



Goodrich Working Scientifically Progression

Pupils should have the opportunity to carry out practical investigations in science that help them to develop their scientific skills. While working scientifically, the children should be developing the following skills:

- asking questions
- making predictions
- setting up tests
- observing and measuring
- recording data
- interpreting and communicating results
- evaluating

Progression of these skills are set out in the table below:

	EYFS	KS1 (plus previous vocabulary)	Lower KS2 (plus previous vocabulary)	Upper KS2 (plus previous vocabulary)
Vocabulary	Questions Answers Equipment Gather Measure Record Results Sort Group Test Explore Observe Compare Describe Similar/similarities Different/differences Egg timers Ruler Tape measure Metre stick Beaker Pipette Syringe	Pictogram Tally chart Block diagram Venn diagram Table Chart Order Observe changes over time Notice patterns Link Secondary sources Hand lenses Stop watch	Variables Control variable Types of scientific enquiry Identify Classify Order/rank Comparative tests Fair tests Careful/systematic Accurate Observations Evidence Present Data/evidence/results Keys Bar charts Conclusions Prediction Support/not support/ refute Thermometers Data loggers Magnifying glass Microscope Increase Decrease Appearance	Independent variable Dependent variable Accuracy Precision Degree of trust Classification keys Scatter graphs Line graphs Causal relationship Opinion/fact

Plan	<p>Class discussion led by teacher Starter question led</p> <p>What are we keeping the same? What are we changing?</p>	<p>Ask simple questions and recognise that they can be answered in different ways</p> <p>Choose the resources from a narrow selection</p> <p>What makes a fair test? What are we keeping the same? What are we changing?</p>	<p>Planning a scientific enquiry with support</p> <p>Choose the resources from a broader selection</p> <p>Fair test. Identify independent, controlled and depend variables with support</p>	<p>Planning a scientific enquiry</p> <p>Select equipment and materials needed</p> <p>Fair test. Identify independent, controlled and depend variables independently</p>
Do	<p>What do you think will happen?</p> <p>Whole class explorations and opportunities to explore and try out ideas in independent play</p> <p>Non-standard units of measure</p> <p>Taking a risk by engaging in new experience and learning by trial and error.</p>	<p>Predict results individually/group</p> <p>Group/individual investigation. Making simple observations and testing out their ideas.</p> <p>Non-standard and standard units of measure (whole numbers, half, quarter)</p> <p>Taking a risk by engaging in new experience and learning by trial and improvement</p>	<p>Predict with reasoning</p> <p>Independent and group investigations. Systematic observations. Make measurements using standard units of measure (begin to use decimals, rounding to one decimal place, round to a whole number) Use a range of equipment.</p>	<p>Hypothesis with reasoning</p> <p>Independent and paired work. Take measurements using scientific equipment with increased accuracy, precision, taking repeat readings when appropriate (decimals to 3d.p., fractions, ratio and proportion, formulas, percentages, rounding to a given degree of accuracy)</p>
Record	<p>Drawings, photographs, making collections of objects, modelled data collection (pictogram, table, tally)</p>	<p>Filling in simple tables, tally chart, bar graph. Gather data to help answer questions.</p>	<p>Gather, record, classify data in a variety of ways to help answer questions Record findings using simple scientific</p>	<p>Record data and results of increasing complexity using scientific diagrams and labels,</p>

		(videos, voice recordings, TA writing up children's ideas)	vocabulary, diagrams, labelling diagram, keys. Bar graphs and tables. Looking for relationships/patterns	classification keys, tables, scatter graphs, bar and line graphs
Review	Talking about things that they have noticed (same/different) Review how well their approach worked Noticing patterns and making links between their experience	Observing similarities and differences, noticing patterns and making links. Using gathered data to answer questions. Use knowledge to pose future questions. Report on findings in a range of formats (oral, written, pictorial, video, digitally) Reflect on their prediction.	Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions Identify differences, similarities or changes related to simple scientific ideas and processes Use straightforward scientific evidence to answer questions or to support their findings	Use test results to predictions to set up further comparative and fair test. Report and present 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 Identify scientific evidence that has been used to support or refute ideas or arguments

N.B.

Recording work can be varied to capture the children's scientific knowledge e.g. individual/group/class recording, video, photographic, pictorial, digital.

When completing an inquiry the approach and recording can be varied depending on the focus e.g. If you are assessing whether children can evaluate and draw conclusion, you may plan and complete an inquiry as a class and then ask the children to focus on the review independently. This can serve two purposes, firstly it will narrow the focus for high quality independent work and secondly, by working as a class on the other areas of the inquiry, you will be modelling how to complete them for the children to apply to their own work when that part of the inquiry becomes the focus area.

