

Progression of skills - Working Scientifically

	Bumblebees (YR1)	Hedgehogs	Barn Owls	Otters
Asking Questions	Explore the world around them and raise their own questions.	Raise their own relevant questions about the world around them	Raise their own relevant questions about the world around them using previous knowledge	Use their science experiences to explore ideas and raise different kinds of questions
Scientific process	Experience different types of science enquiries, including practical activities	Should be given a range of scientific experiences including different types of science enquiries to answer questions	Use the 5 main areas of scientific enquiry and scaffold the children to use these throughout their topics.	Talk about how scientific ideas have developed over time
Planning and setting up different types of enquiries	Begin to recognise different ways in which they might answer scientific questions	Scaffold the children to begin to make decisions about how they might answer a research question.	Start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions	Select and plan the most appropriate type of scientific enquiry to use to answer scientific questions
Performing tests	Carry out simple tests Set up simple practical enquiries, comparative and fair tests	In groups recognise what makes a simple fair test and how we can set it up correctly.	Recognise when a simple fair test is necessary and help to decide how to set it up	Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why
Identifying and classifying (sorting)	Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying)	Comparing objects, materials and living things; deciding how they need to be classified to complete a learning objective.	Talk about criteria for grouping, sorting and classifying; and use simple keys	Use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment
Using secondary sources	Ask people questions and use simple secondary sources to find answers	Recognise when and how secondary sources might help them to answer questions – being guided to relevant sources by the teacher.	Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations	Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact
Observation	Observe closely using simple equipment with help, observe changes over time	Observe closely using simple equipment they have set up. Observe changes over longer periods as well.	Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used	Make their own decisions about what observations to make, what measurements to use and how long to make them for
Pattern seeking	With guidance, they should begin to notice patterns and relationships	With support – use conclusions from investigations to notice patterns and practise orally explaining them.	Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them	Look for different causal relationships in their data and identify evidence that refutes or supports their ideas
Making measurements	Use simple measurements and equipment (e.g. hand lenses, egg timers) to gather data	Take accurate measurements using standard units learn how to use a range of equipment, such as data rulers/force metres appropriately	Take accurate measurements using standard units learn how to use a range of (new) equipment, such as data loggers / thermometers appropriately	Choose the most appropriate equipment to make measurements with increasing precision and explain how to use it accurately. Take repeat measurements where appropriate.
Recording	Record simple data	Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams.	Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data	Decide how to record data and results of increasing complexity from a choice of familiar approaches: scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
Drawing conclusions	Use their observations and ideas to suggest answers to questions Talk about what they have found out and how they found it out	With support, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions.	Pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions	Identify scientific evidence that has been used to support or refute ideas or arguments
Communicating their findings	With help, they should record and communicate their findings in a range of ways and begin to use simple scientific language	Use relevant key vocabulary to share findings both orally and written.	Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions	Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas, use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degree of trust in results
Evaluation		With support, they should identify new questions arising from the data. Think about how we could test these questions?	Pupils should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done	Use their results to make predictions and identify when further observations, comparative and fair tests might be needed

Foundational knowledge, skills and understanding in the Early Years

- Show curiosity about objects, events and people [Playing & Exploring Questions why things happen Speaking: 30-50 months]
- Engage in open-ended activity [Playing & Exploring]
- Take a risk, engage in new experiences and learn by trial and error [Playing & Exploring]
- Find ways to solve problems / find new ways to do things / test their ideas [Creating & Thinking Critically]
- Develop ideas of grouping, sequences, cause and effect [Creating & Thinking Critically]
- Know about similarities and differences in relation to places, objects, materials and living things [ELG: The World]
- Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world [The World: 30-50 months] Closely observes what animals, people and vehicles do [The World 8-20 months]
- Make links and notice patterns in their experience [Creating & Thinking Critically]
- Choose the resources they need for their chosen activities [ELG: Self Confidence & Self Awareness]
- Handle equipment and tools effectively [ELG: Moving & Handling]
- Create simple representations of events, people and objects [Being Imaginative: 40-60+ months]
- Answer how and why questions about their experiences [ELG: Understanding]
- Make observations of animals and plants and explain why some things occur, and talk about changes [ELG: The World]
- Develop their own narratives and explanations by connecting ideas or events ELG: Speaking Builds up vocabulary that reflects the breadth of their experience [Understanding: 30-50 months]

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