



## Science Progression Map – Working Scientifically Skills



At St Andrew's CE Primary School, we aim to bring children to a place where they can realise their full potential. Our Christian values are the foundation of all we do and each one is a facet of the central value, love, which 'always protects, always trusts, always hopes, always perseveres' (1Corinthians 13:7).

### Level Expected at the End of EYFS

A selection of the **most relevant** statements from Development Matters age ranges for Three and Four-Year-Olds and Reception as well as highlighting the statements within the ELGs **which feed into** the programme of study for Science.

Science		
Three- & Four-Year Olds	Personal, Social & Emotional Development	<ul style="list-style-type: none"> <li>Understand 'why' questions, like: "Why do you think the caterpillar got so fat?"</li> </ul>
	Communication & Language	<ul style="list-style-type: none"> <li>Make healthy choices about food, drink, activity and toothbrushing.</li> </ul>
	Understanding the World	<ul style="list-style-type: none"> <li>Use all their senses in hands-on exploration of natural materials.</li> <li>Explore collections of materials with similar and/or different properties.</li> <li>Talk about what they see, using a wide vocabulary.</li> <li>Begin to make sense of their own life-story and family's history.</li> <li>Explore how things work.</li> <li>Plant seeds and care for growing plants.</li> <li>Understand the key features of the life cycle of a plant and an animal.</li> <li>Begin to understand the need to respect and care for the natural environment and all living things.</li> <li>Explore and talk about different forces they can feel.</li> <li>Talk about the differences between materials and changes they notice.</li> </ul>



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Science		
Reception	Communication & Language	<ul style="list-style-type: none"><li>• Learn new vocabulary.</li><li>• Ask questions to find out more and to check what has been said to them.</li><li>• Articulate their ideas and thoughts in well-formed sentences.</li><li>• Describe events in some detail.</li><li>• Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.</li><li>• Use new vocabulary in different contexts.</li></ul>
	Personal, Social & Emotional Development	<ul style="list-style-type: none"><li>• Know and talk about the different factors that support their overall health and wellbeing:<ul style="list-style-type: none"><li>- regular physical activity</li><li>- healthy eating</li><li>- toothbrushing</li><li>- sensible amounts of 'screen time'</li><li>- having a good sleep routine</li><li>- being a safe pedestrian</li></ul></li></ul>
	Understanding the World	<ul style="list-style-type: none"><li>• Explore the natural world around them.</li><li>• Describe what they see, hear and feel while they are outside.</li><li>• Recognise some environments that are different to the one in which they live.</li><li>• Understand the effect of changing seasons on the natural world around them.</li></ul>



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ELG	Communication & Language	Listening, Attention & Understanding	<ul style="list-style-type: none"> <li>Make comments about what they have heard and ask questions to clarify their understanding.</li> </ul>
	Personal, Social & Emotional Development	Managing Self	<ul style="list-style-type: none"> <li>Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.</li> </ul>
	Understanding the World	The Natural World	<ul style="list-style-type: none"> <li>Explore the natural world around them, making observations and drawing pictures of animals and plants.</li> <li>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.</li> <li>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</li> </ul>



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### Key Stage 1 & 2

This curriculum progression map shows the progression of working scientifically skills from year 1 to year 6. Statements here are taken directly from the national curriculum.

National Curriculum Working Scientifically		
Key Stage 1	Lower Key Stage 2	Upper Key Stage 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"> <li>• asking simple questions and recognising that they can be answered in different ways;</li> <li>• observing closely, using simple equipment;</li> <li>• performing simple tests;</li> <li>• identifying and classifying;</li> <li>• using their observations and ideas to suggest answers to questions;</li> <li>• gathering and recording data to help in answering questions.</li> </ul>	<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"> <li>• asking relevant questions and using different types of scientific enquiries to answer them;</li> <li>• setting up simple practical enquiries, comparative and fair tests;</li> <li>• making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers;</li> <li>• gathering, recording, classifying and presenting data in a variety of ways to help in answering questions;</li> <li>• recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables;</li> <li>• reporting 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>• identifying differences, similarities or changes related to simple</li> </ul>	<p>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:</p> <ul style="list-style-type: none"> <li>• planning 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, with increasing accuracy and precision, taking repeat readings when appropriate;</li> <li>• recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs;</li> <li>• using test results to make predictions to set up further comparative and fair tests;</li> <li>• 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;</li> <li>• identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul>



