



## Science Whole School Curriculum – Ellel St. John’s CofE Primary School

### EYFS

The EYFS framework is structured very differently to the national curriculum as it is organised across seven areas of learning rather than subject areas. Below you can see how the skills taught across EYFS feed into national curriculum subjects.

This document demonstrates which statements from the 2020 Development Matters are prerequisite skills for art within the national curriculum. The table below outlines the most relevant statements taken from the Early Learning Goals in the EYFS statutory framework and the Development Matters age ranges for Three and Four-Year-Olds and Reception to match the programme of study for science.

The most relevant statements for art are taken from the following areas of learning:

- Communication and Language
- Physical Development
- Understanding the World

#### Science

Three and Four-Year-Olds	Communication and Language	<ul style="list-style-type: none"> <li>• Understand 'why' questions, like: "Why do you think the caterpillar got so fat?"</li> </ul>
	Physical Development	<ul style="list-style-type: none"> <li>• Make healthy choices about food, drink, activity and tooth brushing.</li> </ul>
	Understanding the World	<ul style="list-style-type: none"> <li>• Use all their senses in hands-on exploration of natural materials.</li> <li>• Explore collections of materials with similar and/or different properties.</li> <li>• Talk about what they see, using a wide vocabulary.</li> <li>• Begin to make sense of their own life-story and family's history.</li> <li>• Explore how things work.</li> <li>• Plant seeds and care for growing plants.</li> <li>• Understand the key features of the life cycle of a plant and an animal.</li> <li>• Begin to understand the need to respect and care for the natural environment and all living things.</li> <li>• Explore and talk about different forces they can feel.</li> <li>• Talk about the differences between materials and changes they notice.</li> </ul>
Reception	Communication and Language	<ul style="list-style-type: none"> <li>• Learn new vocabulary.</li> <li>• Ask questions to find out more and to check what has been said to them.</li> <li>• Articulate their ideas and thoughts in well-formed sentences.</li> <li>• Describe events in some detail.</li> <li>• Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen.</li> <li>• Use new vocabulary in different contexts.</li> </ul>
Reception Continued	Physical Development	<ul style="list-style-type: none"> <li>• Know and talk about the different factors that support their overall health and wellbeing:               <ul style="list-style-type: none"> <li>- regular physical activity</li> <li>- healthy eating</li> <li>- tooth brushing</li> <li>- sensible amounts of 'screen time'</li> <li>- having a good sleep routine</li> <li>- being a safe pedestrian</li> </ul> </li> </ul>

	Understanding the World		<ul style="list-style-type: none"> <li>• Explore the natural world around them.</li> <li>• Describe what they see, hear and feel while they are outside.</li> <li>• Recognise some environments that are different from the one in which they live.</li> <li>• Understand the effect of changing seasons on the natural world around them.</li> </ul>
ELG	Communication and Language	Listening, Attention and Understanding	<ul style="list-style-type: none"> <li>• Make comments about what they have heard and ask questions to clarify their understanding.</li> </ul>
	Personal, Social and Emotional Development	Managing Self	<ul style="list-style-type: none"> <li>• Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.</li> </ul>
	Understanding the World	The Natural World	<ul style="list-style-type: none"> <li>• Explore the natural world around them, making observations and drawing pictures of animals and plants.</li> <li>• Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.</li> <li>• Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</li> </ul>

