

Stickland's School - Working scientifically skills progression KS1/KS2

(italics - NC statements indicate that they feature more than once)



'Asking questions and recognising that they can be answered in different ways



Year 1 & 2	Year 3 & 4	Year 5 & 6
<p>Asking simple questions and recognising that they can be answered in different ways</p> <ul style="list-style-type: none"> • While exploring the world, the children develop their ability to ask questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen). Where appropriate, they answer these questions. • The children answer questions developed with the teacher often through a scenario. • The children are involved in planning how to use resources provided to answer the questions using different types of enquiry, helping them to recognise that there are different ways in which questions can be answered. 	<p>Asking relevant questions and using different types of scientific enquiries to answer them</p> <ul style="list-style-type: none"> • The children consider their prior knowledge when asking questions. They independently use a range of question stems. Where appropriate, they answer these questions. • The children answer questions posed by the teacher. • Given a range of resources, the children decide for themselves how to gather evidence to answer the question. They recognise when secondary sources can be used to answer questions that cannot be answered through practical work. They identify the type of enquiry that they have chosen to answer their question. 	<p><i>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</i></p> <ul style="list-style-type: none"> • 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. • Given a wide range of resources the children decide for themselves how to gather evidence to answer a scientific question. They choose a type of enquiry to carry out and justify their choice. They recognise how secondary sources can be used to answer questions that cannot be answered through practical work.



'Making observations and taking measurements'



Year 1 & 2	Year 3 & 4	Year 5 & 6
<p data-bbox="241 331 640 400">Observing closely, using simple equipment</p> <ul data-bbox="107 453 763 746" style="list-style-type: none"><li data-bbox="107 453 763 667">• Children explore the world around them. They make careful observations to support identification, comparison and noticing change. They use appropriate senses, aided by equipment such as magnifying glasses or digital microscopes, to make their observations.<li data-bbox="107 676 763 746">• They begin to take measurements, initially by comparisons, then using non-standard units.	<p data-bbox="801 331 1451 472">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> <ul data-bbox="792 520 1402 705" style="list-style-type: none"><li data-bbox="792 520 1402 587">• The children make systematic and careful observations.<li data-bbox="792 596 1402 705">• They use a range of equipment for measuring length, time, temperature and capacity. They use standard units for their measurements.	<p data-bbox="1482 331 2132 434">Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <ul data-bbox="1469 481 2141 903" style="list-style-type: none"><li data-bbox="1469 481 2141 625">• The children select measuring equipment to give the most precise results e.g. ruler, tape measure or trundle wheel, force meter with a suitable scale.<li data-bbox="1469 635 2141 903">• During an enquiry, they make decisions e.g. 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).



'Engaging in practical enquiry to answer questions





'Recording and presenting evidence'





'Answering questions and concluding'



Year 1 & 2	Year 3 & 4	Year 5 & 6
<p>Using their observations and ideas to suggest answers to questions</p> <ul style="list-style-type: none"> Children use their experiences of the world around them to suggest appropriate answers to questions. They are supported to relate these to their evidence e.g. observations they have made, measurements they have taken or information they have gained from secondary sources. 	<p>Using straightforward scientific evidence to answer questions or to support their findings</p> <ul style="list-style-type: none"> 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. The answers are consistent with the evidence. 	<p>Identifying scientific evidence that has been used to support or refute ideas or arguments</p> <p>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 e.g. from other groups, secondary sources and their scientific understanding, supports or refutes their answer.</p> <ul style="list-style-type: none"> They talk about how their scientific ideas change due to new evidence that they have gathered. They talk about how new discoveries change scientific understanding.
<p>Using their observations and ideas to suggest answers to questions</p> <ul style="list-style-type: none"> The children recognise 'biggest and smallest', 'best and worst' etc. from their data. 	<p>Identifying differences, similarities or changes related to simple scientific ideas and processes</p> <ul style="list-style-type: none"> Children interpret their data to generate simple comparative statements based on their evidence. They begin to identify naturally occurring patterns and causal relationships. <p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <ul style="list-style-type: none"> They draw conclusions based on their evidence and current subject knowledge. 	<p>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</p> <ul style="list-style-type: none"> 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.



'Evaluating and raising further questions and predictions'



Year 1 & 2	Year 3 & 4	Year 5 & 6
	<p><i>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</i></p> <ul style="list-style-type: none"> • They identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry. 	<p><i>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</i></p> <ul style="list-style-type: none"> • 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.
	<p><i>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</i></p> <ul style="list-style-type: none"> • Children use their evidence to suggest values for different items tested using the same method e.g. the distance travelled by a car on an additional surface. • Following a scientific experience, the children ask further questions which can be answered by extending the same enquiry. 	<p><i>Using test results to make predictions to set up further comparative and fair tests</i></p> <ul style="list-style-type: none"> • Children use the scientific knowledge gained from enquiry work to make predictions they can investigate using comparative and fair tests.



'Communicating their findings'



Year 1 & 2

Year 3 & 4

Year 5 & 6

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 appropriate scientific vocabulary.

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

- They communicate their findings to an audience using relevant scientific language and illustrations.