



Definitions

Enquiry types – different experiments that you can do in order to test your question or theory. There are 6 types of enquiry



These types of enquiry are applied across the whole school curriculum when teaching Science at Warren. The table below highlights how the EYFS framework is progressive between EYFS and KS1, in order for pupils to develop scientific enquiry skills:



How to Work Scientifically: Year group progression F1-6

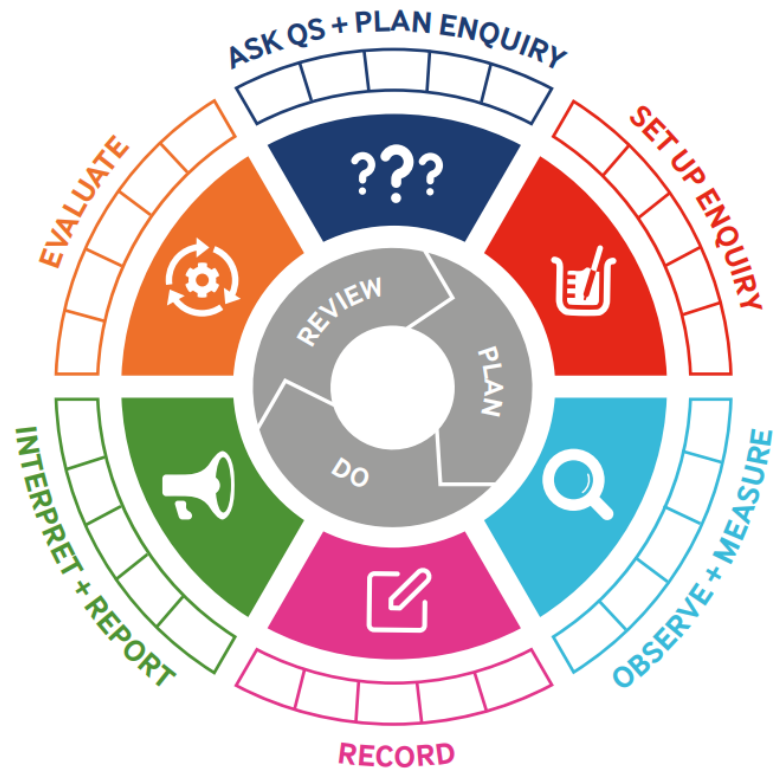
EYFS (Statutory Framework 2021 & Development Matters 2020)	Key Stage 1 (NC 2014)
<ul style="list-style-type: none"> Explore the natural world around them (Understanding the World: reception) Notice and ask questions about differences (Personal, Social & Emotional Dev: birth-3) Understand simple questions about 'who', 'what' and 'where' (Communication & Language: 2 years) / understand 'why' questions (3-4 years) / ask questions to find out more (reception) Listen attentively and respond to what they hear with relevant questions (ELG: Listening, Attention & Understanding) 	<p>Explore the world around them and raise their own simple questions</p> <hr/> <p>ask people questions and use simple secondary sources to find answers</p>
<ul style="list-style-type: none"> Make choices and explore different resources and materials (Playing & Exploring) Be confident to try new activities and show independence, resilience and perseverance in the face of challenge (ELG: Managing Self) 	<p>Experience different types of science enquiries, including practical activities</p>
<ul style="list-style-type: none"> Know more, so feel confident about coming up with their own ideas (Creating & Thinking Critically) 	<p>Begin to recognise different ways in which they might answer scientific questions</p>
<ul style="list-style-type: none"> Respond to new experiences that you bring to their attention (Playing & Exploring) Solve real problems (Creating and Thinking Critically) 	<p>Carry out simple tests</p>
<ul style="list-style-type: none"> Sort materials (Creating & Thinking Critically) Explore collections of materials with similar and/or different properties (Understanding the World: 3-4 years) 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 (ELG: The Natural World) 	<p>Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them</p>
<ul style="list-style-type: none"> Use all their senses in hands-on exploration of natural materials (Understanding the World: 3-4 years) Explore different materials and tools (Physical Dev: birth-3) Explore the natural world around them, making observations and drawing pictures of animals and plants (ELG: The Natural World) 	<p>Observe closely using simple equipment / with help, observe changes over time</p>
<ul style="list-style-type: none"> Realise that their actions have an effect on the world (Playing & Exploring) Notice patterns and arrange things in patterns (Mathematics: birth-3) / talk about and identifies the patterns around them (3-4 years) / continue, copy and create repeating patterns (reception) Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter (ELG: The Natural World) 	<p>With guidance, they should begin to notice patterns and relationships</p>
<ul style="list-style-type: none"> Make comparisons between objects relating to size, length, weight and capacity (Mathematics: 3-4 years) / compare length, weight and capacity (reception) Choose the right resources to carry out their own plan (Physical Dev 3-4 years) / develop their small motor skills so that they can use a range of tools competently, safely and confidently (reception) Use a range of small tools, including scissors, paint brushes and cutlery (ELG: Fine Motor Skills) 	<p>Use simple measurements and equipment (e.g. hand lenses, egg timers) to gather data</p>
<ul style="list-style-type: none"> Use drawing to represent ideas (Expressive Arts & Design: 3-4 years) / return to and build on their previous learning, refining ideas and developing their ability to represent them (reception) 	<p>Record simple data</p>
<ul style="list-style-type: none"> Offer explanations for why things might happen, making use of recently introduced vocabulary from stories, non-fiction, rhymes and poems when appropriate; (ELG: Speaking) 	<p>Use their observations and ideas to suggest answers to questions talk about what they have found out and how they found it out</p>
<ul style="list-style-type: none"> Use a wider range of vocabulary (Communication & Language: 3-4 years) / learn new vocabulary & use new vocabulary through the day and in different contexts (reception) Talk about what they see, using a wide vocabulary (Understanding The World: 3-4 years) Offer their own ideas, using recently introduced vocabulary (ELG: Speaking) 	<p>With help, they should record and communicate their findings in a range of ways and begin to use simple scientific language</p>



