



Knowledge and Skills Progression

Subject area: Science – Working Scientifically – Disciplinary knowledge

National Curriculum Statements

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions.

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair 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
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- 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.

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- 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
- identifying scientific evidence that has been used to support or refute ideas or arguments.

These skills will be taught through the following topics:

- KS1- Animals including humans, Everyday materials, plants and seasonal change.
- LKS2 – Animals including humans, Sound, Electricity, Rocks, Living things and their habitats, Forces and magnets, States of matter, Plants and Light.
- UKS2 – Animals including humans, Forces, Evolution and Inheritance, Living things and their habitats, Electricity, Properties and changes of material, Earth and beyond and Light.

Knowledge & Skills	EYFS	Year 1 (KS1 skills)	Year 2 (KS1 skills)	Year 3 (Lower KS2 skills)	Year 4 (Lower KS2 skills)	Year 5 (Upper KS2 skills)	Year 6 (Upper KS2 skills)
Working Scientifically	Learning Goals	To use the following practical scientific methods, processes and skills (adult support may be needed) -	To use the following practical scientific methods, processes and skills with increasing confidence -	To use the following practical scientific methods, processes and skills -	To use the following practical scientific methods, processes and skills -	To use the following practical scientific methods, processes and skills -	To use the following practical scientific methods, processes and skills -
Questioning and enquiring Planning		<p>To ask a few simple questions about the world around us.</p> <p>To begin to use some different types of enquiry to answer questions.</p> <p>Types of enquiries including - observing changes over time, noticing patterns, grouping and classifying, carrying out simple comparative tests, finding things out from secondary sources.</p>	<p>To ask simple questions about the world around us.</p> <p>To begin to use different types of enquiry to answer questions.</p> <p>Types of enquiries including - observing changes over time, noticing patterns, grouping and classifying, carrying out simple comparative tests, finding things out from secondary sources).</p>	<p>To ask some relevant questions about the world around us and explore everyday phenomena.</p> <p>To use some different types of scientific enquiry to answer questions about the world around us.</p> <p>To begin to decide which type of enquiry is best to answer my question, looking at relationships between living things and familiar environments</p> <p>To begin to raise their own questions about the world around them.</p> <p>Types of enquiries including: observing changes over time, noticing patterns, grouping and classifying, carrying out simple comparative and fair tests, finding things out using secondary sources.</p>	<p>To ask relevant questions about the world around us and explore everyday phenomena.</p> <p>To use different types of scientific enquiry to answer questions about the world around us.</p> <p>To beginning to decide which type of enquiry is best to answer my question, looking at relationships between living things and familiar environments.</p> <p>To begin to raise their own questions about the world around them.</p> <p>Types of enquiries including: observing changes over time, noticing patterns, grouping and classifying, carrying out simple comparative and fair tests, finding things out using secondary sources.</p>	<p>To explore ideas and ask my own questions about scientific phenomena.</p> <p>To begin to plan different types of scientific enquiry to answer questions.</p> <p>To begin to decide which variables to control.</p> <p>To analyse functions, relationships, and interactions more systematically.</p> <p>To begin to recognise some more abstract ideas and begin to recognise how these ideas help them to understand how the world operates.</p> <p>To begin to recognise scientific ideas change and develop over time.</p> <p>Types of scientific enquiry including: observing changes over different periods of time, noticing patterns, grouping and classifying, carrying out comparative and fair tests and finding things</p>	<p>To explore ideas and ask my own questions about scientific phenomena.</p> <p>To plan different types of scientific enquiry to answer questions.</p> <p>To decide which variables to control</p> <p>To analyse functions, relationships, and interactions more systematically.</p> <p>To begin to recognise some more abstract ideas and begin to recognise how these ideas help them to understand how the world operates.</p> <p>To begin to recognise scientific ideas change and develop over time.</p> <p>Types of scientific enquiry including: observing changes over different periods of time, noticing patterns, grouping and classifying, carrying out comparative and fair tests and finding things</p>