Autumn 1 Marvellous Me	Autumn 2 Terrific Tales	Spring 1 Amazing Animals	Spring 2 Come Outside	Summer 1 Ticket to ride!	Summer 2 Fun at the Seaside
<p>Identifying their family. Commenting on photos of their family; naming who they can see and of what relation they are to them.</p> <p>Can talk about what they do with their family and places they have been with their family.</p> <p>Can draw similarities and make comparisons between other families.</p> <p>Name and describe people who are familiar to them.</p> <p>Talk about members of their immediate family and community.</p> <p>Navigating around our classroom and outdoor areas.</p> <p>Create treasure hunts to find places/ objects within our learning environment.</p> <p>Introduce children to different occupations and how they use transport to help them in their jobs.</p> <p>Listen out for and make note of children's discussion between themselves regarding their experience of past birthday celebrations.</p> <p>Using cameras</p>	<p>Can talk about what they have done with their families during Christmas' in the past.</p> <p>Show photos of how Christmas used to be celebrated in the past.</p> <p>Talking about occupations and how to identify strangers that can help them when they are in need</p>	<p>Listening to stories and placing events in chronological order.</p> <p>What can we do here to take care of animals in the jungle?</p> <p>Compare animals from a jungle to those on a farm.</p> <p>Explore a range of jungle animals.</p> <p>Learn their names and label their body parts.</p> <p>Could include a trip to the zoo.</p> <p>Nocturnal Animals Making sense of different environments and habitats</p> <p>Use images, video clips, shared texts and other resources to bring the wider world into the classroom.</p> <p>Listen to what children say about what they see</p> <p>Listen to children describing and commenting on things they have seen whilst outside, including plants and animals.</p> <p>After close observation, draw pictures of the natural world, including animals and plants</p>	<p>Trip to our local park (to link with seasons); discuss what we will see on our journey to the park and how we will get there.</p> <p>Introduce the children to recycling and how it can take care of our world.</p> <p>Look at what rubbish can do to our environment and animals.</p> <p>Create opportunities to discuss how we care for the natural world around us.</p> <p>Can children make comments on the weather, culture, clothing, housing.</p> <p>Change in living things – Changes in the leaves, weather, seasons,</p> <p>Explore the world around us and see how it changes as we enter Summer.</p> <p>Provide opportunities for children to note and record the weather.</p> <p>Building a 'Bug Hotel'</p> <p>Draw children's attention to the immediate environment, introducing and modelling new vocabulary where appropriate.</p> <p>Encourage interactions with the outdoors to foster curiosity and give children freedom to touch, smell and hear the natural world around them during hands-on experiences.</p> <p>Look for children incorporating their understanding of the seasons and weather in their play.</p>	<p>Use Handa's Surprise to explore a different country.</p> <p>Discuss how they got to school and what mode of transport they used.</p> <p>Introduce the children to a range of transport and where they can be found.</p> <p>Look at the difference between transport in this country and one other country.</p> <p>Encourage the children to make simple comparisons.</p> <p>Use bee-bots on simple maps.</p> <p>Encourage the children to use navigational language.</p> <p>Can children talk about their homes and what there is to do near their homes?</p> <p>Look out for children drawing/painting or constructing their homes.</p> <p>Encourage them to comment on what their home is like.</p> <p>Show photos of the children's homes and encourage them to draw comparisons.</p> <p>Introduce the children to NASA and America.</p> <p>Introduce children to significant figures who have been to space and begin to understand that these events happened before they were born.</p> <p>Can children differentiate between land and water.</p>	<p>To understand where dinosaurs are now and begin to understand that they were alive a very long time ago.</p> <p>Learn about what a palaeontologist is and how they explore really old artefacts.</p> <p>Introduce Mary Anning as the first female to find a fossil.</p> <p>Materials: Floating / Sinking – boat building Metallic / non metallic objects</p> <p>Seasides long ago – Magic Grandad o</p> <p>Share non-fiction texts that offer an insight into contrasting environments.</p> <p>Listen to how children communicate their understanding of their own environment and contrasting environments through conversation and in play.</p>