How to Work Scientifically: Year group progression F1-6

Working Scientifically – these are the scientific skills they children need to learn in order to complete a scientific enquiry. At Warren, these are defined as:

1. Scientific questioning (asking and answering)
2. Making predictions
3. Making observations
4. Equipment and measurements
5. Identifying and classifying
6. Investigating
7. Gathering and recording data/evidence
8. Making conclusions
9. Analysing data & evaluating



This diagram shows what you would need to do as a part of an enquiry. This is the planning process of an enquiry.



Working Scientifically in Early Years Foundation Stage

Working scientifically skills in order to complete an enquiry							
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
1. Scientific questioning	<p>Explore the natural world around them</p> <p>Notice and ask questions about differences</p> <p>Understand simple who, what and where questions. Ask questions to find out more.</p> <p>Listen attentively and respond to what they hear with relevant questions (ELG)</p> <p>Feel confident about coming up with their own ideas</p>	<p>Use everyday language/begin to use simple scientific words to ask or answer a scientific question</p>	<p>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</p>	<p>Use ideas to pose questions independently about the world around them.</p>	<p>Suggest relevant questions and know that they could be answered in a variety of ways.</p> <p>Answer questions using straight forward scientific evidence.</p>	<p>Raise different types of scientific questions and hypotheses</p>	<p>Pose/select the most appropriate line of enquiry to investigate scientific questions.</p>



How to Work Scientifically: Year group progression F1-6

2. Making predictions	Feel confident about coming up with their own ideas	Begin to say what might happen in an investigation	Begin to make simple 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 reasons using scientific vocabulary. Based predictions on findings from previous investigations.
3. Making observations	Talk about what they are seeing using vocabulary Use language to describe amounts 'more than, fewer than, less than;	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 testing results and observations to make predictions or set up further comparative or fair tests.
4. Equipment and measurements	Make choices and explore different resources and materials Be confident to try new activities and show independence in the face of challenge (ELG) Make comparisons between objects relating to size, length, weight, capacity.	Use simple, non-standard equipment and measurements in a practical task eg. magnifying glasses	Use simple equipment to take measurements, make observations and carry out simple tests. eg egg timers, magnifying glasses, scales, thermometers	Take accurate measurements using standard units.	Take accurate measurements using standard units including thermometers and data loggers.	Take measurements using a range of scientific equipment with increasing accuracy and precision over time.	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.



How to Work Scientifically: Year group progression F1-6

	Use small tools (ELG: Fine motor skills)						
5. Identifying and Classifying	Sort materials Explore different materials with similar and/or different properties	Identify and classify (mammals and birds)	Identify, classify and group according to criteria (venn diagram- eg natural/ man made)	Talk about criteria for grouping, sorting, and categorising.	Group information according to common factors (Venn with dissecting or Carroll diagram) Use simple keys to explain diagrams	Use classification keys, recognise patterns	Use classification keys, recognise patterns.
6. Investigating	Solve real problems Respond to new experiences that you bring to their attention.	Perform a simple test, following instructions to complete the 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.	Set up simple practical enquiries (comparative and fair testing) and describe a fair test	Set up a simple practical enquiries (comparative and fair testing) with more than one variable	Set up an investigation including recognising and controlling variables where appropriate, including comparative and fair tests	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.
7. Gathering and recording data/evidence	Use drawing to represent ideas	Gather and record simple data to help answer questions using labelled drawings and simple diagrams eg rain gauge pictogram	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 (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 language/knowledge.
8. Making conclusions	Offer explanations for why things might happen, using recently introduced	Use observations to suggest simple answers to simple questions	Use observations to suggest answers to simple questions, discussing some simple	With help, draw a simple conclusion based on evidence	Use recorded data to make predictions, pose questions and	Use a simple mode of communication to justify conclusions on a hypothesis	Identify validity of a conclusion and improvement to the methodology.



