Science Skills Progression.

Year	Key Skills
N	Use all senses for hands on exploration of natural materials Explore collections of materials with similar and/or different properties Talk about what they see, using wide vocabulary Explore how things work Explore and talk about different forces they can feel Plant seeds and care for growing plants
R	**WORKING SCIENTIFICALLY:** • Ask simple questions and recognise that they can be answered in different ways. • Observe closely, using simple equipment. • Perform simple tests. • Identify and classify. • Use their observations and ideas to suggest answers to questions. • Gather and record data to help in answering questions. • Explore the changing of the seasons on the natural world around them.
1	**WORKING SCIENTIFICALLY:** **PREDICT:** Show curiosity about what might happen **PLAN:** Make comments about what they are going to explore/ investigate, in a context given to them. Use common words and phrases or answer simple questions to sequence events. **RESEARCH:** Children access secondary sources (simple books, websites, photos, videos and other sources) that are given to them. **OBSERVE:** Begin to use first-hand observation using senses (qualitative comments, some measurements – egg timers), use common words and phrases to talk about science; ask and answer simple questions about what they have seen/heard. **IDENTIFY, CLASSIFY & GROUP:** Make simple scientific comparisons; sort and group. **MEASURE:** Use simple measurements (egg timers) **RECORD:** Start to make simple recordings during the enquiry process (lists, tallies, tables an d charts) **INTERPRET & CONCLUDE:** Using their observations and ideas to suggest answers to questions. **EVALUATE:** Make simple comments about their enquiry experience. **PRESENT:** Recount what they've seen in a range of ways.
2	**WORKING SCIENTIFICALLY:** **PREDICT:** Ask and answer simple questions about what might happen (get hotter, faster); begin to understand the meaning of 'fair testing' and 'comparative' testing. **PLAN:** Give a brief overview of their plans, in a context given to them, using some science vocabulary . **RESEARCH:** Start to select and use from a range secondary sources to find answers.

	OBSERVE: Use first-hand observations with some simple equipment (e.g. magnifying glass); use everyday words but in a more precise way; occasionally use scientific vocabulary (see vocabulary section); show curiosity and ask questions about what they have heard, read or observed. **IDENTIFY, CLASSIFY & GROUP:** Identify differences and similarities in what they observe (changes over time, patterns and relationships). **MEASURE:** Use simple measurements. **RECORD:** Make more sophisticated recordings during the enquiry process (e.g. frequency tables where the template is given), draw diagrams with labels, food chains, **INTERPRET & CONCLUDE:** Answer questions about their predictions and results (e.g. were they right?) **EVALUATE:** Make comments about the method (e.g. were there unforeseen variables?) **PRESENT:** Explain their findings verbally, through writing, and in age-appropriate graphic form (block diagrams, pictograms, simple tables).
3	**WORKING SCIENTIFICALLY:** **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 (microscope, data logging). Start choosing simple scientific vocabulary instead of everyday words. Start to frame questions/answers in scientifically valid ways (about change, difference). Compare the effect of different factors and look for patterns. **IDENTIFY, CLASSIFY & GROUP:** Start categorising (suggesting umbrella terms). Start to comment on scientific changes, including suggestions about cause and effect. identify similarities and differences. **MEASURE:** Start to take accurate measurements (nearest mm, gram, degree). Use simple data-logging equipment **RECORD:** Take simple notes (abbreviations, simplified grammar) but start to include scientific language. Use jotted tables and diagrams, subdivided lists etc. **INTERPRET & 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 (was it reasonable?) and methodology (was it difficult to measure?) **PRESENT:** Explain observations, results and conclusions verbally and in writing, and in age-appropriate graphic form (bar charts instead of blocks). Use IT to create more complex graphs (line graph, pie chart)
4	**WORKING SCIENTIFICALLY:** **PREDICT:** Frame predictions in scientific language & concepts; start to select information to inform these predictions

	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 **RESEARCH:** Select and use sources to construct their own opinions about science **OBSERVE:** Evaluate own observations and compare them with others'. Use scientific vocabulary (see vocabulary section), often appropriately. Ask and answer scientifically valid questions (about contrast, cause and effect, reliability). **IDENTIFY, CLASSIFY & GROUP:** Categorise terms and observations. Relate contrasts, changes and trends to scientific content **MEASURE:** Make estimations and (with help) take systematic and careful measurements (clear clutter that might affect measurements). Use data loggers. **RECORD:** Take quantitative and qualitative notes that include scientific language. Start to make simple calculations during the enquiry process. Use and make simple guides or keys. **INTERPRET & CONCLUDE:** Include comments about causal relationships and link these to scientific content. **EVALUATE:** Suggest improvements to their methodology, linking this to scientific knowledge **PRESENT:** Make selections to present relevant data, observations and conclusions in a variety of ways (slideshow, vlog, graphic formats). Use age-appropriate graph skills (time graphs, discrete vs continuous data)
5	**WORKING SCIENTIFICALLY:** **PREDICT:** Draw on other evidence to inform their predictions (e.g. own experience, reading, media). Start to refer to concepts like reliability, significance, replicability **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) **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 During the Enquiry **OBSERVE:** Work collaboratively by building on others' observations** Use scientific vocabulary, explaining how it differs from everyday usage, or from near-synonyms. Ask/answer valid questions (e.g. significance, confidence, replicability) **IDENTIFY, CLASSIFY & GROUP:** Make more complex links between the differences and changes they see and the scientific content they have learnt **MEASURE:** Start to make comments about levels of accuracy (e.g. not measuring a ball throw in mm) . Take repeat readings if appropriate **RECORD:** Make clear records of observations and other aspects of the enquiry process (e.g. sketched but labelled diagrams, on-the-cuff calculations) and after the Enquiry **INTERPRET & 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)

	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) **PRESENT:** Include relevant background information and evaluation (e.g. evidence base, measurement accuracy, reliability, usefulness). Use labelled diagrams, tables, classification keys, simple scatter graphs)
6	**WORKING SCIENTIFICALLY:** **PREDICT:** Predict, using evidence, and with reference to concepts like reliability, significance, replicability **PLAN:** Plans scientific enquiries to answer questions of their own, linking to what they have studied, and referring to previous and future investigations **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 **OBSERVE:** Start to apply vocabulary in sophisticated ways, for instance in different areas of science, or in other subjects. Ask/answer perceptive questions (e.g. hypothetical, extrapolatory **IDENTIFY, CLASSIFY & GROUP:** Make links between what they see and a range of scientific content (e.g. including content from all years) **MEASURE:** Understand and explain why different levels of accuracy are appropriate **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 **INTERPRET & CONCLUDE:** Make comments about reliability of results, replicability, methodology. Link their experience to a range of scientific content (i.e. from previous years) **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 **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).