

SCIENCE - Working Scientifically

Progression of Enquiry Skills Early Years

EYFS – Nursery and Reception	Key Stage 1 – YEAR 1 and YEAR 2
show curiosity about objects, events and people Playing & Exploring Questions why things happen Speaking: 30-50 months	asking simple questions and recognising that they can be answered in different ways
engage in open-ended activity Playing & Exploring	observing closely, using simple equipment
take a risk, engage in new experiences and learn by trial and error Playing & Exploring	performing simple tests
find ways to solve problems / find new ways to do things / test their ideas Creating & Thinking Critically	identifying and classifying
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	using their observations and ideas to suggest answers to questions
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	gathering and recording data to help in answering questions
closely observes what animals, people and vehicles do The World 8-20 months Use senses to explore the world around them Playing & Exploring	
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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Progression of Enquiry Skills Year 1

EYFS – Nursery and Reception	Key Stage 1 – YEAR 1 and YEAR 2	Lower Key Stage 2 – YEAR 3 and YEAR 4
show curiosity about objects, events and people Playing & Exploring Questions why things happen Speaking: 30-50 months	asking simple questions and recognising that they can be answered in different ways	asking relevant questions and using different types of scientific enquiries to answer them
engage in open-ended activity Playing & Exploring	observing closely, using simple equipment	setting up simple practical enquiries, comparative and fair tests
take a risk, engage in new experiences and learn by trial and error Playing & Exploring	performing simple tests	making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
find ways to solve problems / find new ways to do things / test their ideas Creating & Thinking Critically	identifying and classifying	gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
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	using their observations and ideas to suggest answers to questions	recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
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	gathering and recording data to help in answering questions	reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
closely observes what animals, people and vehicles do The World 8-20 months Use senses to explore the world around them Playing & Exploring		using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
make links and notice patterns in their experience Creating & Thinking Critically		identifying differences, similarities or changes related to simple scientific ideas and processes
choose the resources they need for their chosen activities ELG: Self Confidence & Self Awareness Handle equipment and tools effectively ELG: Moving & Handling		using straightforward scientific evidence to answer questions or to support their findings
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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Progression of Enquiry Skills Year 2

EYFS – Nursery and Reception	Key Stage 1 – YEAR 1 and YEAR 2	Lower Key Stage 2 – YEAR 3 and YEAR 4
show curiosity about objects, events and people Playing & Exploring Questions why things happen Speaking: 30-50 months	asking simple questions and recognising that they can be answered in different ways	asking relevant questions and using different types of scientific enquiries to answer them
engage in open-ended activity Playing & Exploring	observing closely, using simple equipment	setting up simple practical enquiries, comparative and fair tests
take a risk, engage in new experiences and learn by trial and error Playing & Exploring	performing simple tests	making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
find ways to solve problems / find new ways to do things / test their ideas Creating & Thinking Critically	identifying and classifying	gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
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	using their observations and ideas to suggest answers to questions	recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
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	gathering and recording data to help in answering questions	reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
closely observes what animals, people and vehicles do The World 8-20 months Use senses to explore the world around them Playing & Exploring		using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
make links and notice patterns in their experience Creating & Thinking Critically		identifying differences, similarities or changes related to simple scientific ideas and processes
choose the resources they need for their chosen activities ELG: Self Confidence & Self Awareness Handle equipment and tools effectively ELG: Moving & Handling		using straightforward scientific evidence to answer questions or to support their findings
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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Progression of Enquiry Skills Year 3

Key Stage 1 – YEAR 1 and YEAR 2	Lower Key Stage 2 – YEAR 3 and YEAR 4	Upper Key Stage 2 – YEAR 5 and YEAR 6
asking simple questions and recognising that they can be answered in different ways	asking relevant questions and using different types of scientific enquiries to answer them	planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
observing closely, using simple equipment	setting up simple practical enquiries, comparative and fair tests	taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
performing simple tests	making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
identifying and classifying	gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	using test results to make predictions to set up further comparative and fair tests
using their observations and ideas to suggest answers to questions	recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	reporting and presenting 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
gathering and recording data to help in answering questions	reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	identifying scientific evidence that has been used to support or refute ideas or arguments
	using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	
	identifying differences, similarities or changes related to simple scientific ideas and processes	
	using straightforward scientific evidence to answer questions or to support their findings	