Skill	Year 1 (KS1 skills)	Year 2 (KS1 skills)	Year 3 (Lower KS2 skills)	Year 4 (Lower KS2 skills)	Year 5 (Upper KS2 skills)	Year 6 (Upper KS2 skills)	
Observing and measuring Pattern seeking	<p>To use all your senses when finding out about new things.</p> <p>Use all their senses in hands-on exploration of natural materials.</p>	<p>To begin to observe changes over time.</p> <p>To begin say what I am looking for and what I am measuring.</p> <p>To measure with non-standard units and can begin to use simple standard units e.g., mm, cm, m, ml, l, °C</p> <p>To use some simple equipment eg hand lenses, egg timers.</p> <p>To begin to notice patterns.</p>	<p>To observe changes over time and, with guidance, begin to notice patterns.</p> <p>To say what I am looking for and what I am measuring.</p> <p>To measure with non-standard units and can begin to use simple standard units eg, mm, cm, m, ml, l, °C</p> <p>To use simple equipment eg hand lenses, egg timers.</p> <p>To beginning to notice patterns.</p>	<p>To begin to make systematic and careful observations.</p> <p>To decide what to observe and how long to collect observations.</p> <p>To take accurate measurements using standard units eg. mm, cm, m, ml, l, °C, seconds, minutes,</p> <p>To decide which equipment to use and can use new equipment eg. data loggers.</p> <p>To look for naturally occurring patterns and relationships, and decide what data to collect to identify them.</p>	<p>To make systematic and careful observations.</p> <p>To decide what to observe and how long to collect observations.</p> <p>To take accurate measurements using standard units eg. mm, cm, m, ml, l, °C, seconds, minutes,</p> <p>To decide which equipment to use and can use new equipment eg. data loggers.</p> <p>To look for naturally occurring patterns and relationships, and decide what data to collect to identify them.</p>	<p>To make accurate and precise measurements, taking repeat readings where appropriate.</p> <p>To begin to make their own decisions about what to observe, how long to observe for.</p> <p>To take accurate and precise measurements using standard units N, g, kg, mm, cm, mins, seconds, cm²V, km/h, m per sec, m/ sec.</p> <p>To select equipment on my own and can explain how to use it accurately to make a set of observations and say what the interval and range are.</p> <p>To begin to interpret data (line and bar graphs) and find patterns.</p> <p>To begin to identify patterns that might be found in the natural environment</p>	<p>To make accurate and precise measurements, taking repeat readings where appropriate.</p> <p>To identify patterns that might be found in the natural environment.</p> <p>To make their own decisions about what observations to make, what measurements to use and how long to make them.</p> <p>To interpret data (pie, line and bar graphs) and find patterns.</p> <p>To accurately and precisely measurements – N, g, kg, mm, cm, mins, seconds, cm²V, km/h, m per sec, m/ sec</p> <p>Graphs – pie, line, bar .</p> <p>To select equipment on my own and can explain how to use it accurately to make a set of observations and say what the interval and range are.</p>
Skill	EYFS	Year 1 (KS1 skills)	Year 2 (KS1 skills)	Year 3 (Lower KS2 skills)	Year 4 (Lower KS2 skills)	Year 5 (Upper KS2 skills)	Year 6 (Upper KS2 skills)
Investigating	To use all your senses when finding out	To begin to perform simple tests.	To perform simple tests. To discuss my ideas.	To set up some simple practical enquiries, including comparative and fair tests.	To set up simple practical enquiries. Including comparative and fair tests.	To begin to set up a range of comparative and fair tests and make predictions.	To set up a range of comparative and fair tests, make predictions and use these to make

