

Science Whole School Working Scientifically Progression

At Baguley Hall Primary School, we teach the working scientifically strand in five areas: **Identifying and Classifying**, **Observing**, **Pattern seeking**, **Research**, **Comparative and Fair testing**. These strands underpin the science skills curriculum and are woven throughout working scientifically objectives.

	By the end of Reception	By the end of KS1	By the end of LK2	By the end of UK2
Asking questions	<ul style="list-style-type: none"> Look closely at similarities, differences, patterns and change Comment and ask questions showing curiosity about similarities, differences, patterns and changes e.g. lifecycle of a butterfly, growing plants and minibeasts etc. 	<ul style="list-style-type: none"> Ask simple questions about the world around us and recognise that questions can be answered in different ways Explore the world around them and raise their own simple questions Start to ask questions about the world around them Responds to suggestions with own ideas Questions can be answered by observing changes over time, noticing patterns, grouping and classifying, carrying out simple comparative tests, finding things out from secondary sources 	<ul style="list-style-type: none"> Ask relevant questions and use different types of scientific enquiries to answer them Raise their own relevant questions about the world around them Should be given a range of scientific experiences including different types of science enquiries to answer questions Start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions 	<ul style="list-style-type: none"> Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Use their science experiences to explore ideas and raise different kinds of questions Talk about how scientific ideas have developed over time Make links between concepts
Observing	<ul style="list-style-type: none"> The child has a curiosity and interest about the immediate environment around them and recognises when things have similar or different features With adult modelling observe the environment around them and changes over time using simple equipment e.g. minibeasts and plants growing 	<ul style="list-style-type: none"> Use simple equipment to observe closely Identify and classify With guidance, they should begin to notice patterns and relationships Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying) Observe closely using simple equipment with help, observe changes over time 	<ul style="list-style-type: none"> Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them Take accurate measurements using standard units learn how to use a range of (new) equipment, such as data loggers / thermometers appropriately Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data 	<ul style="list-style-type: none"> Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate Decide how to record data and results of increasing complexity from a choice of familiar approaches: scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs Make a series of observations and measurements and vary one factor while keeping others the same Record observations, to support comparisons and measurements using tables and bar charts and begin to plot points to form simple graphs
Investigating	<ul style="list-style-type: none"> The child investigates, notices changes and interacts with elements of their natural and manufactured environment Investigate through practical activities through modelling by an adult Carry out simple tests with adult support Through adult modelling use simple measurements and equipment e.g. magnifying glasses, sand timers to gather data 	<ul style="list-style-type: none"> Perform simple tests Experience different types of science enquiries, including practical activities Begin to recognise different ways in which they might answer scientific questions Carry out simple tests Follow instructions safely Ask people questions and use simple secondary sources to find answers Use simple measurements and equipment (e.g. magnifying glasses, sand/egg timers) to gather data 	<ul style="list-style-type: none"> Set up simple practical enquiries, comparative and fair tests Gather, record, classify and present data in a variety of ways to help in answering questions Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Set up simple practical enquiries, comparative and fair test Recognise when a simple fair test is necessary and help to decide how to set it up Talk about criteria for grouping, sorting and classifying; and use simple keys Recognise when and how secondary sources (books, internet) might help them to answer questions that cannot be answered through practical investigations 	<ul style="list-style-type: none"> Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs Use test results to make predictions to setup further comparative and fair tests Decide on an appropriate approach, including using a fair test to answer a question Select suitable equipment and information from that provided. Select and use methods that are adequate for the task Use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment Following instructions, taking action to control obvious risks to themselves

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			<ul style="list-style-type: none"> - I carry out fair tests with some help, recognising and explaining what makes them fair 	<ul style="list-style-type: none"> - Select and use methods to obtain data systematically - Recognise hazard symbols and make, and act on, simple suggestions to control obvious risks to themselves and others
Evaluating and explaining	<ul style="list-style-type: none"> • Whilst exploring through play and real experiences, the child shows their learning and understanding of living things, materials and objects • He or she communicates about what is happening and why - Drawing pictures of their environment to represent scientific data e.g. plant growth - Simply explain what, why and how questions 	<ul style="list-style-type: none"> • Use his/her observations and ideas to suggest answers to questions • Gather and record data to help in answering questions - Record simple data - Use their observations and ideas to suggest answers to questions - Talk about what they have found out and how they found it out - Use drawings and charts to show their findings - With guidance they can use scientific language to explain their findings - Say whether what happened was what they expected 	<ul style="list-style-type: none"> • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • Identify differences, similarities or changes related to simple scientific ideas and processes • Use straightforward scientific evidence to answer questions or to support his/her findings - With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions - Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions - With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done. - Suggest improvements to their work. 	<ul style="list-style-type: none"> • Report and present findings from enquiries, including conclusions, causal relationships and explanations of and explanation of and a degree of trust in results, in oral and written forms such as displays and other presentations • Identify scientific evidence that has been used to support or refute ideas or arguments - Communicate conclusions using appropriate scientific language - Identify scientific evidence that has been used to support or refute ideas or arguments - Interpret data containing positive and negative numbers - Begin to relate conclusions to patterns in data, including graphs, and to scientific knowledge and understanding. - Analyse findings to draw scientific conclusions that are consistent with the evidence - Communicate these using scientific and mathematical conventions and terminology - Suggest improvements to work, giving reasons - Evaluate their working methods to make practical suggestions for improvements - Reflect on their results and consider whether they are valid