



Science Skills Progression



PROGRESSION IN SCIENCE SKILLS

Year	BEFORE THE ENQUIRY/EXPERIMENT	DURING THE ENQUIRY/EXPERIMENT	AFTER THE ENQUIRY/EXPERIMENT
1	<p>Predict Show curiosity about what might happen</p> <p>Plan Make comments about what they are going to explore/ investigate, in a context given to them</p> <p>Research Children access simple books, websites, photos, videos and other sources that are given to them</p>	<p>Observe Begin to use first-hand observation using senses (e.g. qualitative comments, some measurements)</p> <p>Using vocabulary Use common words and phrases to talk about science</p> <p>Asking questions Ask and answer simple questions about what they have seen/heard</p> <p>Identify, Classify and Group Make simple scientific comparisons (e.g. spot the difference between pictures)</p> <p>Measure Measure to nearest 10cm e.g. with a metre rule painted in 5cm blocks</p> <p>Record Start to make simple recordings during the enquiry process (e.g. lists, tallies)</p>	<p>Interpret & Conclude Using their observations and ideas to suggest answers to questions</p> <p>Evaluate Make simple comments about their enquiry experience</p> <p>Present Recount what they've seen or found, or draw a picture</p>
2	<p>Predict Ask and answer simple questions about what might happen (e.g. get hotter, faster) Show understanding of 'fair testing'</p> <p>Plan Give a brief overview of their plans, in a context given to them, using some science vocabulary</p> <p>Research Start to select and use a range of books, websites, photos and other sources to learn about</p>	<p>Observe Use first-hand observations with some simple equipment (e.g. magnifying glass)</p> <p>Using vocabulary Use everyday words but in a more precise way; occasionally use scientific vocabulary (see vocabulary section)</p> <p>Asking questions Show curiosity, e.g.</p>	<p>Interpret and conclude Answer questions about their predictions and results (e.g. were they right?)</p> <p>Evaluate Make comments about the method (e.g. were there unforeseen variables?)</p> <p>Present Explain their findings</p>

	science	voluntarily ask questions about what they have heard, read or observed Identify, Classify and Group Identify differences and similarities in what they observe (perhaps with a given focus) Measure to nearest cm (and equivalents) Record Make more sophisticated recordings during the enquiry process (e.g. frequency tables where the template is given)	verbally, through writing, and in age-appropriate graphic form (block diagrams, pictograms, simple tables)
3	Predict Start to frame predictions in scientific language & concepts Start to apply concepts of 'fair testing' Plan Verbally explain their plans, in a context given to them, using technical vocabulary and starting to link to different types of scientific enquiry* Research Independently select and use sources to satisfy their curiosity about science	Observe Use a range of observation equipment, e.g. microscope, data logging Using vocabulary Start choosing simple scientific vocabulary (see below) instead of everyday words Asking questions Start to frame questions/answers in scientifically valid ways (e.g. about change, difference) Identify, Classify and Group Start categorising (i.e. suggesting umbrella terms) Start to comment on scientific changes, including suggestions about cause and effect Measure Start to take accurate measurements (e.g. nearest mm, gram, degree) Use simple data-logging equipment Record Take simple notes (i.e. abbreviations, simplified grammar) but start to include scientific language. Use jotted tables and diagrams, subdivided lists etc.	Interpret and conclude Start to link results to scientific language and subject knowledge Start to suggest further enquiry questions Evaluate Using technical vocabulary, make basic evaluations about their prediction (e.g. was it reasonable?) and methodology (e.g. was it difficult to measure?) Present Explain observations, results and conclusions verbally and in writing, and in age-appropriate graphic form (e.g. bar charts instead of blocks) Use IT to create more complex graphs (e.g. line graph, pie chart)
4	Predict Frame predictions in scientific language & concepts; start to select information to inform these	Observe Evaluate own observations and compare them with others'	Interpret and conclude Include comments about causal

