



# St Mary's Church of England Primary School



## Science Progression of Skills

<b>Reception</b>  <b>Early Learning Goals</b>  <b>Understanding the World</b>	<b>The Natural World</b> <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>							
Domain	N.C Topic	Reception EYFS Framework	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Biology	Animals including Humans	<ul style="list-style-type: none"> <li>• Children make observations of animals.</li> <li>• Children know and talk about similarities and differences in relation to living things.</li> <li>• Children explain why something occur and talk about changes</li> </ul>	<ul style="list-style-type: none"> <li>• Name a variety of common animals</li> <li>• Identify and group a range of familiar animals</li> <li>• Identify key features of a range of animals</li> <li>• Relate each of the human senses to organs</li> </ul>	<ul style="list-style-type: none"> <li>• Describe the relationship between animal adults and their offspring</li> <li>• Describe the importance of eating a healthy diet and exercise</li> <li>• Identify human's basic needs.</li> <li>• Construct and simple food chain about what eats what.</li> </ul>	<ul style="list-style-type: none"> <li>• Describe why animals depend on the correct nutrition.</li> <li>• Explain which parts of the skeleton provide support and protection and how they allow for movement.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify what each of the principal organs in the digestive system do.</li> <li>• Describe the function for each kind of tooth in the human skull.</li> <li>• Use a food chain to represent the predator-prey relationship.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify similarities and differences in two different life cycles, e.g. sparrow and butterfly, with reference to eggs and intermediate stages.</li> <li>• Describe the changes as humans develop to old age, e.g. trends in changes to size, weight, mobility etc.</li> <li>• Describe in sequence the stages of reproduction in some plants and animals, e.g. dog and a thistle.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify the broad groups into which living things are classified, e.g. mammals.</li> <li>• State how animals can be classified using specific characteristics.</li> <li>• Name the main parts of the human circulatory system, e.g. heart, arteries, veins.</li> <li>• Recognise that diet, exercise, drugs and lifestyle impact on the way the body functions, e.g. knowing that exercise changes the body.</li> <li>• Describe that nutrients and water are transported within humans.</li> </ul>

	Plants	<ul style="list-style-type: none"> <li>Children make observations of plants.</li> <li>Children know and talk about similarities and differences in relation to living things.</li> <li>Children explain why some things occur, and talk about changes.</li> </ul>	<ul style="list-style-type: none"> <li>Identify a range of local plants.</li> <li>Name parts of a range of familiar plants.</li> <li>Compare and contrast a collection of items into 'living' 'not living' and 'never been alive'.</li> </ul>	<ul style="list-style-type: none"> <li>Describe stages of development of a full grown plant.</li> <li>Explore and identify what plants need to grow</li> <li>Explaining with the aid of a diagram or plant how water is carried up from the soil.</li> <li>Explain how pollination, seed formation and seed dispersal play a role in the reproduction of flowering plants.</li> </ul>	<ul style="list-style-type: none"> <li>Explain what all plants need to flourish and recognise how these requirements vary in amount</li> <li>Describe what each part of a flowering plant does</li> </ul>			
	Living things and their habitats	<ul style="list-style-type: none"> <li>Children know and talk about the features of their own environment and how environments might vary from one another.</li> <li>Children know and talk about similarities and differences in relation to places.</li> <li>Children explain why some things occur, and talk about changes in Autumn.</li> </ul>		<ul style="list-style-type: none"> <li>Explain how for a plant it gets what it needs from its habitat and other things that are there</li> <li>Identify a range of living things in habitats of various sizes</li> <li>Identify and explore what plants need to thrive</li> </ul>		<ul style="list-style-type: none"> <li>Suggest different ways of sorting the same group of living things, e.g. grouping birds according to where they live, what they eat and size of adults.</li> <li>Use classification keys to group and identify members from a range of familiar and less familiar living things.</li> <li>Describe examples of living things that are threatened by changes to environments, e.g. owls and habitat loss.</li> </ul>	<ul style="list-style-type: none"> <li>Describe in sequence the stages of reproduction in some plants e.g. a thistle.</li> </ul>	<ul style="list-style-type: none"> <li>State how plants can be classified using specific characteristics.</li> </ul>

