

Working Scientifically Progression – Years 1-6

Key Stage 1 – Year 1/2		
Working Scientifically Coverage	Analysing and Recording Scientifically	Planning and Carrying out Investigations
During years 1 and 2, pupils are taught to use the following practical scientific methods, processes and skills through their taught units of work: ✓ asking simple questions and recognising that they can be answered in different ways ✓ observing closely, using simple equipment ✓ performing simple tests ✓ identifying and classifying ✓ using their observations and ideas to suggest answers to questions ✓ gathering and recording data to help in answering questions.	Pupils will interpret and construct simple: • Pictograms • Tally charts • Block diagrams • Tables Pupils will ask and answer simple questions by counting the number of objects in each category and sorting by quantity. Pupils will ask and answer questions about totalling and compare categorical data.	Pupils will learn to make: • Simple predictions and conclusions based on prior knowledge, observations and/or evidence provided. Scaffolds will be provided to support children in making simple scientific predictions and conclusions with a singular reason (because...) such as: ✓ 'I think that Plant A will grow because it has sunlight. I think that Plant B will not grow because it is in darkness.' ✓ 'I have found out that Plant A grew by 3cm in 3 weeks because it had sunlight.' I have found out that Plant B only grew 1cm because it was in darkness.' In planning practical investigations, pupils will use a simple planning template to include: A scientific question to investigate, list of variables with one chosen variable, a prediction, factors, an equipment list and a simple method (up to 4 steps).

Lower Key Stage 2 – Year 3/4		
Working Scientifically Coverage	Analysing and Recording Scientifically	Planning and Carrying out Investigations
During years 3 and 4, pupils are taught to use the following practical scientific methods, processes and skills through their taught units of work: ✓ asking relevant questions and using different types of scientific enquiries to answer them ✓ setting up simple practical enquiries, comparative and fair tests ✓ making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers ✓ gathering, recording, classifying and presenting data in a variety of ways to help in answering questions ✓ recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables ✓ reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	Pupils will interpret and present data using appropriate graphical methods including: • Bar charts • Time graphs Pupils will begin by solving one-step and then two-step problems such as: ‘How many more?’ ‘How many fewer?’ using information presented in scaled bar charts, pictograms and tables. Pupils will then move on to solve comparison sum and difference problems using information presented in: • Bar charts • Pictograms • Tables	Pupils will learn to make: • Simple predictions and conclusions based on prior knowledge, observations and/or evidence provided. Scaffolds will be provided to support children in making simple scientific predictions and conclusions with more developed reason(s) (because...) such as: ✓ ‘I predict that Plant A will grow because it has sunlight which I know all plants need to survive and grow. I think that Plant B will not grow because it is in darkness and does not have the light it needs to grow.’ ✓ ‘I have found out that Plant A grew by 3cm in 3 weeks because it had sunlight and water.’ I have found out that Plant B only grew 1cm because it was in darkness. It also had water which is why it may have grown a small amount.’ In planning practical investigations, pupils will use a simple planning template to include: A scientific question to investigate, a list of variables with up to two chosen variables, a prediction, factors, an

✓ using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions ✓ identifying differences, similarities or changes related to simple scientific ideas and processes ✓ using straightforward scientific evidence to answer questions or to support their findings.		equipment list and a simple method (up to 6 steps).
Upper Key Stage 2 – Year 5/6		
Working Scientifically Coverage	Analysing and Recording Scientifically	Planning and Carrying out Investigations
During years 5 and 6, pupils are taught to use the following practical scientific methods, processes and skills through their taught units of work: ✓ planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary ✓ taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate ✓ recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	Pupils will complete, read and interpret information in: • Tables (including timetables) Pupils will solve comparison sum and difference problems using information provided in: • Line graphs Pupils will move on to interpret and construct: • Pie charts • Line graphs Pupils will use information provided/presented to solve problems. They will calculate and interpret the mean as an average.	Pupils will learn to make: • Increasingly detailed predictions and conclusions based on prior knowledge, observations and/or evidence provided. Scaffolds will be provided to support children in making scientific predictions and conclusions with more developed reason(s) (because...) such as: ✓ 'I predict that Plant A will grow significantly because it has full exposure to sunlight which I know all plants need to survive and grow along with air, warmth, water and nutrients. I predict that Plant B will only grow a small amount because it has no exposure to sunlight and does not have the light it needs

✓ using test results to make predictions to set up further comparative and fair tests ✓ reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations ✓ identifying scientific evidence that has been used to support or refute ideas or arguments.		to survive and grow. Plants create energy from sunlight. This is called photosynthesis.' ✓ 'I conclude that Plant A grew by 2.8cm in 3 weeks because it had full exposure to sunlight and water. The plant was able to create energy from the sunlight which is called photosynthesis. I also conclude that Plant B only grew 1.3cm because it was in darkness with no exposure to sunlight. Even though it was watered and had air, the plant was unable to use photosynthesis to create energy from the sunlight.' In planning practical investigations, pupils will use an increasingly-detailed planning template to include: A scientific question to investigate, a list of variables with up to three chosen variables, a detailed prediction, factors, an equipment list and a detailed method (up to 8 steps).
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