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	scientific ideas and processes; <ul style="list-style-type: none"> <li>• using straightforward scientific evidence to answer questions or to support their findings.</li> </ul>	
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Plan	KS1	LKS2	UKS2
Ask questions, make predictions, decide on the method and equipment.	<p><b>KS1 Science National Curriculum</b> Asking simple questions and recognising that they can be answered in different ways.</p> <p>Children can:</p> <ul style="list-style-type: none"> <li><b>a</b> explore the world around them, leading them to ask some simple scientific questions about how and why things happen;</li> <li><b>b</b> begin to recognise ways in which they might answer scientific questions;</li> <li><b>c</b> ask people questions and use simple secondary sources to find answers.</li> </ul>	<p><b>Lower KS2 Science National Curriculum</b> Asking relevant questions and using different types of scientific enquiries to answer them.</p> <p>Children can:</p> <ul style="list-style-type: none"> <li><b>a</b> start to raise their own relevant questions about the world around them in response to a range of scientific experiences;</li> <li><b>b</b> start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions;</li> <li><b>c</b> recognise when a fair test is necessary;</li> <li><b>d</b> 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> </ul>	<p><b>Upper KS2 Science National Curriculum</b> Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</p> <p>Children can:</p> <ul style="list-style-type: none"> <li><b>a</b> with growing independence, raise their own relevant questions about the world around them in response to a range of scientific experiences;</li> <li><b>b</b> with increasing independence, make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions;</li> <li><b>c</b> explore and talk about their ideas, raising different kinds of scientific questions;</li> <li><b>d</b> ask their own questions about scientific phenomena;</li> <li><b>e</b> select and plan the most appropriate type of scientific enquiry to use to answer scientific questions;</li> <li><b>f</b> make their own decisions about what observations to make, what measurements to use and how long to make them for, and whether to repeat them;</li> <li><b>g</b> plan, set up and carry out comparative and fair tests to answer questions, including recognising and controlling variables where necessary.</li> </ul>



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Do	KS1	LSK2	UKS2
<p>Carry out an enquiry using equipment.</p>	<p><b>KS1 Science National Curriculum</b></p> <p>Observing closely, using simple equipment.</p> <p>Performing simple tests.</p> <p>Identifying and classifying.</p> <p>Children can:</p> <ul style="list-style-type: none"> <li><b>a</b> observe the natural and humanly-constructed world around them;</li> <li><b>b</b> observe changes over time;</li> <li><b>c</b> use simple measurements and equipment;</li> <li><b>d</b> make careful observations, sometimes using equipment to help them observe carefully;</li> <li><b>e</b> carry out simple practical tests, using simple equipment;</li> <li><b>f</b> experience different types of scientific enquiries, including practical activities;</li> <li><b>g</b> talk about the aim of scientific tests they are working on;</li> <li><b>h</b> use simple features to compare objects, materials and living things;</li> <li><b>i</b> decide how to sort and classify objects into simple groups with some help.</li> </ul>	<p><b>Lower KS2 Science National Curriculum</b></p> <p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p>Setting up simple practical enquiries, comparative and fair tests.</p> <p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</p> <p>Children can:</p> <ul style="list-style-type: none"> <li><b>a</b> make systematic and careful observations;</li> <li><b>b</b> observe changes over time;</li> <li><b>c</b> use a range of equipment, including thermometers and data loggers;</li> <li><b>d</b> ask their own questions about what they observe;</li> <li><b>e</b> where appropriate, take accurate measurements using standard units using a range of equipment;</li> <li><b>f</b> set up and carry out simple comparative and fair tests;</li> <li><b>g</b> talk about criteria for grouping, sorting and classifying;</li> <li><b>h</b> group and classify things.</li> </ul>	<p><b>Upper KS2 Science National Curriculum</b></p> <p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</p> <p>Children can:</p> <ul style="list-style-type: none"> <li><b>a</b> choose the most appropriate equipment to make measurements and explain how to use it accurately;</li> <li><b>b</b> take measurements using a range of scientific equipment with increasing accuracy and precision;</li> <li><b>c</b> make careful and focused observations;</li> <li><b>d</b> know the importance of taking repeat readings and take repeat readings where appropriate;</li> <li><b>e</b> independently group, classify and describe living things and materials;</li> <li><b>f</b> use and develop keys and other information records to identify, classify and describe living things and materials.</li> </ul>