	<p>predictions</p> <p>Plan In a given context they explain their plans in detail, verbally and in writing, using technical vocabulary and linking to types of scientific enquiry* Start to link the planning and evaluation stages</p> <p>Research Select and use sources to construct their own opinions about science</p>	<p>Using vocabulary Use scientific vocabulary (see vocabulary section), often appropriately</p> <p>Asking questions Ask and answer scientifically valid questions (e.g. about contrast, cause and effect, reliability)</p> <p>Identify, Classify and Group Categorise terms and observations Relate contrasts, changes and trends to scientific content</p> <p>Measure Make estimations and (with help) take systematic and careful measurements (e.g. clear clutter that might affect measurements) Use data loggers</p> <p>Record Take quantitative and qualitative notes that include scientific language Start to make simple calculations during the enquiry process</p>	<p>relationships and link these to scientific content</p> <p>Evaluate Suggest improvements to their methodology, linking this to scientific knowledge</p> <p>Present Make selections to present relevant data, observations and conclusions in a variety of ways (e.g. slideshow, vlog, graphic formats) Use age-appropriate graph skills (e.g. time graphs, discrete vs continuous data)</p>
5	<p>Predict Draw on other evidence to inform their predictions (e.g. own experience, reading, media) Start to refer to concepts like reliability, significance, replicability</p> <p>Plan Plans make links to previous investigations, and consider the relative merits of different types of scientific enquiry* in a context that is given to them (e.g. explaining which might be useful)</p> <p>Research Select, organise and use information from more than one source to construct an informed response and/or opinion. Explain the usefulness and reliability of different sources</p>	<p>Observe Work collaboratively by building on others' observations**</p> <p>Using vocabulary Use scientific vocabulary (see below), explaining how it differs from everyday usage, or from near-synonyms</p> <p>Asking questions Ask/answer valid questions (e.g. significance, confidence, replicability)</p> <p>Identify, Classify and Group Make more complex links between the differences and changes they see and the scientific content they have learnt</p> <p>Measure Start to make comments about levels of accuracy (e.g. not measuring a ball throw in mm) Take repeat readings if</p>	<p>Interpret and conclude Justify their interpretations with evidence, from their own enquiry but also external sources (e.g. from famous experiments in the past, or from other curriculum areas)</p> <p>Evaluate Start to organise evaluations (e.g. breaking it down into manageable steps) Show some sensitivity/selection in their evaluations (e.g. when critiquing others, or by considering scientific ethics)</p> <p>Present Include relevant background</p>

		<p>appropriate</p> <p>Record Make clear records of observations and other aspects of the enquiry process (e.g. sketched but labelled diagrams, on-the-cuff calculations)</p>	<p>information and evaluation (e.g. evidence base, measurement accuracy, reliability, usefulness) Use labelled diagrams, tables, classification keys, simple scatter graphs)</p>
6	<p>Predict Predict, using evidence, and with reference to concepts like reliability, significance, replicability</p> <p>Plan Plans scientific enquiries to answer questions of their own, linking to what they have studied, and referring to previous and future investigations</p> <p>Research Thoughtfully select, organise and use relevant information from a range of sources to inform responses, justify their opinions, and politely point out the limitations of other people's ideas</p>	<p>Observe</p> <p>Using vocabulary Start to apply vocabulary in sophisticated ways, for instance in different areas of science, or in other subjects</p> <p>Asking questions Ask/answer perceptive questions (e.g. hypothetical, extrapolatory)</p> <p>Identify, Classify and Group Make links between what they see and a range of scientific content (e.g. including content from all years)</p> <p>Measure Understand and explain why different levels of accuracy are appropriate</p> <p>Record Explain their choices about where, when and how to record an enquiry. Group and redraft into useful formats like tables, diagrams, flow-charts etc</p>	<p>Interpret and conclude Make comments about reliability of results, replicability, methodology Link their experience to a range of scientific content (i.e. from previous years)</p> <p>Evaluate Organise evaluations carefully, selecting by relevance and linking to scientific knowledge Show an awareness of scientific ethics, and display a sensitivity when critiquing others</p> <p>Present Use a range of presentation forms to show discernment in selection, awareness of audience, and perceptive conclusions Draw complex graphs by hand (e.g. pie charts, scatter/ line graphs)</p>