



St. Joseph's Catholic Primary School  
Working Scientifically skills Progression



Working Scientifically skills EYFS/Key stage 1						
<b>Nursery</b>	Children ask questions, make observations, and talk about what they are doing and have found out while carrying out a range of activities					
<b>Reception</b>	Children ask questions, make observations, and talk about what they are doing and have found out while carrying out a range of activities					
	<b>Asking Questions</b>	<b>Test Hypotheses</b>	<b>Observe and measure</b>	<b>Gather and record</b>		<b>Interpret and report</b>
<b>National Curriculum Objectives</b>	<i>Questioning</i>	<i>Planning and performing tests</i>	<i>Observing and Measuring</i>	<i>Identifying and Classifying</i>	<i>Gathering and Recording data</i>	<i>Conclusions and Predictions</i>
<b>Year 1</b>	Ask simple questions based on their exploration of the world	Suggest ways of answering a question Perform simple tests to explore a question or idea suggested to them, with support	Observe objects, living things, events and the world around them closely, using their senses and simple equipment  Make measurements using non-standard units of measure	Recognise basic features, similarities and differences of objects and living things  Sort and group objects or living things in different ways	Present findings in simple templates provided for them or orally  Present evidence they have collected in simple templates provided for them to help in answering questions	Using their observations and ideas to suggest answers to questions
<b>Year 2</b>	Ask simple questions about their experiences and observations of objects, living things or events and with help use these observations	to suggest ways to discover an answer or solve a problem, recognising that some can be answered in a variety of ways  Identify things to measure or observe that are relevant to the questions or ideas they are investigating using a simple test	Use equipment, provided for observation and measuring, correctly. Observe closely  Make measurements using non-standard and standard units of measure (measuring to labelled intervals)	Make comparison between basic features or components of objects, living things or events to support identification and/or classification  Sort and group objects, living things or events on the basis of their observations and explain why	Gather and record data in appropriate ways with increasing independence to help in answering questions  Report on and record findings as drawings, photographs, labelled diagrams, orally, as displays, or in simple prepared tables or charts	Use their observations and ideas to suggest answers to questions and to make predictions



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Working Scientifically skills Lower Key stage 2						
	Asking Questions	Test Hypotheses	Observe and measure	Gather and record	Interpret and report	Evaluating and raising further questions
<i>National Curriculum objectives</i>	<i>Asking relevant questions and using different types of scientific enquiries to answer them</i>	<i>Setting up simple practical enquiries, comparative and fair tests</i>	<i>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</i>	<i>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</i>  <i>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</i>	<i>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</i>	<i>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</i>  <i>Using straightforward scientific evidence to answer questions or to support their findings.</i>
<b>Year 3</b>	<p>Can ask questions linked to topic e.g. which makes the highest sound?</p> <p>Can make some suggestions about what to do but needs help in phrasing the question</p> <p>With support, can identify the type of enquiry that they have chosen to answer their question</p>	<p>With support, can choose from a small range of resources to answer the question</p> <p>Can make suggestions about how to answer the question but needs support to choose the method and explain which variables must be kept the same.</p>	<p>Can make observations linked to the questions, with guidance</p> <p>Can choose and use equipment supplied by teacher and beginning to use data loggers to measure over time</p> <p>Can take accurate measurements to nearest labelled interval but may need support when not all numbers are on scale</p>	<p>With guidance, can make suggestions on how to record and present evidence</p> <p>Can record their observations using templates or follow given method</p> <p>Begin to create own tables to record measurements or use a template to create charts or bar graphs</p> <p>Begin to suggest methods of recording classifications - Venn/Carroll. With support can create a branching database</p>	<p>Can answer their own and others' questions based on observations they have made, measurements they have taken</p> <p>Draw conclusions based on their evidence and current subject knowledge, with guidance</p>	<p>When questioned, suggest how they would do it differently if they repeated the enquiry.</p> <p>With support, can use their evidence to suggest values for items tested using the same method e.g. the distance travelled by a car on an additional surface</p> <p>When prompted, can think of further questions they would like to ask that they could answer by extending the enquiry</p> <p>Can interpret their data to generate simple comparative statements based on their evidence. With guidance, begin to see patterns</p>



