

## HfL Assessment Criteria for Working Scientifically Skills Overview Table

Skill		Key stage 1	Lower key stage 2	Upper key stage 2
Ideas and questions		<ul style="list-style-type: none"> <li>• <b>asks simple questions and recognising that they can be answered in different ways</b></li> <li>• recognises scientific and technical developments that help us</li> </ul>	<ul style="list-style-type: none"> <li>• <b>asks relevant questions and using different types of scientific enquiries to answer them</b></li> <li>• explains the purposes of a variety of scientific and technological developments</li> </ul>	<ul style="list-style-type: none"> <li>• uses their scientific experiences to explore ideas and raise different types of questions</li> <li>• talks about how scientific ideas have developed over time</li> <li>• recognises the applications of specific scientific ideas</li> </ul>
Planning	Planning an approach	<ul style="list-style-type: none"> <li>• <b>performs simple tests</b> or follows teachers' instructions</li> <li>• with guidance, suggests what they will do</li> <li>• with guidance, identifies things to measure or observe that are relevant to the question</li> </ul>	<ul style="list-style-type: none"> <li>• <b>sets up simple practical enquiries, comparative and fair tests</b></li> <li>• begins to make decisions about what observations to make and how long to make them for</li> </ul>	<ul style="list-style-type: none"> <li>• selects and <b>plans different types of scientific enquiries to answer questions</b></li> <li>• makes decisions about what observations to make, what measurements to use, how long to make them for and whether to repeat them</li> </ul>
	Equipment	<ul style="list-style-type: none"> <li>• uses resources provided or chosen from a limited range</li> <li>• uses simple measurements and equipment to gather data</li> </ul>	<ul style="list-style-type: none"> <li>• begins to choose the type of simple equipment that might be used from a reasonable range</li> <li>• uses appropriate equipment and measurements with reasonable accuracy</li> </ul>	<ul style="list-style-type: none"> <li>• chooses the most appropriate equipment to make measurements</li> <li>• explains how to use the equipment accurately</li> </ul>
	Variables	<ul style="list-style-type: none"> <li>• suggests why a test is unfair</li> </ul>	<ul style="list-style-type: none"> <li>• recognises when a simple fair test is needed</li> <li>• with help, decides how to set up a fair test and control variables</li> </ul>	<ul style="list-style-type: none"> <li>• recognises when and how to set up comparative and fair tests</li> <li>• <b>recognises and controls variables where necessary</b> (e.g. explains which variables need to be controlled and why)</li> </ul>

Obtaining and presenting evidence	Observing and measuring	<ul style="list-style-type: none"> <li>• <b>observes closely</b> (including changes over time), <b>using simple equipment</b></li> <li>• makes measurements using non-standard units</li> </ul>	<ul style="list-style-type: none"> <li>• <b>makes systematic and careful observations</b></li> <li>• <b>makes accurate measurements using standard units (e.g. cm, m, °C, N, g, Kg, ml), using a range of equipment, e.g. data loggers and thermometers</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>takes measurements, in standard units, using a range of scientific equipment, with increasing accuracy and precision</b></li> <li>• <b>takes repeat readings when appropriate</b></li> </ul>
	Secondary sources	<ul style="list-style-type: none"> <li>• uses simple secondary sources to find answers, e.g. books, videos, photographs or people</li> </ul>	<ul style="list-style-type: none"> <li>• recognises when and how secondary sources (e.g. books, internet, experts, diagrams) might help answer questions that cannot be answered through practical investigations</li> </ul>	<ul style="list-style-type: none"> <li>• recognises which secondary sources will be most useful to research their ideas</li> <li>• begins to separate opinion from fact</li> </ul>
	Recording information and data	<ul style="list-style-type: none"> <li>• <b>gathers and records simple data to help in answering questions</b></li> <li>• with support, prepares simple tables to record data</li> </ul>	<ul style="list-style-type: none"> <li>• <b>gathers and records data in a variety of ways to help in answering questions</b></li> <li>• prepares own format for recording data</li> <li>• makes decisions about how to record and analyse the data</li> </ul>	<ul style="list-style-type: none"> <li>• <b>records data and results of increasing complexity</b></li> <li>• decides how to record data from a choice of familiar approaches</li> <li>• calculates mean value where appropriate</li> </ul>
	Presenting evidence	<ul style="list-style-type: none"> <li>• with help, records their findings in a range of ways, e.g. simple tables, diagrams, pictograms, sorting circles, bar charts and templates</li> <li>• talks about their findings using everyday terms, text scaffolds or simple scientific language</li> </ul>	<ul style="list-style-type: none"> <li>• <b>records and presents findings using drawings, labelled diagrams, keys, tally charts, Carroll diagrams, Venn diagrams, bar charts and tables</b></li> <li>• <b>reports on findings from enquiries, in simple scientific language, using oral and written explanations, displays or presentations of results and conclusions</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>records and presents findings using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</b></li> <li>• <b>reports on findings from enquiries, using relevant scientific language and conventions, in oral and written explanations such as displays and other presentations</b></li> </ul>

Considering and evaluating evidence	Looking for patterns	<ul style="list-style-type: none"> <li>uses simple observable features to compare objects, materials and living things</li> <li><b>identifies and classifies</b> (decides how to sort and group objects)</li> <li>with guidance, begins to notice changes (i.e. cause and effect), patterns and relationships (i.e. how one variable affects another)</li> </ul>	<ul style="list-style-type: none"> <li>uses observable and other criteria to group, sort and classify in different ways (including simple keys and branching databases)</li> <li><b>identifies differences, similarities or changes related to simple scientific ideas and processes</b></li> <li>with help, looks for changes, patterns, and relationships in their data</li> </ul>	<ul style="list-style-type: none"> <li>uses and develops keys and other information records to identify, classify and describe living things and materials</li> <li><b>identifies conclusions, causal relationships and patterns</b></li> </ul>
	Explaining results	<ul style="list-style-type: none"> <li>talks about what they have found out and how they found it out</li> <li><b>uses their observations and ideas to suggest answers to questions</b></li> <li>uses comparative language to describe changes, patterns and relationships</li> </ul>	<ul style="list-style-type: none"> <li>with help, <b>uses results to draw simple conclusions</b> and answers questions using appropriate level of knowledge</li> <li><b>uses straightforward scientific evidence to answer questions or to support their findings</b></li> <li>uses relevant scientific language to discuss their ideas and communicate their findings</li> </ul>	<ul style="list-style-type: none"> <li>draws valid conclusions, explains and interprets the results <b>(including the degree of trust)</b> using scientific knowledge and understanding (e.g. recognises limitations of data)</li> <li><b>identifies scientific evidence that has been used to support or refute ideas or arguments</b></li> <li>uses relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas</li> </ul>
	Evaluating	<ul style="list-style-type: none"> <li>with support, suggests whether or not what happened was what they expected</li> <li>with support, suggests different ways they could have done things</li> </ul>	<ul style="list-style-type: none"> <li>with support, <b>uses results to suggest improvements</b> to what they have done</li> <li>with support, <b>raise further questions</b> (e.g. arising from the data)</li> <li>with support, <b>makes predictions for new values</b> within or beyond the data collected</li> </ul>	<ul style="list-style-type: none"> <li>makes practical suggestions about how their working method could be improved (e.g. the effect of sample size on reliability)</li> <li>uses results to identify when further tests and observations might be needed</li> <li><b>uses test results to make predictions and to set up further comparative and fair tests</b></li> </ul>

**Vocabulary for working scientifically:**

Variable, evidence, fair test, method, equipment, results, conclusion, accurate, reliable, prediction supports, observe, measure, question,