	Evolution and inheritance							<ul style="list-style-type: none"> <li>• Recognise that fossils provide information about living things from millions of years ago, e.g. understand that they are preserved remains of extinct living things.</li> <li>• Recognise that living things produce offspring of the same kind, but normally offspring vary, e.g. that puppies have common features but are not identical.</li> <li>• Identify ways in which certain animals and plants are adapted to suit their environment in different ways.</li> </ul>
Chemistry	Materials (rocks, states of matter)	<ul style="list-style-type: none"> <li>• Children know and talk about similarities and difference in materials (ice / solids)</li> <li>• Children can talk about why some things occur, and talk about changes.</li> </ul>	<ul style="list-style-type: none"> <li>• Correctly identify both object and material.</li> <li>• Identify and name a range of materials.</li> <li>• Describe a range of properties of a variety of materials.</li> <li>• Classify a variety of materials into groups based on physical properties.</li> </ul>	<ul style="list-style-type: none"> <li>• Describe changes achieved to materials by applying forces in different directions.</li> <li>• Select and justify a material for a particular use.</li> </ul>	<ul style="list-style-type: none"> <li>• Explain how fossils are formed.</li> <li>• Describe how soil is made.</li> <li>• Examine and test rocks, grouping them according to the results.</li> </ul>	<ul style="list-style-type: none"> <li>• Group materials according to their state of matter.</li> <li>• Describe how evaporation and condensation happen in the water cycle, and how temperature affects evaporation.</li> <li>• Identify changes of state and research values of degrees Celsius at which changes happen.</li> </ul>	<ul style="list-style-type: none"> <li>• Test and sort a range of materials based on their physical properties.</li> <li>• Describe how some materials, e.g. sugar, will dissolve and can be retrieved.</li> <li>• Justify separation techniques proposed, with reference to materials being separated.</li> <li>• Show how the original materials can be retrieved from each of these changes.</li> </ul>	

							<ul style="list-style-type: none"> <li>Identify reactants and products of chemical changes and recognise these as being irreversible.</li> <li>Use evidence to justify the selection of a material for a purpose.</li> </ul>	
Physics	Seasonal Changes	<ul style="list-style-type: none"> <li>Children know and talk about the features of their own environment and how environments might vary from one another.</li> <li>Children know and talk about similarities and differences in relation to places.</li> <li>Children explain why some things occur, and talk about changes in Autumn / summer / winter</li> </ul>	<ul style="list-style-type: none"> <li>Describe seasonal changes.</li> <li>Relate weather patterns and day length to seasons.</li> </ul>					
	Forces and Magnets				<ul style="list-style-type: none"> <li>Compare how an object, such as a toy car, will move on different surfaces.</li> <li>Recognise the difference between contact</li> </ul>		<ul style="list-style-type: none"> <li>Explain that gravity causes objects to fall towards Earth.</li> <li>Describe how motion may be resisted by air resistance, water</li> </ul>	

			<p>and contact forces.</p> <ul style="list-style-type: none"> <li>• Describe how magnets attract or repel each other, and attract magnetic materials.</li> <li>• Group materials on the basis of testing for being magnetic.</li> <li>• Describe and identify the poles of a magnet.</li> <li>• Predict outcomes of a particular arrangement of magnets.</li> </ul>		<p>resistance or friction.</p> <ul style="list-style-type: none"> <li>• Describe how some devices may turn a smaller force into a larger one.</li> <li>•</li> </ul>	
	Light and sound		<ul style="list-style-type: none"> <li>• Relate being able to see to the presence of light.</li> <li>• Describe how some objects reflect light.</li> <li>• Describe how and why our eyes should be protected from sunlight.</li> <li>• Explain how shadows are made.</li> <li>• Describe how to change the size of a shadow.</li> </ul>	<ul style="list-style-type: none"> <li>• Explain, with reference to vibrations, how an object makes a sound.</li> <li>• Describe the role of a medium in the transmission of sound.</li> <li>• Describe the effect of moving further from the source of a sound.</li> <li>• Explain with reference to a particular object how the pitch of the sound can be changed.</li> <li>• Explain with reference to a particular object how the volume of the sound can be changed.</li> </ul>		<ul style="list-style-type: none"> <li>• Represent light using straight line ray diagrams.</li> <li>• Draw diagrams using straight lines showing light travelling to the eye.</li> <li>• Explain how we can see an object by referring to light travelling into the eye.</li> <li>• Draw a diagram showing an object, shadow and light to relate object shape to shadow shape.</li> </ul>