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Record	KS1	LKS2	UKS2
Use drawing, tables or graphs to note observations and measurements.	<p><b>KS1 Science National Curriculum</b> Gathering and recording data to help in answering questions.</p> <p>Children can:</p> <ul style="list-style-type: none"> <li>a record and communicate findings in a range of ways with support;</li> <li>b 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><b>Lower KS2 Science National Curriculum</b> Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Children can:</p> <ul style="list-style-type: none"> <li>a collect data from their own observations and measurements;</li> <li>b present data in a variety of ways to help in answering questions;</li> <li>c use, read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge;</li> <li>d record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables.</li> </ul>	<p><b>Upper KS2 Science National Curriculum</b> Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</p> <p>Children can:</p> <ul style="list-style-type: none"> <li>a decide how to record data from a choice of familiar approaches;</li> <li>b record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar graphs and line graphs.</li> </ul>

Review	KS1	LKS2	USK2
Interpret, communicate and evaluate results.	<p><b>KS1 Science National Curriculum</b> Using their observations and ideas to suggest answers to questions.</p> <p>Children can:</p> <ul style="list-style-type: none"> <li>a notice links between cause and effect with support;</li> <li>b begin to notice patterns and</li> </ul>	<p><b>Lower KS2 Science National Curriculum</b> Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p> <p>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p>	<p><b>Upper KS2 Science National Curriculum</b> 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.</p>



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	<p>relationships with support;</p> <ul style="list-style-type: none"> <li>c begin to draw simple conclusions;</li> <li>d identify and discuss differences between their results;</li> <li>e use simple and scientific language;</li> <li>f read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1;</li> <li>g talk about their findings to a variety of audiences in a variety of ways.</li> </ul>	<p>Identifying differences, similarities or changes related to simple scientific ideas and processes.</p> <p>Using straightforward scientific evidence to answer questions or to support their findings.</p> <p>Children can:</p> <ul style="list-style-type: none"> <li>a draw simple conclusions from their results;</li> <li>b make predictions;</li> <li>c suggest improvements to investigations;</li> <li>d raise further questions which could be investigated;</li> <li>e first talk about, and then go on to write about, what they have found out;</li> <li>f report and present their results and conclusions to others in written and oral forms with increasing confidence;</li> <li>g make links between their own science results and other scientific evidence;</li> <li>h identify similarities, differences, patterns and changes relating to simple scientific ideas and processes;</li> <li>i use straightforward scientific evidence to answer questions or support their findings;</li> <li>j recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations.</li> </ul>	<p>Using test results to make predictions to set up further comparative and fair tests.</p> <p>Identifying scientific evidence that has been used to support or refute ideas or arguments.</p> <p>Children can:</p> <ul style="list-style-type: none"> <li>a notice patterns;</li> <li>b draw conclusions based in their data and observations;</li> <li>c use their scientific knowledge and understanding to explain their findings;</li> <li>d read, spell and pronounce scientific vocabulary correctly;</li> <li>e identify patterns that might be found in the natural environment;</li> <li>f look for different causal relationships in their data;</li> <li>g discuss the degree of trust they can have in a set of results;</li> <li>h independently report and present their conclusions to others in oral and written forms;</li> <li>i use their test results to identify when further tests and observations may be needed;</li> <li>j use test results to make predictions for further tests;</li> <li>k use primary and secondary sources evidence to justify ideas;</li> <li>l identify evidence that refutes or supports their ideas;</li> <li>m recognise where secondary sources will be most useful to research ideas and begin to separate opinion from fact;</li> </ul>
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			<ul style="list-style-type: none"> <li>n use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas;</li> <li>o talk about how scientific ideas have developed over time.</li> </ul>
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### Enquiry Skills Progression

