Working Scientifcially Progression Grid

CORE QUESTION: What enquiry skill are we going to use and why?

5 types of scientific enquiry: Observing changes over time, Pattern seeking, Grouping and classifying, Comparative and fair testing, Secondary Research.

		Reception	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
			Developing the skill of…	**Confidently…**	**Developing the skill of…**	**Confidently…**	**Developing the skill of…**	**Confidently…**
Plan Ask questions, make predictions, decide on the method and equipment	**Recognise the best type of enquiry to answer a question**	Listen attentively and respond to what they hear with relevant questions	With help and encouragement, I ask simple questions that begin with why, what if, how or when.	I ask simple questions and recognise these questions can be answered in different ways.	I can ask questions and I recognise that there are different types of enquiry. (begin to decide on most appropriate type of scientific enquiry)	I ask relevant questions and use different types of scientific enquiries to answer them. (begin to decide on most appropriate type of scientific enquiry)	I ask relevant questions (containing scientific knowledge and understanding) and with help I recognise which type of enquiry is best to answer a question. select most appropriate type of enquiry, use and understand the language of independent, dependant and control variables)	I ask relevant questions (containing scientific knowledge and understanding). I recognise which type of enquiry is best to answer a question. select most appropriate type of enquiry, use and understand the language of independent, dependant and control variables)
	Choose equipment, select tests, use secondary sources to decide how to obtain accurate observations and measurements		I make suggestions about how to do things when we plan a simple test.	I decide with help, what to find out, observe or measure.	I can set up a simple practical enquiry and I am beginning to understand how to make a test fair. (explain why the test is fair, using	I can set up simple practical enquiries, comparative or fair tests. (explain why the test is fair, using language of variables)	I decide what observations and measurements to make (controlling variables with help where necessary) and what equipment to use to	I can plan different types of science enquiries to answer questions. I recognise and control variables where necessary. I decide what observations and

					language of variables) I make suggestions about what observations and measurements to make and what equipment I need.	I decide what observations and measurements to make and what equipment to use.	make my measurements and observations.	measurements to make and what equipment to use (giving reasons) to make my measurements and observations.
Do and Record Carry out an enquiry using equipment Measuring (linking to Maths progression) Use drawings, tables or graphs to note observations and measurement	**Obtain observations and measurements using equipment and/or secondary sources**	Show an ability to follow instructions involving several ideas or actions be confident to try new activities… use a range of small tools… safely use and explore a variety of materials, tools and techniques	With help, I use simple equipment and non-standard units to find things out. I observe using my senses. Measure using non-standard units of measure. (ruler / cubes / thermometer / hands / egg timers)	I observe closely, using simple equipment and non-standard units. I can identify and classify. I can perform a simple test. Measure using standard units where all the numbers are marked on the scale. length (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) Rulers / measuring cylinders / thermometers / scales	I am beginning to make systematic and careful observations. I sometimes use standard units. With help I can use information sources provided to find things out. (help to make decisions on which equipment to use) Measure using standard units where not all the numbers are marked on the scale, and beginning to take repeat readings. length (m/cm/mm); mass (kg/g); temperature (°C); capacity (litres/ml); time (min, sec) Data loggers / rulers / measuring cylinders and jugs / thermometers/ scales	I use a range of equipment (including thermometers and dataloggers). I make systematic and careful observations and take accurate measurements using standard units. I use information sources provided to find things out. (help to make decisions on which equipment to use) Measure using standard units where not all the numbers are marked on the scale, and take repeat readings where necessary. length (m/cm/mm); mass (kg/g); temperature (°C); capacity (litres/ml); time (min, sec) Data loggers / thermometers / measuring cylinders and jugs / scales / stop watches / tape measure	I use a range of equipment independently. The series of observations and measurements I take are adequate for the task. I use information sources provided to find things out. I identify possible risks to myself and others. Measure using standard units using equipment that has scales, involving decimals. length (m/cm/mm); mass (kg/g); temperature (°C, incl negative nmbr); capacity (litres/ml); time (min, sec, ms) Newton meters / data loggers / thermometers / measuring jugs and cylinders / scales / stop watches / tape measure	I take measurements, using a range of scientific equipment with increasing accuracy and precision. I take repeat readings when appropriate. I use relevant information sources to find things out I identify possible risks to myself and others. Measure using standard units using equipment that has scales, involving decimals. length (m/cm/mm) mass (kg/g); temperature (°C, incl negative nmbr); capacity (litres/ml) ; time (min, sec, ms) Data loggers / thermometers / measuring jugs / scales / stop watches / tape measure

