use and develop keys and other information records to identify, classify and describe living things and materials</li> <li>Decide how to record data from a choice of familiar approaches</li> <li>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar graphs and line graphs.</li> </ul>
	Draw conclusions, notice patterns and present findings.	Not applicable	<ul style="list-style-type: none"> <li>Notice links between cause and effect with support</li> <li>Begin to notice patterns and relationships with support</li> <li>Begin to draw simple conclusions</li> </ul>	<ul style="list-style-type: none"> <li>Draw simple conclusions from their results</li> <li>Make predictions</li> <li>Suggest improvements to investigations</li> <li>Raise further questions which could be investigated</li> <li>First talk about, and then go on to write about, what they have</li> </ul>	<ul style="list-style-type: none"> <li>Notice patterns and draw conclusions based in their data and observations</li> <li>Use their scientific knowledge and understanding to explain their findings</li> <li>Read, spell and pronounce scientific vocabulary correctly</li> <li>Identify patterns that might be</li> </ul>

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			<ul style="list-style-type: none"> <li>• Identify and discuss differences between their results</li> <li>• Use simple and scientific language</li> <li>• Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1</li> <li>• Talk about their findings to a variety of audiences in a variety of ways</li> </ul>	<p>found out</p> <ul style="list-style-type: none"> <li>• Report and present their results and conclusions to others in written and oral forms with increasing confidence</li> </ul>	<p>found in the natural environment</p> <ul style="list-style-type: none"> <li>• Look for different causal relationships in their data</li> <li>• Discuss the degree of trust they can have in a set of results</li> <li>• Independently report and present their conclusions to others in oral and written forms</li> </ul>
	Use scientific evidence and secondary sources of information	Not applicable	Not applicable	<ul style="list-style-type: none"> <li>• Make links between their own science results and other scientific evidence</li> <li>• Use straightforward scientific evidence to answer questions or support their findings</li> <li>• Identify similarities, differences, patterns and changes relating to simple scientific ideas and processes</li> <li>• Recognise when and how secondary sources might help</li> </ul>	<ul style="list-style-type: none"> <li>• Use primary and secondary sources evidence to justify ideas</li> <li>• Identify evidence that refutes or supports their ideas</li> <li>• Recognise where secondary sources will be most useful to research ideas and begin to separate opinion from fact</li> <li>• Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas</li> </ul>

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				them to answer questions that cannot be answered through practical investigations	<ul style="list-style-type: none"> <li>• Talk about how scientific ideas have developed over time</li> </ul>
<p>Love the world you live in</p> <p>Awe &amp; wonder</p>	<p>Explore nature</p> <p>Question the world around them</p> <p>Take inspiration from great scientists</p> <p>Respecting the world we live in and understanding its limited resources</p>	<p>Shows care and concern for living things and the environment</p> <p>Shows interest in different occupations and ways of life</p> <p>Enjoys joining in with family customs and routines</p> <p>Develop understanding of how the environment and living things are influenced by human activity</p> <p>Describe some actions which people in their own community do to help maintain the area they live in</p>	<ul style="list-style-type: none"> <li>• Explore the world around them, leading them to ask some simple scientific questions about how and why things happen</li> <li>• Observe the natural and humanly constructed world around them</li> <li>• Use simple features to compare living things</li> <li>• Describe the work of notable scientists</li> <li>• Use some of the ideas of scientists as a starting point for an experiment</li> <li>• Use nature and the physical world to inspire research</li> <li>• Use only your fair share of resources, not wasting materials unnecessarily</li> <li>• Tidy up your area after you have finished working</li> </ul>	<ul style="list-style-type: none"> <li>• Start to raise their own relevant questions about the world around them in response to a range of scientific experiences</li> <li>• Make systematic and careful observations of the world around them</li> <li>• Discuss criteria for grouping, sorting and classifying and then group and classify materials and living things</li> <li>• Replicate some of the research taken by notable scientists</li> <li>• Create original experiments that are influenced by studies of others</li> <li>• Show understanding of why we should use only our fair share of resources to create artworks</li> <li>• Show understanding of why tidying up after ourselves shows</li> </ul>	<ul style="list-style-type: none"> <li>• With growing independence, raise their own relevant questions about the world around them in response to a range of scientific experiences</li> <li>• Make careful and focused observations of the world around them</li> <li>• Independently group, classify and describe living things and materials</li> <li>• Give details about the style of some notable scientists</li> <li>• Show how the work of those studied was influential in both society and to other scientists</li> <li>• Demonstrate understanding of why certain scientists are considered particularly influential, and certain experiments/research have become particularly well-known</li> <li>• Explain why wasting resources or taking more than our share violates fundamental values and the rights of others, and how our usage and conservation of</li> </ul>



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				respect for our environment and classmates	resources at school links directly to broader global problems with consumption <ul style="list-style-type: none"><li>• Take responsibility for tidying and organising resources after work has finished, demonstrating awareness of why this is important to show respect for the environment and others in the class</li></ul>
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