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Progression of Enquiry Skills Year 4

Key Stage 1 – YEAR 1 and YEAR 2	Lower Key Stage 2 – YEAR 3 and YEAR 4	Upper Key Stage 2 – YEAR 5 and YEAR 6
asking simple questions and recognising that they can be answered in different ways	asking relevant questions and using different types of scientific enquiries to answer them	planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
observing closely, using simple equipment	setting up simple practical enquiries, comparative and fair tests	taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
performing simple tests	making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
identifying and classifying	gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	using test results to make predictions to set up further comparative and fair tests
using their observations and ideas to suggest answers to questions	recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	reporting and presenting 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
gathering and recording data to help in answering questions	reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	identifying scientific evidence that has been used to support or refute ideas or arguments
	using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	
	identifying differences, similarities or changes related to simple scientific ideas and processes	
	using straightforward scientific evidence to answer questions or to support their findings	

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Progression of Enquiry Skills Year 5

Lower Key Stage 2 – YEAR 3 and YEAR 4	Upper Key Stage 2 – YEAR 5 and YEAR 6	Key Stage 3
asking relevant questions and using different types of scientific enquiries to answer them	planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience
setting up simple practical enquiries, comparative and fair tests	taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review
making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate
gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	using test results to make predictions to set up further comparative and fair tests	make predictions using scientific knowledge and understanding
recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	reporting and presenting 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	use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety Evaluate the reliability of methods and suggest possible improvements Evaluate risks Pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility.
reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	identifying scientific evidence that has been used to support or refute ideas or arguments	apply sampling techniques Apply mathematical concepts and calculate results Use and derive simple equations and carry out appropriate calculations Undertake basic data analysis including simple statistical techniques
using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions		understand and use SI units and IUPAC (International Union of Pure and Applied Chemistry) chemical nomenclature Make and record observations and measurements using a range of methods for different investigations Present observations and data using appropriate methods, including tables and graphs
identifying differences, similarities or changes related to simple scientific ideas and processes		interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions
using straightforward scientific evidence to answer questions or to support their findings		present reasoned explanations, including explaining data in relation to predictions and hypotheses Evaluate data, showing awareness of potential sources of random and systematic error