How to Work Scientifically: Year group progression F1-6

	vocabulary (ELG: Speaking)	With help, explain what they think they have found out.	scientific language to explain what they have found out.	from an enquiry or observation.	suggest improvements for further enquiries.	Begin to recognise how scientific ideas change over time.	Discuss how scientific ideas develop over time.
9. Analysing and evaluating	Talk about what they see using a wide range of vocabulary. Offering their own ideas with recently introduced vocabulary (ELG:Speaking)	Use every day or simple scientific language to ask or answer a question on given data	Identify simple patterns and relationships using simple comparative language	Gather, record and use data in a variety of ways to answer a simple question	With help, identify changes, patterns, similarities and differences in data to help form comparisons. 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.

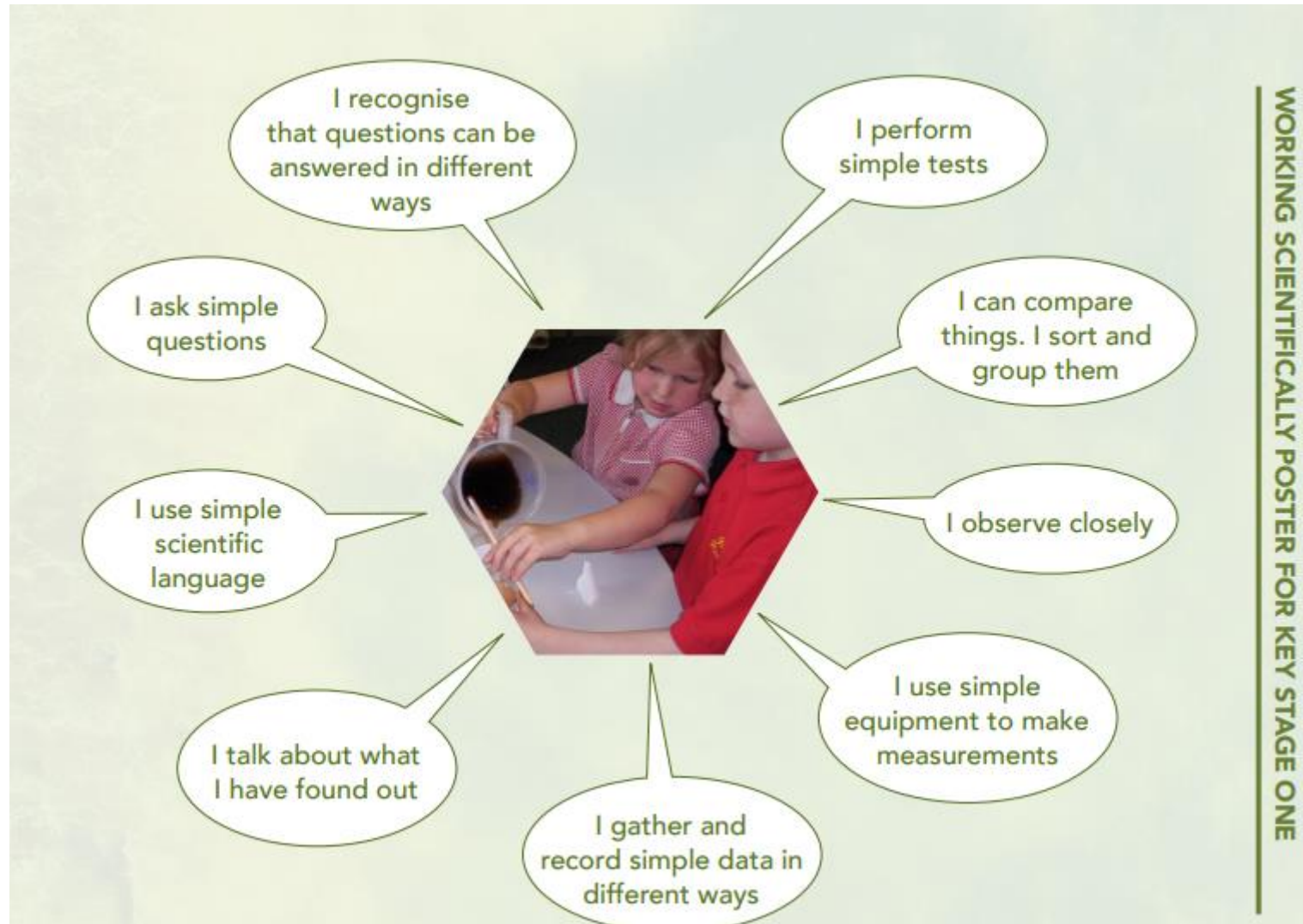


What working scientifically could look like in EYFS





What working scientifically could look like in KS1





What working scientifically could look like in LKS2





What working scientifically could look like in UKS2

