



Scientific Skills - Progression Map and Intent

Overview

*There are strong links between the EYFS/KS1 And LKS2 science curriculum, clearly demonstrating that the science curriculum, assessment and pedagogy have:

- Continuity
- progression

*Science teachers collaborate, plan and provide a range of joint activities/events for pupils.

*Schools and teachers exchange information, co-ordinate science activities, share science resources

*Teachers collaborate to plan progression in cross-curricular skills required for science:

- Literacy
- Numeracy
- ICT
- Problem solving
- Thinking

*Teachers share good practice and expertise in approaches to teaching, learning and assessment.

Our high-quality science curriculum provides the foundation for understanding the world. Science has changed our lives and is vital to the world's future prosperity; all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science.

Intent

We want our pupils to become inquisitive and explorative about the world around them. We want them to expand their knowledge from the Early Years wider world learning and to love, respect, and investigate their natural world as well as themselves. We want them to ask question to research further outside of the classroom and to be respectful of everything and everyone around them. We further believe that the acquisition of knowledge, skills and understanding of science in the curriculum is essential for the child's future learning and to prepare them for adult life.

Implementation

- We will provide a wide range of scientific experiences for all pupils regardless of age, ability, gender, specific educational needs or disability which encourages their love of learning and passion for investigation.
- We will teach scientific skills to pupils through a progressive programme of study.
- We will ensure that children can record their results in a variety of ways, building on writing up investigations with data included.
- We will provide differentiated teaching to conceptual needs of the full ability range in each year group.

- We will help the children to develop an enquiring and questioning approach to scientific discover through a range of concepts and starting points.
- We will help the children to develop a problem solving approach to scientific experimentation where they lead their learning.
- We will help the children to develop close observation and precise recording which demonstrates their learning through their key phase.
- We will relate scientific knowledge to everyday experience.
- We will ensure science teaching and learning is safe and use a range of resources to excel the children’s learning.
- We will assess and monitor pupil’s progress against National Curriculum/levels of attainment.

Impact

- Pupils will develop a love of learning, investigating, experimenting and will want to test the theories to their fullest.
- Pupils will work hard to meet the challenges of the growing curriculum and become resilient in their investigations.
- Pupils will learn to draw upon prior learning and enhance this learning with research, experimentation and concluding.
- Pupils will become independent and determined learners who tackle problem solving with inquisitive attitudes.

Research						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To make comments and ask questions about aspects of their familiar world (such as the place where they live) or the natural world.	To begin to use simple secondary sources to find answers. To begin to find information to help me from books and computers with help	To use simple secondary sources to find answers. To find information to help me from books and computers with help.	To begin to recognise when and how secondary sources might help to answer questions that cannot be answered through practical investigations.	To recognise when and how secondary sources might help to answer questions that cannot be answered through practical investigations.	To begin to recognise which secondary sources will be most useful to research their ideas.	To recognise which secondary sources will be most useful to research their ideas.
Questioning and Planning						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	To ask simple questions about the world around us.	To ask questions about the world around us.	To ask some relevant questions and use different	To ask relevant questions and use different types of scientific	To begin to plan different types of scientific enquiries to	To plan different types of scientific enquiries to answer questions,

	To begin to recognise that they can be answered in different ways.	To recognise that they can be answered in different ways..	types of scientific enquiries to answer them.	enquiries to answer them.	answer questions, including recognising and controlling variables where necessary.	including recognising and controlling variables where necessary.
To show curiosity about objects, events and people			To begin to explore everyday phenomena and the relationships between living things and familiar environments. To begin to develop their ideas about functions, relationships and interactions.	To explore everyday phenomena and the relationships between living things and familiar environments. To begin to develop their ideas about functions, relationships and interactions.	To begin to explore and talk about ideas, ask their own questions about scientific phenomena, analyse functions, relationships and interactions more systematically	To explore and talk about ideas, ask their own questions about scientific phenomena, analyse functions, relationships and interactions more systematically.
To questions why things happen			To begin to raise their own questions about the world around them.	To raise their own questions about the world around them.	To begin to recognise some more abstract ideas and begin to recognise how these ideas help them to understand how the world operates. To begin to recognise scientific ideas change and develop over time. To begin to select the most	To recognise more abstract ideas and begin to recognise how these ideas help them to understand how the world operates. To recognise scientific ideas change and develop over time. To select the most appropriate

appropriate ways to answer science questions using different types of scientific enquiry.

ways to answer science questions using different types of scientific enquiry.