	about new things. Use all their senses in hands-on exploration of natural materials.	To begin to discuss my ideas. To begin to say what happened in an investigation.	To say what happened in an investigation.	To begin to help decide which variables to keep the same and which to change.	To help decide which variables to keep the same and which to change.	To begin to explain which variables need to be controlled and why. To begin to suggest improvements to my test, giving reasons.	further comparative and fair tests. To explain which variables, need to be controlled and why. To suggest improvements to my test, giving reasons.
Skill	EYFS	Year 1 (KS1 skills)	Year 2 (KS1 skills)	Year 3 (Lower KS2 skills)	Year 4 (Lower KS2 skills)	Year 5 (Upper KS2 skills)	Year 6 (Upper KS2 skills)
Recording and reporting findings	To use all your senses when finding out about new things. Explore the natural world around them, making observations and drawing pictures of animals and plants.	To begin to collect simple data with adult support. To begin to record data in a table my teacher has provided. To begin to communicate my findings in a variety of ways.	To collect simple data to help answer a question. To record data in a table my teacher has provided. To communicate my findings in a variety of ways.	To begin to collect data in a variety of ways, including labelled diagrams, bar charts and tables. To begin to help decide how to record data. To begin to communicate findings using simple scientific language. To begin to report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	To collect data in a variety of ways, including labelled diagrams, bar charts and tables. To help decide how to record data. To communicate findings using simple scientific language. To begin to report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	To begin to record data and results of increasing complexity using – scientific diagrams and labels, classification keys, tables, bar graphs, line graphs. To beginning to choose how best to present data. To beginning to communicate findings using increasing detail and scientific language.	To record data and results of increasing complexity using – scientific diagrams and labels, classification keys, tables, bar graphs, line graphs. To choose how best to present data. To communicate findings using detailed scientific language.
Skill	EYFS	Year 1 (KS1 skills)	Year 2 (KS1 skills)	Year 3 (Lower KS2 skills)	Year 4 (Lower KS2 skills)	Year 5 (Upper KS2 skills)	Year 6 (Upper KS2 skills)
Identifying, grouping and classifying	To collect materials and group them.	To begin to identify a variety of objects, materials and living things. To begin to compare, sort and group a range of objects, materials and living things.	To identify and classify a variety of objects, materials and living things. To compare, sort and group a range of objects, materials and living things	To begin to talk about and identify differences and similarities in the properties or behaviour of living things, materials and other scientific phenomena. To begin to identify simple changes related	To talk about and identify differences and similarities in the properties or behaviour of living things, materials and other scientific phenomena. To identify simple changes related to	To beginning to use keys and other information records to classify and describe living things, materials and other scientific phenomena. To beginning to develop my own keys and other	To use keys and other information records to classify and describe living things, materials and other scientific phenomena. To develop my own keys and other information records to classify and describe.