**YEAR 2**

Autumn 1		Autumn 2		Spring 1	Spring 2	Summer 1	Summer 2
Uses of Everyday materials		Animals including humans		Plants	Animals inc habitats	Free choice topic	
<p>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</p> <p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</p> <p><b>Working Scientifically</b> Sort/compare/group/identify/classify- Decide how to sort and group objects and materials. Name/identify a variety of common features and/or uses for objects and materials. Planning- Set up a comparative test. In a group suggest ways in which they might answer scientific questions. Suggest a [practical way] to find answers to their questions and listen to the suggestions of others. Use different types of scientific enquiry to answer their own questions. Research- Find out about the work of famous scientists - historical &amp; modern day- John McAdam. Collaborating-Listen to the suggestions of others. Explain results- Begin to explain how they know...use the word because "it is because..."/ suggest how and/or why things happen. Draw on use their results and their own experience to answer their questions. Begin to use simple scientific language to describe or explain what they have found out. Read and spell scientific vocabulary. Communicating recording-Record and communicate their findings in a range of ways with increasing independence e.g. talk/discuss; write/describe; draw pictures; take photographs; video; make/construct a variety of tables, charts [including simple, bar charts produced as a group and displays. Make some choices on how to communicate their ideas to a range of audiences in a variety of ways. Use simple scientific language in their recording. Record simple data with some accuracy. Record data to help in answering questions.</p>		<p><b>National Curriculum:</b> Explore and compare the differences between things that are living, dead, and things that have never been alive</p> <p>Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other</p> <p>Notice that animals, including humans, have offspring which grow into adults</p> <p>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</p> <p>Medicines can be useful when we are ill.</p> <p>Medicines can be harmful if not used properly.</p> <p><b>Working Scientifically</b> Questioning- Raise their own questions based on or linked to things they have observed. Ask people questions. Sort/compare/group /identify/classify- Compare and contrast... a variety of things - focusing on the similarities as well as the differences] including how different things change over different periods of time (living things). Explain results- Read and spell scientific vocabulary. Equipment and measurement- Gather data to help in answering questions.</p> <p><b>Locality:</b> Identify different habitats within the school grounds – pond area, Forest School area, wild meadow area. Then do a bug/wildlife hunt etc in these areas.</p>		<p><b>National Curriculum:</b> Observe and describe how seeds and bulbs grow into mature plants</p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p> <p>Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food</p> <p><b>Working Scientifically</b> Research- Find out about the work of famous scientists - historical &amp; modern day- Louis Pasteur. Use simple and appropriate secondary sources (such as books, photographs and videos) to find things out / find answers.</p> <p><b>Locality:</b> Visit to zoo/farm with inquiry question such as: Can you find a food chain in the zoo/farm? .</p>		<p>Observe and describe how seeds and bulbs grow into mature plants</p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</p> <p>Explore and compare the differences between things that are living, dead, and things that have never been alive</p> <p>Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other</p> <p>Identify and name a variety of plants and animals in their habitats, including microhabitats</p> <p><b>Working Scientifically</b> Sort/compare/group/identify/classify- Sort and classify things according to a variety of different features (e.g. "I know it is living because it .. and it..."). Decide how to sort and group living things. Name/identify a variety of common features and/or uses for living things. Name/Identify common example and some common features. Recording of explore/observe- Record and communicate their findings using simple scientific language. Use their own ideas and their observations to offer answers to questions. Observe and describe simple processes/cycles with several steps e.g. growth cycle, simple food chain, saying how living things depend on one another. Recognise and describe a series of changes over time (e.g. growth). Observe, and record make drawings to represent things in the real world with some accuracy. Describe results- With guidance, begin to notice patterns and relationships. Order their findings. Recognise if results matched predictions. Talk/ discuss/ describe/record with some accuracy what they have seen/ what has happened. Explain results- Read and spell scientific vocabulary. Equipment and measurement- Observe more accurately by measuring non-standard and standard units. Use their senses, simple measurements and equipment to gather data with increasing independence.</p>	
<p><b>Working Scientifically:</b> Asking simple questions and recognising that they can be answered in different ways</p> <p>Using their observations and ideas to suggest answers to questions</p>		<p><b>Working Scientifically:</b> Identifying and classifying</p> <p>Using their observations and ideas to suggest answers to questions</p>		<p><b>Working Scientifically:</b> Observing closely, using simple equipment</p> <p>Performing simple tests</p> <p>Gathering and recording data to help in answering questions</p>		<p><b>Working Scientifically:</b> Identifying and classifying</p> <p>Using their observations and ideas to suggest answers to questions</p>	
Cross-curricular links		Cross-curricular links		Cross-curricular links		Cross-curricular links	



## LKS2

### Lower KS2 National Curriculum

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

'Working scientifically' is described separately at the beginning of the programme of study, but must **always** be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.

Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

### Working Scientifically

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.









## UKS2

### Upper KS2 National Curriculum

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

'Working and thinking scientifically' is described separately at the beginning of the programme of study, but must **always** be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.

Pupils should read, spell and pronounce scientific vocabulary correctly.

### Working scientifically

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 presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments.