Observing, Measuring and Pattern Seeking

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>To use senses to explore the world around them.</p> <p>To closely observe what animals, people and vehicles do.</p>	<p>To begin to observe closely, using simple equipment.</p> <p>To use simple observations and ideas to suggest answers to questions.</p>	<p>To observe closely, using simple equipment.</p> <p>To use simple observations and ideas to suggest answers to questions.</p>	<p>To begin to make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p>	<p>To make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p>	<p>To begin to take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate.</p>	<p>To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate.</p>
<p>To make links and notice patterns and their experiences.</p>	<p>To observe simple changes over time and, with guidance, begin to notice patterns.</p> <p>To begin say what I am looking for and</p>	<p>To observe changes over time and, with guidance, begin to notice patterns.</p> <p>To say what I am looking for and</p>	<p>To begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them.</p>	<p>To look for naturally occurring patterns and relationships and decide what data to collect to identify them.</p>	<p>To begin to identify patterns that might be found in the natural environment.</p>	<p>To identify patterns that might be found in the natural environment.</p>

what I am measuring. To begin know how to use simple equipment safely.	what I am measuring. To know how to use simple equipment safely.	To start to use 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.	To use 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.	To begin to make their own decisions about what observations to make, what measurements to use and how long to make them for and whether to repeat them	To make their own decisions about what observations to make, what measurements to use and how long to make them for and whether to repeat them
To use simple measurements and equipment with support (e.g. hand lenses and egg timers)	To use simple measurements and equipment with increasing independence (e.g. hand lenses and egg timers).	To learn to use new equipment appropriately with support (e.g. data loggers).	To learn to use new equipment appropriately (e.g. data loggers).	To begin to choose the most appropriate equipment and explain how to use it accurately.	To choose the most appropriate equipment and explain how to use it accurately.
		To begin see a pattern in my results. To begin to choose from a selection of equipment.	To see a pattern in my results. To choose from a selection of equipment.	To begin interpret data and find patterns. To start to select equipment on my own. To start to make a set of observations and say what the interval and range are.	To interpret data and find patterns. To select equipment on my own. To make a set of observations and say what the interval and range are.
To be able to read mm, cm, m, ml, l, °C with support.	To be able to read mm, cm, m, ml, l, °C	To begin to observe and measure accurately using	To observe and measure accurately using standard units	To begin to take accurate and precise measurements –	To make accurate and precise measurements –

standard units including time in minutes and seconds.

including time in minutes and seconds.

N, g, kg, mm, cm, mins, seconds, cm²V, km/h, m per sec, m/ sec
Graphs – pie, line

N, g, kg, mm, cm, mins, seconds, cm²V, km/h, m per sec, m/ sec
Graphs – pie, line, bar

Investigating

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>To find ways to solve problems / find new ways to do things / test their ideas. To engage in open-ended activity.</p>	<p>To perform simple tests with support.</p>	<p>To perform simple tests.</p>	<p>To set up some simple practical enquiries, comparative tests.</p>	<p>To set up simple practical enquiries, comparative tests</p>	<p>To begin to use test results to make predictions to set up further comparative tests.</p>	<p>To use test results to make predictions to set up further comparative tests</p>
	<p>To begin use prior understanding to predict the outcomes of an investigation with support. To begin to discuss my ideas about how to find things out.</p>	<p>To begin use prior understanding to predict the outcomes of an investigation To discuss my ideas about how to find things out.</p>	<p>To use prior understanding to predict the outcomes of an investigation. To begin to recognise which independent, dependent and controlled variables are necessary to test my ideas. To begin to think of more than one variable factor.</p>	<p>To use prior understanding to hypothesise the outcomes of an investigation. To recognise which independent, dependent and controlled variables are necessary to test my ideas. To think of more than one variable factor.</p>	<p>To begin to make informed predictions and justify them using scientific knowledge. To begin to recognise when and how to set up comparative tests and explain which variables need to be controlled and why.</p>	<p>To make informed predictions and justify them using scientific knowledge. To recognise when and how to set up comparative tests and explain which variables need to be controlled and why.</p>

Recording and Reporting Findings

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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To choose the resources they need for their chosen activities	To gather and record data with some adult support, to help in answering questions To begin to record simple data. To begin to record and communicate their findings in a range of ways. To show my results in a simple table that my teacher has provided.	To gather and record data to help in answering questions To record simple data. To record and communicate their findings in a range of ways. To show my results in a table that my teacher has provided	To gather, record, and begin to classify and present data in a variety of ways to help in answering questions. To begin to record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables To begin to report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions To begin to use notes, simple tables and standard units	To gather, record, classify and present data in a variety of ways to help in answering questions. To record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables To report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions To use notes, simple tables and standard units and help to	To begin to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs. To begin to report and present findings from enquiries. To begin to decide how to record data from a choice of	To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs. To report and present findings from enquiries. To decide how to record data from a choice of
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and help to decide how to record and analyse their data.
To begin to record results in tables and bar charts.