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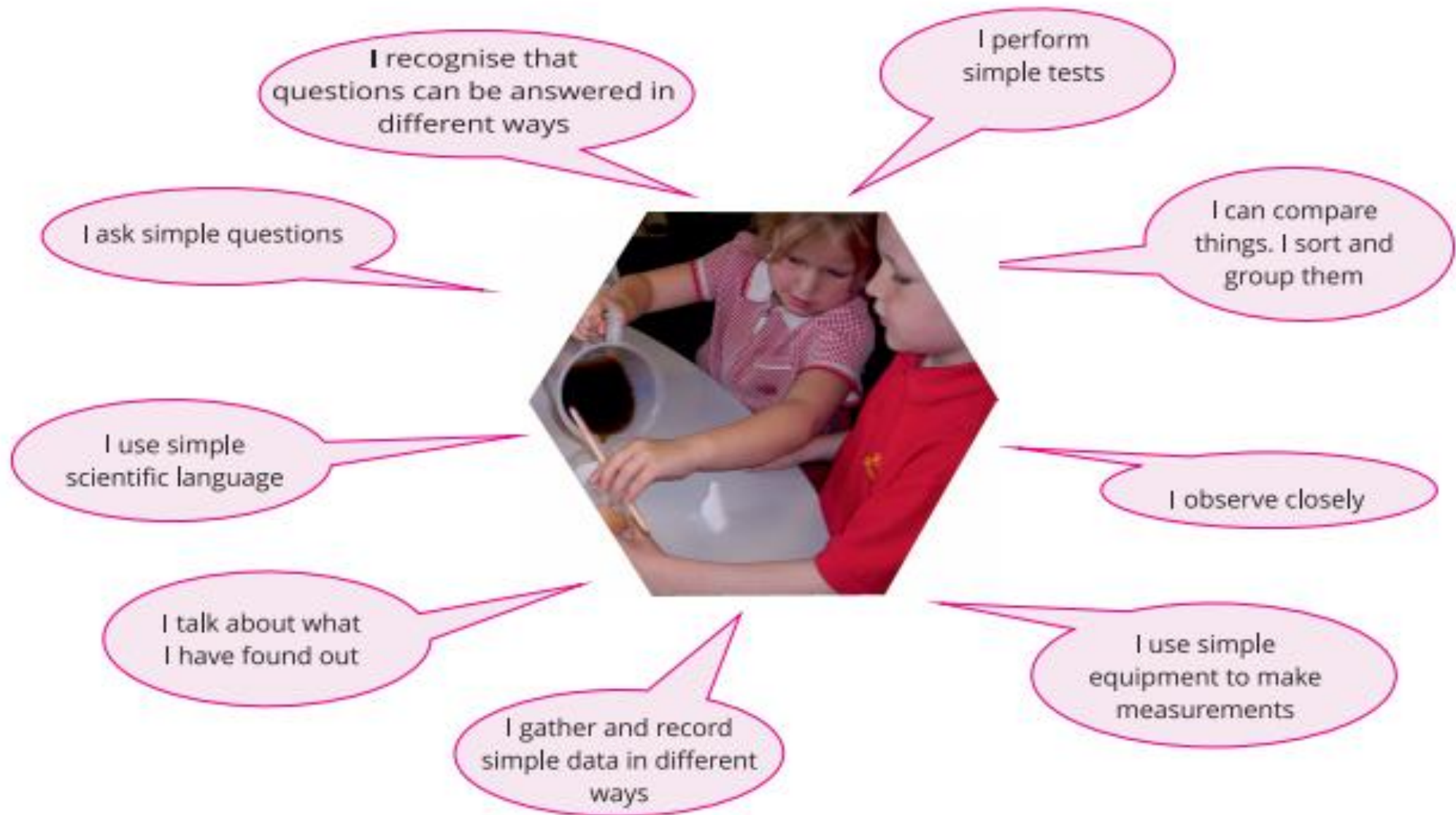
Progression of Enquiry Skills Year 6

Lower Key Stage 2 – YEAR 3 and YEAR 4	Upper Key Stage 2 – YEAR 5 and YEAR 6	Key Stage 3
asking relevant questions and using different types of scientific enquiries to answer them	planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience
setting up simple practical enquiries, comparative and fair tests	taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review
making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate
gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	using test results to make predictions to set up further comparative and fair tests	make predictions using scientific knowledge and understanding
recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	reporting and presenting 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	use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety Evaluate the reliability of methods and suggest possible improvements Evaluate risks Pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility.
reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	identifying scientific evidence that has been used to support or refute ideas or arguments	apply sampling techniques Apply mathematical concepts and calculate results Use and derive simple equations and carry out appropriate calculations Undertake basic data analysis including simple statistical techniques
using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions		understand and use SI units and IUPAC (International Union of Pure and Applied Chemistry) chemical nomenclature Make and record observations and measurements using a range of methods for different investigations Present observations and data using appropriate methods, including tables and graphs
identifying differences, similarities or changes related to simple scientific ideas and processes		interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions
using straightforward scientific evidence to answer questions or to support their findings		present reasoned explanations, including explaining data in relation to predictions and hypotheses Evaluate data, showing awareness of potential sources of random and systematic error

Working Scientifically in Early Years Foundation Stage



Working Scientifically in Key Stage 1



Working Scientifically in Lower Key Stage 2



Working Scientifically in Upper Key Stage 2