## YEAR 5

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Forces		Earth and space	Animals including humans Living things and their habitats	Properties and changes of materials	
<p><b>National Curriculum:</b></p> <p><b>Forces:</b> Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p> <p><b>Locality:</b> Link with BAE systems at Barrow-in-Furness. Building of submarines and how they are designed to have least water resistance. Also link with BAE systems at Warton where military aircraft are produced.</p>	<p><b>National Curriculum:</b></p> <p><b>Earth and Space:</b> Describe the movement of the Earth, and other planets, relative to the Sun in the solar system</p> <p>Describe the movement of the Moon relative to the Earth</p> <p>Describe the Sun, Earth and Moon as approximately spherical bodies</p> <p>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</p> <p><b>Locality:</b> Link with Lancaster University – 'Luniverse' planetarium activity provided by Professors from the University.</p>	<p><b>National Curriculum:</b></p> <p><b>Animals including humans Living things and their habitats:</b> Describe the changes as humans develop to old age.</p> <p>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>Describe the life process of reproduction in some plants and animals</p> <p><b>Locality:</b> Find plants/trees/wildlife in the local area and research their life cycles.</p>	<p><b>National Curriculum:</b></p> <p><b>Properties and changes of materials:</b> Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</p> <p>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</p>		
<p><b>Working Scientifically:</b> Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels, tables, scatter graphs</p>		<p><b>Working Scientifically:</b> Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat</p>	<p><b>Working Scientifically:</b> 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</p>	<p><b>Working Scientifically:</b> Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels, tables, bar and line graphs</p>	

Reporting and presenting findings from enquiries, including conclusions, in oral and written forms such as displays and other presentations	readings when appropriate (shadow exp)			Using test results to make predictions to set up further comparative and fair tests	
	Recording data and results of increasing complexity using scientific diagrams and labels, tables, scatter graphs (shadow)				
Cross-curricular links	Cross-curricular links	Cross-curricular links	Cross-curricular links	Cross-curricular links	Cross-curricular links

YEAR 6					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Light and how we see	Electricity	Animals including humans	Evolution and inheritance	SATs – short unit = Living things and their habitats	Human development - Puberty and SRE
<p><b>National Curriculum:</b> Recognise that light appears to travel in straight lines</p> <p>Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye</p> <p>Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes</p> <p>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>	<p><b>National Curriculum:</b> Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches</p> <p>Use recognised symbols when representing a simple circuit in a diagram.</p> <p><b>Locality:</b> Link with Lancaster University STEM team – Harnessing the Wind (looking at wind farms based in Morecambe Bay and how they generate power)</p> <p>Link with Local Power Station – Heysham how electricity is generated and distributed.</p>	<p><b>National Curriculum:</b> Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>Describe the ways in which nutrients and water are transported within animals, including humans.</p>	<p><b>National Curriculum:</b> Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p><b>Locality:</b> Go on a wildlife hunt around the school grounds – identify the different wildlife in the school grounds and then decide how they are adapted to the habitat they were found in.</p>	<p><b>National Curriculum:</b> Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals</p> <p>Give reasons for classifying plants and animals based on specific characteristics.</p>	<p><b>National Curriculum:</b> <b>Puberty and Reproduction – SRE</b></p> <ul style="list-style-type: none"> <li>Know how female and male bodies change during puberty</li> <li>Know why bodies change during puberty</li> <li>To know how babies are made</li> </ul>
<p><b>Working Scientifically:</b> Using tests results to make predictions to set up further comparative and fair tests.</p> <p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p>	<p><b>Working Scientifically:</b> Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels, scatter graphs, bar and line graphs</p> <p>Using test results to make predictions to set up further comparative and fair tests</p> <p>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</p>	<p><b>Working Scientifically:</b> 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</p>	<p><b>Working Scientifically:</b> Identifying scientific evidence that has been used to support or refute ideas or arguments</p>	<p><b>Working Scientifically:</b> Reporting and presenting findings from enquiries, including conclusions, in oral and written forms such as displays and other presentations</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys</p>	<p><b>Working Scientifically:</b> Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p>
Cross-curricular links	Cross-curricular links D.T – making an educational toy that includes an electrical circuit.	Cross-curricular links	Cross-curricular links	Cross-curricular links	Cross-curricular links