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<b>Year 4</b>	<p>Use prior knowledge when asking questions and independently use a range of question stems.</p> <p>Given a range of resources, can decide for themselves how to gather evidence to answer the question (practically or using secondary resources).</p> <p>Identify the type of enquiry that they have chosen to answer their question</p>	<p>Make systematic and careful observations.</p> <p>Follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking.</p> <p>Choose from a range of equipment for measuring length, time, temperature and capacity accurately. (including data loggers to measure over time)</p>	<p>Measure standard units e.g. m, ml, g to the nearest interval accurately</p> <p>Choose and use equipment supplied by teacher. (including data loggers to measure over time)</p> <p>Make decisions about which measures are appropriate to use to answer the question; m, cm, mm, kg, g, cm<sup>3</sup>, minutes, seconds, Newtons.</p>	<p>Decide how to record and present evidence.</p> <p>Can record their observation e.g. photographs, videos, pictures, labelled diagrams or writing.</p> <p>Record their measurements e.g. using tables, tally charts and bar charts</p> <p>Can record classifications e.g. using tables, Venn diagrams, Carroll diagrams and with guidance create classification keys and use branching databases</p>	<p>Can communicate their findings to an audience both orally and in writing, using appropriate scientific vocabulary.</p> <p>Can draw conclusions based on their evidence and current subject knowledge.</p> <p>Can answer their own and others' questions based on observations they have made, measurements they have taken or information they have gained from secondary sources. The answers are consistent with the evidence</p>	<p>Can interpret their data to generate simple comparative statements based on their evidence. With support, can identify naturally occurring patterns and causal relationships.</p> <p>Can identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry.</p>
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Working Scientifically skills Upper Key stage 2						
	Asking Questions	Test Hypotheses	Observe and measure	Gather and record	Interpret and report	Evaluating and raising further questions
<i>National Curriculum objectives</i>	<i>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</i>	<i>Using test results to make predictions to set up further comparative and fair tests.</i>	<i>Taking measurements using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</i>	<i>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</i>	<i>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.</i>	<i>Explain degree of trust in results</i>  <i>Identify and evaluate scientific evidence (own or others) that has been used to support or refute ideas or arguments</i>
<b>Year 5</b>	<p>Asks scientific questions and with guidance choose the type of enquiry to use to answer the question</p> <p>Suggest the use of secondary resources to find answers to their questions</p> <p>With guidance, selects from given practical resources to gather evidence</p> <p>Beginning to recognise the variables used in the enquiry and control them</p> <p>Make suggestions about what to observe or measure and for how long</p>	<p>Beginning to use knowledge gained from investigations and scientific knowledge to make predictions they can investigate with support from peers and teacher</p>	<p>Selects the best measuring equipment to use from a range of resources</p> <p>Recognises that taking repeat measurements (fair testing) or increasing sample size (pattern seeking) will give more accurate results (closer to the true value).</p> <p>With support, will adjust the observation period and frequency (observing over time); or check further secondary sources (researching); in order to get accurate data</p>	<p>With guidance, makes suggestions on how to record and present evidence</p> <p>Beginning to record measurements in different ways e.g table, tally chart, bar charts or line graphs</p> <p>Record classifications in different ways e.g Venn, Carroll and using a classification key</p> <p>With support, can present the same data in different ways</p> <p>Beginning to record results in different ways e.g using annotated photographs, videos, labelled diagrams, observational drawings, labelled scientific diagrams or writing</p>	<p>With support, is beginning to recognise causal relationships in the natural world and patterns from their evidence</p> <p>When prompted, they recognise which results do not fit the overall pattern; and with support are beginning to explain their findings using their subject knowledge.</p> <p>Beginning to evaluate the method used, the control of the variables and the accuracy of the measurements</p> <p>Beginning to recognise variables and other limitations that can influence their results</p> <p>Present their findings to an audience using the relevant scientific vocabulary e.g powerpoint or posters</p>	<p>With guidance, use their observations, measurements and other information to answer their own and others' questions</p> <p>When answering questions, recognise whether the evidence from other sources or from other groups supports or refutes their answer</p> <p>When given new evidence, recognises and begins to talk about how it affects their answer</p> <p>Beginning to talk about new discoveries and recognise how they can change scientific understanding</p>



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<p><b>Year 6</b></p>	<p>Independently ask scientific questions and choose a type of enquiry to carry out and justify their choice</p> <p>Recognise how secondary sources can be used to answer questions that cannot be answered through practical work.</p> <p>Select from a range of practical resources to gather evidence to answer their questions. carry out fair tests, recognising and controlling the variables.</p> <p>Decide what observations or measurements to make over time and for how long.</p>	<p>Use the scientific knowledge gained from enquiry work to make predictions they can investigate using comparative and fair tests.</p>	<p>Select measuring equipment to give the most precise results e.g. ruler, tape measure or trundle wheel, force meter with a suitable scale.</p> <p>During an enquiry, make decisions e.g. whether they need to: take repeat readings (fair testing); increase the sample size (pattern seeking); adjust the observation period and frequency (observing over time); or check further secondary sources (researching); in order to get accurate data (closer to the true value).</p>	<p>Decide how to record and present evidence. record observations e.g. using annotated photographs, videos, labelled diagrams, observational drawings, labelled scientific diagrams or writing.</p> <p>Record measurements in different ways e.g. using tables, tally charts, bar charts, line graphs and scatter graphs.</p> <p>Record classifications e.g. using tables, Venn diagrams, Carroll diagrams and classification keys.</p> <p>Present the same data in different ways in order to help with answering the question.</p>	<p>In their conclusions, identify causal relationships and patterns in the natural world from their evidence; identify results that do not fit the overall pattern; and explain their findings using their subject knowledge</p> <p>Evaluate, the choice of method used, the control of variables, the precision and accuracy of measurements and the credibility of secondary sources used</p> <p>Identify any limitations that reduce the trust they have in their data</p> <p>Communicate their findings to an audience using relevant scientific language and illustrations.</p>	<p>Answer their own and others' questions based on observations they have made, measurements they have taken or information they have gained from secondary sources.</p> <p>When answering questions, discuss whether other evidence e.g. from other groups, secondary sources and their scientific understanding, supports or refutes their answer.</p> <p>Talk about and discuss how their scientific ideas change due to new evidence that they have gathered.</p> <p>Talk about how new discoveries change scientific understanding</p> <p>Interpret their data to generate simple comparative statements based on their evidence.</p> <p>Can identify naturally occurring patterns and causal relationships</p>
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