		To begin to use simple features to compare objects, materials and living things and, with help, decide how to sort and group them.	To use simple features to compare objects, materials and living things and, with help, decide how to sort and group them.	to simple scientific phenomena. To beginning to discuss criteria for grouping and sorting and can classify using simple keys.	simple scientific phenomena. To discuss criteria for grouping and sorting and can classify using simple keys.	information records to classify and describe. To beginning to identify changes related to scientific phenomena.	To identify changes related to scientific phenomena.
Skill	EYFS	Year 1 (KS1 skills)	Year 2 (KS1 skills)	Year 3 (Lower KS2 skills)	Year 4 (Lower KS2 skills)	Year 5 (Upper KS2 skills)	Year 6 (Upper KS2 skills)
Research		To use simple secondary sources (with help) to find information: books, computers and other familiar sources.	To find information to help me from books, computers and other familiar secondary sources, with some adult support.	To begin to decide when research will help in my enquiry. To begin to carry out simple research on my own using secondary sources.	To begin to decide when research will help in my enquiry. To carry out simple research on my own using secondary sources.	To begin to recognise which secondary sources will be most useful to my research. To begin to carry out research independently.	To recognise which secondary source will be most useful to my research. To carry out research independently.
Skill	EYFS	Year 1 (KS1 Skills)	Year 2 (KS1 skills)	Year 3 (Lower KS2 skills)	Year 4 (Lower KS2 skills)	Year 5 (Upper KS2 skills)	Year 6 (Upper KS2 skills)
Conclusions		To begin to talk about what I have found out. To begin to explain how I carried out my enquiry. To begin to say whether I was surprised at the results. To begin to suggest simple changes to my enquiry.	To talk about what I have found out. To explain how I carried out my enquiry. To say whether I was surprised at the results. To suggest simple changes to my enquiry.	To begin to draw simple conclusions based on the results of my enquiry. To begin to answer my questions using the results of my enquiry. To begin to and with adult help, use my findings to make new predictions, suggest improvements and think of new questions. To begin sometimes to think of cause and effect in my explanations.	To draw simple conclusions based on the results of my enquiry. To answer my questions using the results of my enquiry. To use my findings to make new predictions, suggest improvements and think of new questions. To begin to think of cause and effect in my explanations.	To begin to draw scientific, causal conclusions using the results of an enquiry to justify my ideas. To begin to explain my conclusion using scientific knowledge and understanding. To begin to distinguish opinion and facts. To begin to use my findings to make predictions and set up further enquiries. To begin to use abstract models to explain my ideas.	To draw scientific, causal conclusions using the results of an enquiry to justify my ideas. To explain my conclusion using scientific knowledge and understanding. To distinguish opinion and facts. To use my findings to make predictions and set up further enquiries. To begin to use abstract models to explain my ideas.
Skill	EYFS	Year 1 (KS1 skills)	Year 2 (KS1 skills)	Year 3 (Lower KS2 skills)	Year 4 (Lower KS2 skills)	Year 5 (Upper KS2 skills)	Year 6 (Upper KS2 skills)
Vocabulary See glossary sheets for	To talk about what you see using my	To begin to use simple scientific language.	To use simple scientific language. To describe what I see.	To begin to use some scientific language in my work.	To use some scientific language in my work.	To begin to read, spell and pronounce scientific vocabulary correctly.	To read, spell and pronounce scientific vocabulary correctly.

each unit for each phase.	growing vocabulary.	To begin to describe what I see eg something is long. To begin to compare eg something is longer or shorter.	To compare eg something is longer or shorter.	To begin to describe my observations and my findings. To begin to use comparative and superlative descriptions eg longer / shorter than, longest / shortest.	To describe my observations and my findings. To use comparative and superlative descriptions eg longer / shorter than, longest / shortest.	To begin to confidently use the correct scientific language when appropriate. To begin to explain my ideas with scientific reasons. To begin to use scientific conventions eg trends, rogue result, support prediction.	To confidently use the correct scientific language when appropriate. To explain my ideas with scientific reasons. To use scientific conventions eg trends, rogue result, support prediction.
Skill	EYFS	Year 1 (KS1 skills)	Year 2 (KS1 skills)	Year 3 (Lower KS2 skills)	Year 4 (Lower KS2 skills)	Year 5 (Upper KS2 skills)	Year 6 (Upper KS2 skills)
Understanding	To understand there are four seasons. To begin to understand that materials can change.	To say how science helps us in our daily lives. To say how science can be dangerous eg electricity can give you a shock.	To say how science helps us in our daily lives. To say how science can be dangerous eg electricity can give you a shock.	To begin to know which things in science have made our lives better eg computers in schools, hospitals etc To begin to understand risk in science..	To know some things in science which have made our lives better eg computers in schools, hospitals etc To understand there is some risk in science..	To begin to see how science is useful in lots of different ways. To begin to say which parts of our lives rely on science. To begin to explain the positive and negative effects of scientific developments.	To see how science is useful in lots of different ways. To say which parts of our lives rely on science. To explain the positive and negative effects of scientific developments.
Skill	EYFS	KS1		LKS2		UKS2	
Enrichment	Use of the school grounds	Use the school grounds. Trip to Ashton Park, Sandlea Gardens and Birkenhead Park. Visit from Chester Zoo, trip to safari park.		Use of school grounds – science week. West Kirby Beach. WKGS light workshop.		Use of school grounds- science week. West Kirby Beach Sandlea Park Chester Zoo WKGS for a Light workshop	