	Record observations and measurements	Explore the natural world around them, making observations and drawing pictures of animals and plants	With help, I can gather and record data to help me answer my questions. Use text, simple labelled diagrams, pictures, photographs, simple prepared tables to record their observations Basic classification – grouping and matching	I gather data and record data to help me answer my questions. I record what I have found out using e.g. words or pictures, tables or simple prepared formats. Use text, block diagrams, simple labelled diagrams, pictograms, pictures, photographs, tally charts, simple tables to record their observations	I gather data and using a pre-prepared table I can record data. I record my findings using a drawing and/or words. Prepare own tables, use pictograms, tally charts, basic Venn and Carroll diagrams with prepared headings.	I gather, record and classify data in a variety of ways to help me answer my questions. I record my findings using simple scientific language, tables, drawings and labelled diagrams. Prepare own tables, use pictograms, basic Venn and Carroll diagrams, and line graphs. Use pre-made classification keys to identify and classify	I gather and record non-complex results (data and observations) using e.g. tables and scientific diagrams. Choose the appropriate form of presentation. Prepare own tables to record data, including columns for taking repeat readings Classification keys – beginning to make their own keys, some headings may be given Use Venn and Carroll diagrams	I record data and results of increasing complexity using e.g. scientific diagrams and labels and tables. I choose a method to suit the results, e.g. a two column table Choose the appropriate form of presentation. Prepare own tables to record data, including columns for taking repeat readings Classification keys – making their own keys. Use Venn and Carroll diagrams
	Present observations and measurements				With help, I can present my data	I present my data in a variety of ways using e.g. Venn diagrams, bar charts, simple scatter graphs and keys.	I present the results (data and observations) in a range of formats e.g. bar and line graphs, simple scatter graphs, keys and frequency charts.	I present the data and results in suitable formats using e.g. line graphs, bar graphs, scatter graphs and classification keys.
Review Interpret, communicate and evaluate results	**Draw conclusions and make explanations**	participate in discussions, offering their own ideas, using recently introduced vocabulary offer explanations for why things might happen…	I talk about what happened and/or what I saw.	I use my observations and ideas to suggest answers to my questions.	I can use my results when I talk about what happened. **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**	I use my results to draw simple conclusions and I make predictions for new values. I communicate what I have found out using straightforward scientific ideas	I draw conclusions from my data and observations. I begin to use basic scientific evidence to support or refute the ideas or	From my data and observations I draw valid conclusions (i.e. consistent with the evidence) including causal relationships. I identify scientific evidence to

		□ express their ideas and feelings about their experiences □ know some similarities and differences… drawing on their experience			**scientific ideas and processes** **Using straightforward scientific evidence to answer questions or to support their findings**	and I report my findings using oral and written explanations and displays. **Identifying differences, similarities or changes related to simple scientific ideas and processes** **Using straightforward scientific evidence to answer questions or to support their findings**	arguments for my conclusion.	support or refute the ideas or arguments for my conclusion.
	Evaluate the data collected						I look at my results and decide if any observations or measurements are unsuitable.	I look at my results and decide if any observations or measurements are unsuitable and need to be carried out again. I offer simple explanations for differences in results.
	Evaluate the process used (including next steps)		I talk about what I did.	I talk about how I found out what I found out.	I can talk about what went wrong! I have ideas about what else I would like to find out.	I suggest improvements to the way I carried out the enquiry. I suggest further questions to investigate.	I use what I have found out to suggest improvements to my work giving reasons. I can set up further questions to investigate.	I use my test results to make predictions to set up further enquiries e.g. comparative and fair tests and suggest how my working methods could be improved, with reasons.