# Progression of skills - Working Scientifically

| | Larks (YR1) | Robins (Yr2/3) | Owls (Yr4/5) | Swans(Y6) |
|---|---|---|---|---|
| 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 |
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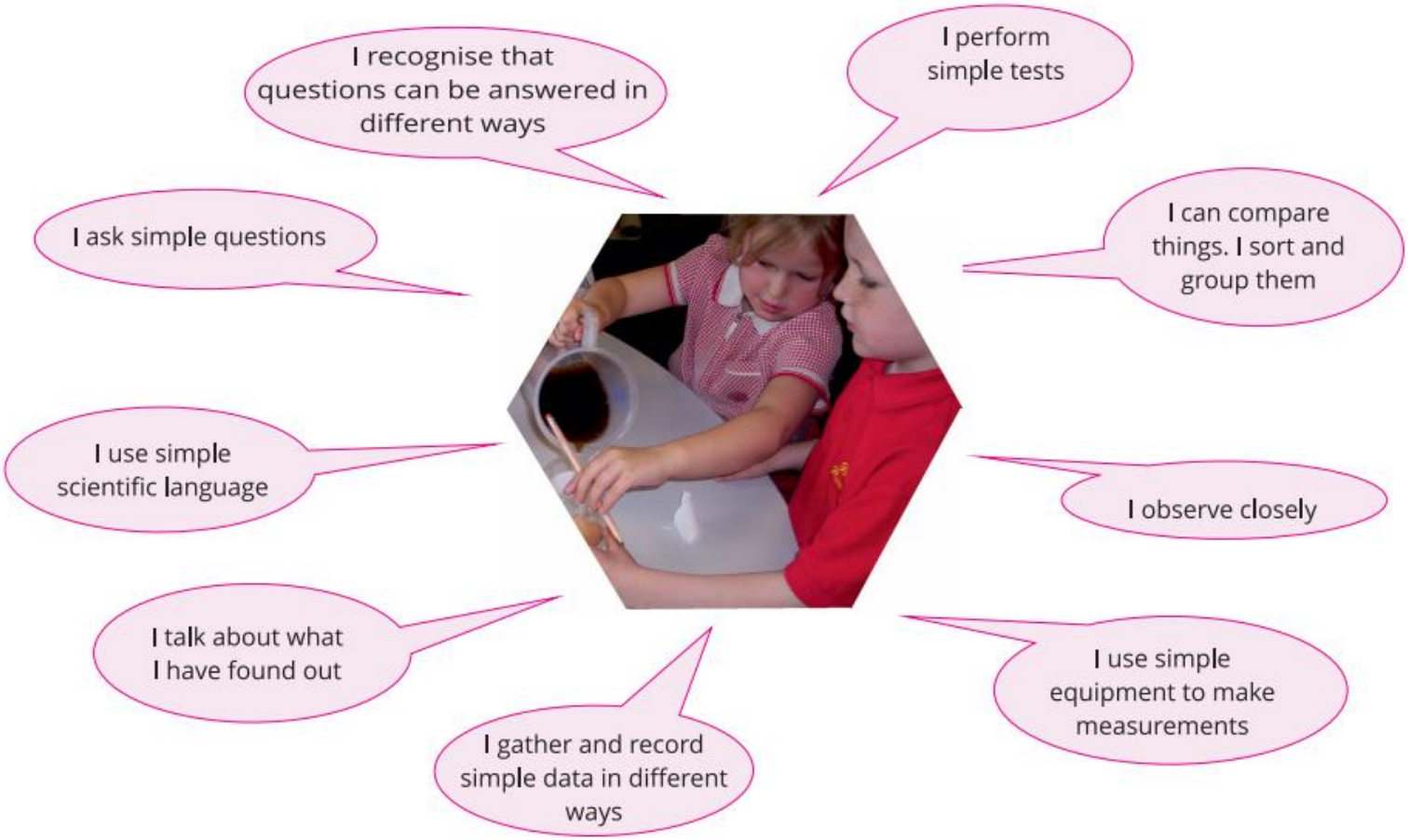
| • Show curiosity about objects, events and people [Playing & Exploring Questions why things happen Speaking: 30-50 months]<br>• Engage in open-ended activity [Playing & Exploring]<br>• Take a risk, engage in new experiences and learn by trial and error [Playing & Exploring]<br>• Find ways to solve problems / find new ways to do things / test their ideas [Creating & Thinking Critically]<br>• Develop ideas of grouping, sequences, cause and effect [Creating &Thinking Critically]<br>• Know about similarities and differences in relation to places, objects, materials and living things [ELG: The World]<br>• 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<br>• Make links and notice patterns in their experience [Creating & Thinking Critically]<br>• Choose the resources they need for their chosen activities [ELG: Self Confidence & Self Awareness]<br>• Handle equipment and tools effectively [ELG: Moving & Handling]<br>• Create simple representations of events, people and objects [Being Imaginative: 40-60+ months]<br>• Answer how and why questions about their experiences [ELG: Understanding]<br>• Make observations of animals and plants and explain why some things occur, and talk about changes [ELG: The World]<br>• 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] |

