HfL Working Scientifically Skills Overview Table

Skill		Key stage 1	Lower key stage 2	Upper key stage 2
Ideas and questions		• **asks simple questions and recognising that they can be answered in different ways** • recognises scientific and technical developments that help us	• **asks relevant questions and using different types of scientific enquiries to answer them** • explains the purposes of a variety of scientific and technological developments	• uses their scientific experiences to explore ideas and raise different types of questions • talks about how scientific ideas have developed over time • recognises the applications of specific scientific ideas
Planning	Planning an approach	• **performs simple tests** or follows teachers' instructions • with guidance, suggests what they will do • with guidance, identifies things to measure or observe that are relevant to the question	• **sets up simple practical enquiries, comparative and fair tests** • begins to make decisions about what observations to make and how long to make them for	• selects and **plans different types of scientific enquiries to answer questions** • makes decisions about what observations to make, what measurements to use, how long to make them for and whether to repeat them
	Equipment	• uses resources provided or chosen from a limited range • uses simple measurements and equipment to gather data	• begins to choose the type of simple equipment that might be used from a reasonable range • uses appropriate equipment and measurements with reasonable accuracy	• chooses the most appropriate equipment to make measurements • explains how to use the equipment accurately
	Variables	• suggests why a test is unfair	• recognises when a simple fair test is needed • with help, decides how to set up a fair test and control variables	• recognises when and how to set up comparative and fair tests • **recognises and controls variables where necessary** (e.g. explains which variables need to be controlled and why)

Obtaining and presenting evidence	Observing and measuring	**observes closely** (including changes over time)**, using simple equipment** - makes measurements using non-standard units	**makes systematic and careful observations** **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**	**takes measurements,** in standard units**, using a range of scientific equipment, with increasing accuracy and precision** **takes repeat readings when appropriate**
	Secondary sources	uses simple secondary sources to find answers, e.g. books, videos, photographs or people	recognises when and how secondary sources (e.g. books, internet, experts, diagrams) might help answer questions that cannot be answered through practical investigations	- recognises which secondary sources will be most useful to research their ideas - begins to separate opinion from fact
	Recording information and data	**gathers and records simple data to help in answering questions** - with support, prepares simple tables to record data	**gathers and records data in a variety of ways to help in answering questions** - prepares own format for recording data - makes decisions about how to record and analyse the data	**records data and results of increasing complexity** - decides how to record data from a choice of familiar approaches - calculates mean value where appropriate
	Presenting evidence	- with help, records their findings in a range of ways, e.g. simple tables, diagrams, pictograms, sorting circles, bar charts and templates - talks about their findings using everyday terms, text scaffolds or simple scientific language	**records and presents findings using drawings, labelled diagrams, keys, tally charts, Carroll diagrams, Venn diagrams, bar charts and tables** **reports on findings from enquiries, in simple scientific language, using oral and written explanations, displays or presentations of results and conclusions**	**records and presents findings using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs** **reports on findings from enquiries,** using relevant scientific language and conventions**, in oral and written explanations such as displays and other presentations**

Considering and evaluating evidence	Looking for patterns	• uses simple observable features to compare objects, materials and living things • **identifies and classifies** (decides how to sort and group objects) • with guidance, begins to notice changes (i.e. cause and effect), patterns and relationships (i.e. how one variable affects another)	• uses observable and other criteria to group, sort and classify in different ways (including simple keys and branching databases) • **identifies differences, similarities or changes related to simple scientific ideas and processes** • with help, looks for changes, patterns, and relationships in their data	• uses and develops keys and other information records to identify, classify and describe living things and materials • **identifies conclusions, causal relationships and patterns**
	Explaining results	• talks about what they have found out and how they found it out • **uses their observations and ideas to suggest answers to questions** • uses comparative language to describe changes, patterns and relationships	• with help, **uses results to draw simple conclusions** and answers questions using appropriate level of knowledge • **uses straightforward scientific evidence to answer questions or to support their findings** • uses relevant scientific language to discuss their ideas and communicate their findings	• draws valid conclusions, explains and interprets the results (**including the degree of trust)** using scientific knowledge and understanding (e.g. recognises limitations of data) • **identifies scientific evidence that has been used to support or refute ideas or arguments** • uses relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas
	Evaluating	• with support, suggests whether or not what happened was what they expected • with support, suggests different ways they could have done things	• with support, **uses results to suggest improvements** to what they have done • with support, **raise further questions** (e.g. arising from the data) • with support, **makes predictions for new values** within or beyond the data collected	• makes practical suggestions about how their working method could be improved (e.g. the effect of sample size on reliability) • uses results to identify when further tests and observations might be needed • **uses test results to make predictions and to set up further comparative and fair tests**

Vocabulary for working scientifically:
Variable, evidence, fair test, method, equipment, results, conclusion, accurate, reliable, prediction supports, observe, measure, question,