Southdale
C of E Junior school
Shining like stars in the universe

Working Scientifically

SCIENCE WORKING SCIENTIFICALLY SKILLS

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YEAR 3 & 4

Working Scientifically One (WS1)	
Asking relevant questions and using different types of scientific enquiries to answer them.	Children should use their prior knowledge when asking questions or be provided with a range of question stems where appropriate. They should be able to answer age appropriate questions posed by the teacher. In order for the children to answer these questions, they should be given a range of resources, both practical and written and decide themselves how to gather the evidence to answer the question. Secondary sources should be given when they cannot answer the question practically. Using the seven enquiry skills, pupils should be able to identify the type of enquiry they have chosen to be able to answer the question.
Working Scientifically Two (WS2)	
Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	The children make systematic (methodical) and careful observations. They use a range of equipment for measuring: length, time, temperature and capacity with support of their maths knowledge, of standard units, for their measurements.
Working Scientifically Three (WS3)	
Setting up simple practical enquiries, comparative and fair tests.	The children will select from a range of practical resources to be able to gather the evidence they need to answer the question posed by the teacher or their own. Once their plan is created, they are able to follow it by: making observations, classifying, comparing, fair testing, tests over time and pattern seeking. A comparative test is performed by changing a variable that is qualitative e.g. the type of material, shape of the parachute. This leads to a ranked outcome. A fair test is performed by changing a variable that is quantitative e.g. the thickness of the material or the area of the canopy. This leads to establishing a causative relationship.

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Working Scientifically Four (WS4)	
Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. Recoding findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	The children will start to decide how to record and present their evidence, with support from the teacher. They can record their observation using: using photographs, videos, pictures, labelled diagrams or writing. Any measurements could be recorded in: tables, tally charts and bar charts (given templates, if required, to which they can add headings). Finally, classifications could be recorded using: tables, Venn diagrams and Carroll diagrams. The children will need support to present the same data in different ways in order to help with answering the question.
Working Scientifically Five (WS5)	
Using straightforward scientific evidence to answer questions or to support their findings.	Children answer their own and others' questions based on: observations they have made, measurements they have taken or information they have gained from secondary sources. Their answers should be consistent with the evidence to stop misconceptions.
Working Scientifically Six (WS6)	
Identifying differences, similarities or changes related to simple scientific ideas and processes.	Children should be able interpret their data to generate simple comparative statements based on their evidence. They begin to identify naturally occurring patterns and causal relationships.

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Working Scientifically Seven (WS7)	
Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	Children will draw conclusions based on the evidence they have collected or on current subject knowledge. Any adapted methods should be identified, as they progress, and they should be able to recognise how they would do something differently if they repeated the enquiry again. Once the investigation or learning is complete, the children should be able to ask further questions, which can be answered by extending the same enquiry
Working Scientifically Eight (WS8)	
Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	They communicate their findings to an audience both orally and in writing, using the appropriate scientific vocabulary taught.

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YEAR 5 & 6

Working Scientifically One (WS1)	
Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	Children independently ask scientific questions. This may be stimulated by a scientific experience or involve asking further questions based on their developed understanding following an enquiry. A wide range of resources should be given to help the children decide for themselves how to gather the evidence. They choose the type of enquiry to carry out and have to be able to justify their choice. Building on prior knowledge, they should now independently recognise that secondary sources have to be used to answer questions that they cannot answer through practical work in the classroom. A range of practical resources should be available to the children so they are able to gather evidence to answer their questions. The test they carry out should be fair tests and they should recognise and control variables that might have an effect on the investigation. They decide what observations or measurements to make over time and for how long. They look for patterns and relationships using a suitable sample.
Working Scientifically Two (WS2)	
Taking measurements, using a rage of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.	The children should be given the opportunity to select measuring equipment that they believe will get them the desired outcome. For example: ruler, tape measure or trundle wheel, force meter with a suitable scale etc. During an enquiry, they make decisions (depending on how they perceive the experiment is going) as to 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).

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YEAR 5 & 6

Working Scientifically Three (WS3)	
Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	The children decide how to record and present evidence and this could be by using annotated photographs, videos, labelled diagrams, observational drawings, labelled scientific diagrams or writing. They record measurements using: tables, tally charts, bar charts, line graphs and scatter graphs. They record classifications using: tables, Venn diagrams, Carroll diagrams and classification keys. The children should be able to present the same data in different ways in order to help with answering the question (this could be approached as a whole class).
Working Scientifically Four (WS4)	
Identifying scientific evidence that has been used to support or refute ideas or arguments	Children answer their own and others' questions based on observations they have made, measurements they have taken or information they have gained from secondary sources. When doing this, they discuss whether other evidence from other groups in the class, secondary sources or their own scientific understanding, supports or refutes their answer. They will begin to recognise that their scientific ideas might change when they encounter new evidence that they have gathered or read. This then leads onto to them talking about how new discoveries change scientific understanding.

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Working Scientifically Five (WS5)	
Reporting and presenting findings from enquiries, including conclusions, casual relationships and explanations of and degree pf trust in results, in oral and written forms such as displays or other presentations.	In their conclusions, children: 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. They evaluate, for example: the choice of method used; the control of variables; the precision and accuracy of measurements and the credibility of secondary sources used. They identify any limitations that reduce the trust they have in their data. They communicate their findings to an audience using relevant scientific language and illustrations. This could be verbally or written.
Working Scientifically Six (WS6)	
Using test results to make predictions to set up further comparative and fair tests.	The children use the scientific knowledge gained from enquiry work to make predictions they can investigate using comparative and fair tests.