	KS1	LKS2	UKS2
Observing over Time	<ul style="list-style-type: none"> <li>• Ask questions.</li> <li>• Make careful observations.</li> <li>• Use scientific language.</li> <li>• Draw and label what you observe.</li> <li>• Use equipment and take simple measurements.</li> <li>• Create graphs and tables from your observations.</li> <li>• Use observations to suggest answers to questions.</li> <li>• Talk about and explain observations using scientific knowledge and understanding.</li> </ul>	<ul style="list-style-type: none"> <li>• Ask questions.</li> <li>• Make careful observations.</li> <li>• Use scientific language.</li> <li>• Draw and label what you observe.</li> <li>• Use equipment and take measurements accurately.</li> <li>• Create graphs and tables from your observations.</li> <li>• Use observations to suggest answers to questions.</li> <li>• Draw simple conclusions from data.</li> <li>• Ask questions about observations made.</li> <li>• Think about the effect of changing the time and number of observations.</li> <li>• Talk about and explain observations using scientific knowledge and understanding.</li> </ul>	<ul style="list-style-type: none"> <li>• Make careful observations.</li> <li>• Observe changes over different periods of time.</li> <li>• Use scientific language.</li> <li>• Draw and label what you observe.</li> <li>• Use equipment and take measurements accurately.</li> <li>• Create graphs and tables from your observations.</li> <li>• Use observations to suggest answers to questions.</li> <li>• Draw conclusions, suggesting answers to questions.</li> <li>• Recognise relationships in results.</li> <li>• Talk about and explain observations using scientific knowledge and understanding.</li> <li>• Use results to make predictions for further tests.</li> </ul>

	KS1	LKS2	UKS2
Pattern Seeking	<ul style="list-style-type: none"> <li>• Ask questions.</li> <li>• Recognise when pattern seeking</li> </ul>	<ul style="list-style-type: none"> <li>• Ask questions.</li> </ul>	<ul style="list-style-type: none"> <li>• Recognise when variables cannot be controlled and when pattern seeking will help to answer questions.</li> </ul>



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	<p>will help to answer questions.</p> <ul style="list-style-type: none"> <li>• Use equipment accurately to collect observations.</li> <li>• Notice simple relationships and links.</li> <li>• Record data appropriately and accurately.</li> <li>• Recognise simple patterns in results to draw conclusions.</li> </ul>	<ul style="list-style-type: none"> <li>• Recognise when pattern seeking will help to answer questions.</li> <li>• Begin to make decisions about how data is collected and which equipment to use.</li> <li>• Use equipment accurately to collect observations.</li> <li>• Record data appropriately and accurately.</li> <li>• Present data in ways such as bar charts and tables.</li> <li>• Notice links and relationships.</li> <li>• Recognise patterns in results to make conclusions.</li> </ul>	<ul style="list-style-type: none"> <li>• Make decisions about how data is collected and which equipment to use.</li> <li>• Use equipment to make observations and accurate measurements.</li> <li>• Record data appropriately and accurately.</li> <li>• Present data in ways such as tables, scatter graphs, bar and line graphs.</li> <li>• Recognise patterns in results.</li> <li>• Notice links and causal relationships.</li> <li>• Recognise the effect of sample size on reliability.</li> <li>• Use findings to plan further tests from.</li> </ul>
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	KS1	LKS2	UKS2
Identifying, Grouping & Classifying	<ul style="list-style-type: none"> <li>• Ask questions.</li> <li>• Recognise when identifying and classifying will be helpful to answer questions.</li> <li>• Identify and group names and features of plants, animals and materials.</li> <li>• Use secondary sources to identify and classify things.</li> <li>• Use simple diagrams and tables to record groups.</li> <li>• Look for similarities and make comparisons.</li> </ul>	<ul style="list-style-type: none"> <li>• Ask questions.</li> <li>• Recognise when identifying and classifying will be helpful to answer questions.</li> <li>• Use tests to sort and classify things.</li> <li>• Discuss criteria and different ways of sorting things.</li> <li>• Use secondary sources to identify and classify things.</li> <li>• Make simple classification keys.</li> <li>• Use more than one source to identify and classify things.</li> <li>• Look for similarities and differences.</li> </ul>	<ul style="list-style-type: none"> <li>• Recognise when identifying and classifying will be helpful to answer questions.</li> <li>• Use tests to sort and classify things.</li> <li>• Use secondary sources to identify and classify things.</li> <li>• Make classification keys using specific characteristics of things.</li> <li>• Use more than one source to identify and classify things.</li> <li>• Use scientific knowledge and language to describe similarities and differences when comparing things.</li> </ul>