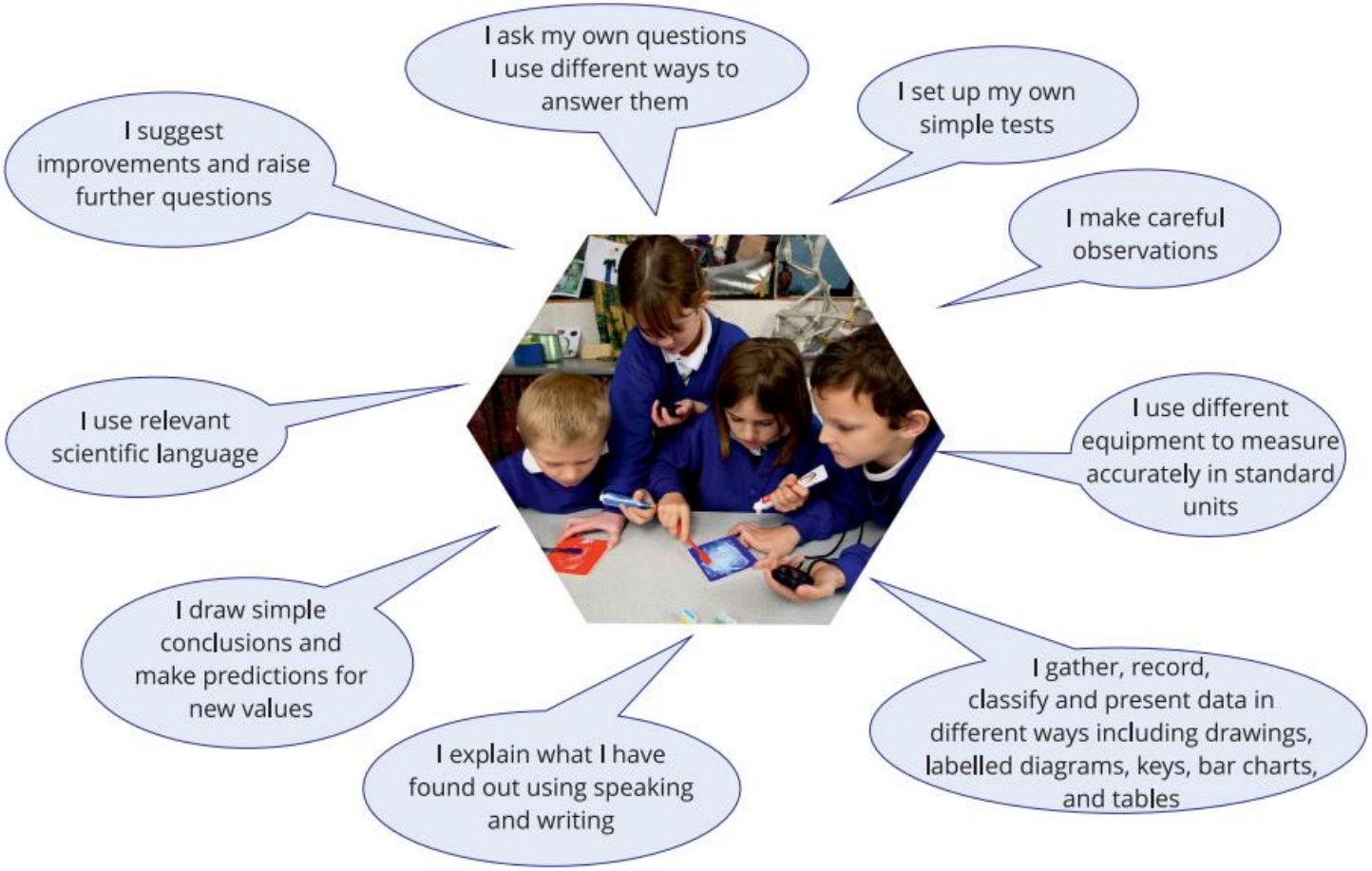
# EYFS


I question why things happen
I have my own ideas
I test my ideas
I begin to use science words
I notice similarities and differences
I can talk about things like plants, animals, natural and found objects
I can use my senses and look closely
I can create simple representations of people and objects
I use equipment and tools carefully