decide how to record and analyse their data.
To record results in tables and bar charts.

familiar approaches.
To begin to choose how best to present data.

familiar approaches.
To choose how best to present data

Conclusions

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>To answer how and why questions about their experiences.</p> <p>To make observations of animals and plants and explain why some things occur, and talk about changes.</p> <p>To build up vocabulary that reflects the breadth of their experience</p> <p>Understanding.</p>	<p>To begin to talk about what they have found out and how they found it out</p> <p>To begin to say what happened in my investigation.</p> <p>To begin to say whether I was surprised at the results or not.</p> <p>To begin to say what I would change about my investigation.</p>	<p>To talk about what they have found out and how they found it out.</p> <p>To say what happened in my investigation.</p> <p>To say whether I was surprised at the results or not.</p> <p>To say what I would change about my investigation.</p>	<p>To begin to use results to draw simple conclusions, hypothesise for new values, suggest improvements and raise further questions.</p> <p>To begin to use straightforward scientific</p>	<p>To use results to draw simple conclusions, hypothesise for new values, suggest improvements and raise further questions.</p> <p>To use straightforward scientific</p>	<p>To begin to report and present 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.</p> <p>To begin to identify scientific evidence that</p>	<p>To report and present 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.</p> <p>To identify scientific evidence that</p>

evidence to answer questions or to support their findings. To begin to look for changes, patterns, similarities and differences in their data in order to draw simple conclusions, with support.

To begin to identify new questions arising from the data, make new predictions and find ways of improving what they have already done, with support.

To begin to identify a pattern in my results. To begin to identify what I discovered, linking cause and effect.

To begin to answer questions

evidence to answer questions or to support their findings. To look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions, with support.

To identify new questions arising from the data, make new predictions and find ways of improving what they have already done, with support.

To identify a pattern in my results. To identify what I discovered, linking cause and effect.

To answer questions from

has been used to support or refute ideas or arguments. To begin to draw conclusions based on their data and observations, use evidence to justify their ideas, use scientific knowledge and understanding to explain their findings

To begin to use test results to make predictions to set up further comparative tests

To begin to look for different causal relationships in their data and identify evidence that refutes or supports their ideas.

To begin to use test results to

has been used to support or refute ideas or arguments. To draw conclusions based on their data and observations, use evidence to justify their ideas, use scientific knowledge and understanding to explain their findings

To use test results to make predictions to set up further comparative tests

To look for different causal relationships in their data and identify evidence that refutes or supports their ideas.

To use test results to make

from what I have discovered.

what I have discovered.

make predictions to set up further comparative tests.

predictions to set up further comparative tests.

To use their results to identify when further tests and observations are needed

To use their results to identify when further tests and observations are needed

To begin to separate opinion from fact.

To separate opinion from fact.

To begin to draw conclusions and identify scientific evidence.

To draw conclusions and identify scientific evidence.

To begin to use simple models (e.g. flow charts, classification tree)

To use simple models (e.g. flow charts, classification tree)

To know which evidence proves a scientific point.

To know which evidence proves a scientific point.

Identifying, Grouping and Classifying

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To answer how and why questions about their experiences.	To identify and classify with some support. To begin to observe and identify, compare and describe.	To identify and classify To observe and identify, compare and describe.	To begin to identify differences, similarities or changes related to simple scientific ideas and processes.	To identify differences, similarities or changes related to simple scientific ideas and processes.	To begin to use and develop keys and other informational records to identify, classify and describe living things and materials.	To use and develop keys and other informational records to identify, classify and describe living things and materials.
To develop ideas of	To begin to use simple features to	To use simple features to	To begin to talk about criteria for	To talk about criteria for		

grouping, sequences, cause and effect
To know about similarities and differences in relation to places, objects, materials and living things

compare objects, materials and living things and, with help, decide how to sort and group them.

compare objects, materials and living things and, with help, decide how to sort and group them.

grouping, sorting and classifying and use simple keys
To begin to compare and group according to behaviour or properties, based on testing.

grouping, sorting and classifying and use simple keys
To compare and group according to behaviour or properties, based on testing.

Vocabulary						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	properties		prediction		line graph	angle of incidence
	observe		measurement		relationship	angle of reflection
	test		enquiry		outlier	refraction
	magnifying glass		independent variable			spectrum
	object		dependent variable			translucent
	record		controlled variable			medium
	equipment		comparative test			periscope
			theory			
			hypothesis			