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Researching	<ul style="list-style-type: none"> <li>• Ask questions.</li> <li>• Recognise when research using secondary sources will help to answer questions.</li> <li>• Decide which sources of information might answer questions.</li> <li>• Use relevant information and data from a range of secondary sources.</li> <li>• Present findings in suitable formats.</li> <li>• Draw conclusions from research.</li> <li>• Explain research using scientific knowledge and understanding.</li> </ul>	<ul style="list-style-type: none"> <li>• Ask questions.</li> <li>• Recognise when research using secondary sources will help to answer questions.</li> <li>• Decide which sources of information might answer questions.</li> <li>• Use relevant information and data from a range of secondary sources.</li> <li>• Recognise how data has been obtained.</li> <li>• Present findings in suitable formats.</li> <li>• Draw conclusions from research.</li> <li>• Explain research using scientific knowledge and understanding.</li> <li>• Use findings from research to raise further questions.</li> </ul>	<ul style="list-style-type: none"> <li>• Recognise when research using secondary sources will help to answer questions.</li> <li>• Decide which sources of information might answer questions.</li> <li>• Use relevant information and data from a range of secondary sources.</li> <li>• Recognise how data has been obtained.</li> <li>• Start to notice when information and data is biased or based on opinions rather than facts.</li> <li>• Present findings in suitable formats.</li> <li>• Draw conclusions from research.</li> <li>• Explain research using scientific knowledge and understanding.</li> <li>• Evaluate how well your research has answered your questions.</li> <li>• Use findings from research to raise further questions.</li> </ul>

	KS1	LKS2	UKS2
Comparative & Fair Testing	<ul style="list-style-type: none"> <li>• Ask questions and find different ways to answer them.</li> <li>• Use scientific language.</li> <li>• Use equipment to make observations and take measurements.</li> <li>• Make careful observations.</li> <li>• Gather, record and present data to help answer questions.</li> <li>• Talk about findings.</li> </ul>	<ul style="list-style-type: none"> <li>• Ask questions and find different ways to answer them.</li> <li>• Set up simple tests, making decisions about what equipment you need and how you will record results.</li> <li>• Use scientific language.</li> <li>• Use scientific diagrams.</li> </ul>	<ul style="list-style-type: none"> <li>• Ask questions and find different ways to answer them.</li> <li>• Use scientific language.</li> <li>• Use scientific diagrams.</li> <li>• Use equipment to measure accurately and to make careful observations.</li> <li>• Control or change variables where necessary.</li> <li>• Gather, record, present and group data in different ways: tables, keys</li> </ul>



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	<ul style="list-style-type: none"> <li>• Make simple conclusions.</li> </ul>	<ul style="list-style-type: none"> <li>• Use equipment to measure accurately and to make careful observations.</li> <li>• Gather, record, present and group data in different ways: tables, keys and charts.</li> <li>• Present your findings.</li> <li>• Draw simple conclusions and make predictions.</li> <li>• Suggest improvements and raise further questions.</li> <li>• Make simple conclusions.</li> </ul>	<p>and charts.</p> <ul style="list-style-type: none"> <li>• Make conclusions and recognise causal relationships.</li> <li>• Take repeat readings.</li> <li>• Use results to make predictions to plan further tests from.</li> <li>• Recognise the degree of trust in results and, if needed, suggest improvements.</li> </ul>
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### Progression of Vocabulary - Working Scientifically

KS1	LKS2	UKS2
aim answers block diagrams changes compare describe difference different enquiry equipment experience explore findings gather group identify (name)	accurate bar chart chart classify comparative test conclusion (What have we found out?) criteria data develop diagram evaluate evidence explanation key making a test fair method	accuracy and precision bar graphs causal relationship degree of trust dependent variable independent variable justify line graphs refute repeat results scatter graphs support variables (what do we change, what do we keep the same, how and what are we measuring?)



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investigate measure notice observe patterns pictograms questions record same similarity simple tables sort sorting diagrams tally charts test What will we do? (plan) What do you think will happen? (prediction) What happened? (results) What have we found out? (conclusion)	observations plan (What will we do?) practical enquiry prediction (What do you think will happen?) primary sources questioning reasoning relationships results (What happened?) secondary sources standard units table What do we change, what do we keep the same, what are we measuring?	
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