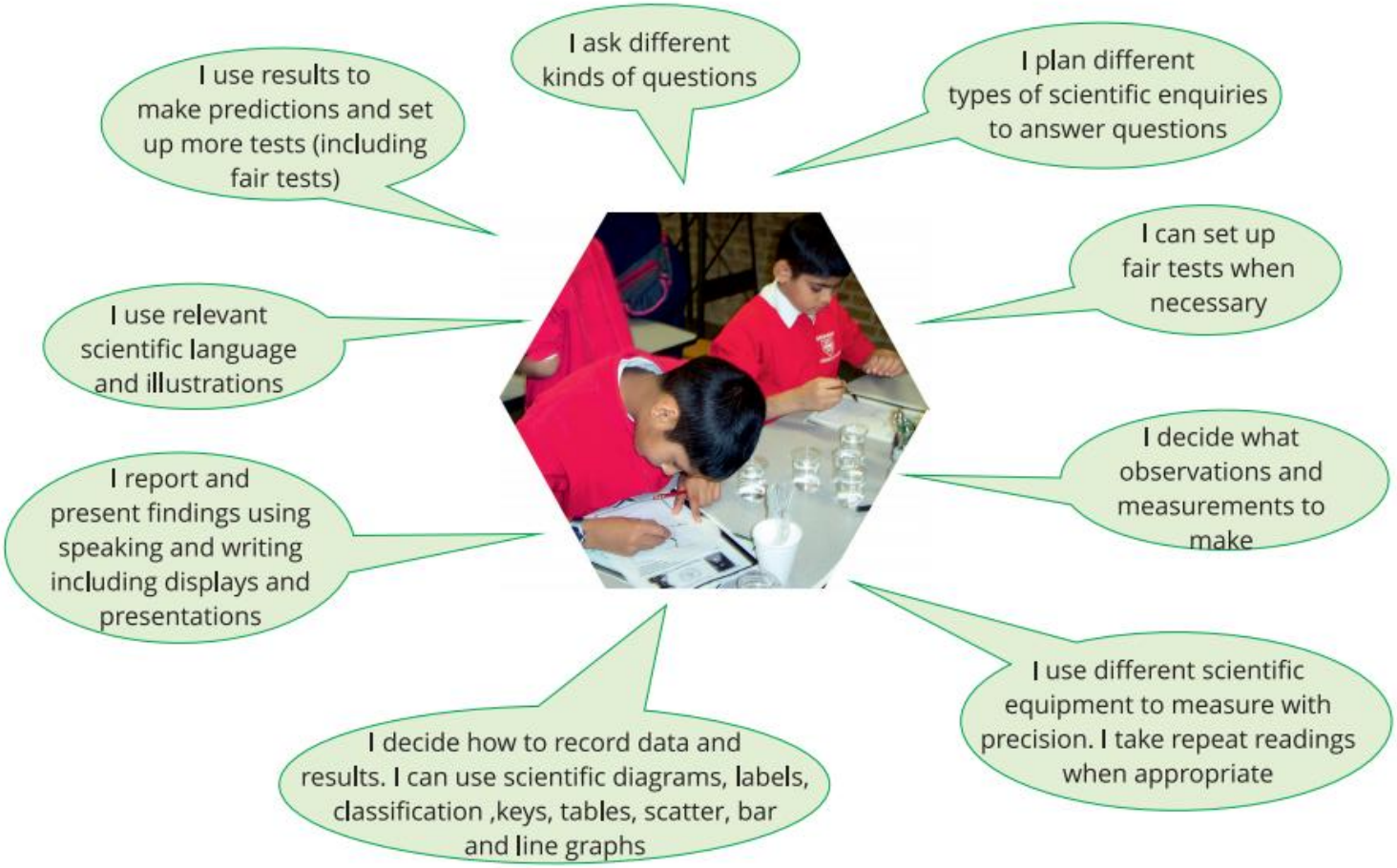
# KS1


I recognise that questions can be answered in different ways
I perform simple tests
I ask simple questions
I can compare things. I sort and group them
I use simple scientific language
I observe closely
I talk about what I have found out
I use simple equipment to make measurements
I gather and record simple data in different ways

# LKS2


I ask my own questions
I use different ways to answer them
I set up my own simple tests
I suggest improvements and raise further questions
I make careful observations
I use relevant scientific language
I use different equipment to measure accurately in standard units
I draw simple conclusions and make predictions for new values
I explain what I have found out using speaking and writing
I gather, record, classify and present data in different ways including drawings, labelled diagrams, keys, bar charts, and tables

# UKS2


I ask different kinds of questions
I plan different types of scientific enquiries to answer questions
I use results to make predictions and set up more tests (including fair tests)
I can set up fair tests when necessary
I use relevant scientific language and illustrations
I decide what observations and measurements to make
I report and present findings using speaking and writing including displays and presentations
I use different scientific equipment to measure with precision. I take repeat readings when appropriate
I decide how to record data and results. I can use scientific diagrams, labels, classification ,keys, tables, scatter, bar and line graphs