	Electricity					<ul style="list-style-type: none"> <li>List examples of appliances that run on electricity.</li> <li>Construct a simple circuit and name its components.</li> <li>Sort materials into conductors and insulators, identifying metals as conductors.</li> <li>Predict whether a particular arrangement of components will result in a bulb lighting.</li> <li>Predict how the operation of a switch will affect bulbs lighting.</li> </ul>		<ul style="list-style-type: none"> <li>Explain how number and voltage of cells affects the lamp or buzzer.</li> <li>Explain the use of switches, how bulbs can be made brighter and buzzers made louder.</li> <li>Represent a circuit that has been constructed using symbols.</li> </ul>
	Earth and Space						<ul style="list-style-type: none"> <li>Draw a diagram or use a model to describe planetary orbits.</li> <li>Draw a diagram or use a model to describe the Moon's orbit around the Earth.</li> <li>Describe the Sun, Earth &amp; Moon as spheres.</li> <li>Use a diagram or model to explain why the Sun seems to travel across the sky, and what causes day and night.</li> </ul>	
<b>Working Scientifically Process</b>		<b>Reception</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
<b>Planning Investigations</b>		In the EYFS, the characteristics of effective	<ul style="list-style-type: none"> <li>Pupil can, with prompting, ask simple questions</li> </ul>	<ul style="list-style-type: none"> <li>Pupil can ask simple questions that can be</li> </ul>	<ul style="list-style-type: none"> <li>Pupil can, with support, develop relevant, testable</li> </ul>	<ul style="list-style-type: none"> <li>Pupil can develop relevant, testable questions, e.g.</li> </ul>	<ul style="list-style-type: none"> <li>Pupil can, with support, can answer questions</li> </ul>	<ul style="list-style-type: none"> <li>Pupil can answer questions using evidence</li> </ul>

	<p>learning from the Statutory Framework for the Early Years Foundation Stage are the foundations on which the working scientifically skills build in Key Stage 1.</p> <p>While children are playing and exploring, teachers should be modelling, encouraging and supporting them to do the following:</p> <ul style="list-style-type: none"> <li>• Show curiosity and ask</li> </ul>	<p>that can be tested, e.g. about plants growing in their habitat.</p> <ul style="list-style-type: none"> <li>• Pupil can offer ways of gathering evidence to answer a question, e.g. by deciding on the best material to use for a particular application.</li> </ul>	<p>tested, e.g. about the local environment and how organisms depend on each other.</p> <ul style="list-style-type: none"> <li>• Pupil can suggest different ways of answering a question, e.g. testing the suitability of materials for different purposes.</li> </ul>	<p>questions, e.g. what happens to shadows when the light source moves.</p> <ul style="list-style-type: none"> <li>• Pupil can plan enquiry, such as comparative or fair test, e.g. comparing the effect of different factors on plant growth.</li> <li>• Pupil can set up a comparative test, e.g. how far things move on different surfaces.</li> </ul>	<p>based on observations of animals.</p> <ul style="list-style-type: none"> <li>• Pupil can plan investigations using different types of scientific enquiry, e.g. exploring various materials by observing change over time, running comparative tests and conducting surveys.</li> <li>• Pupil can set up comparative and fair tests, e.g. finding patterns in the sounds made by elastic bands of different thicknesses.</li> </ul>	<p>using evidence gathered from different types of scientific enquiry, e.g. comparing life cycles of different plants using change over time, surveys and secondary research.</p> <ul style="list-style-type: none"> <li>• Pupil can, with prompting, identifies and manages variables, e.g. when exploring falling paper cones.</li> </ul>	<p>gathered from different types of scientific enquiry, e.g. operation of circulatory system from experiment, survey and secondary research.</p> <ul style="list-style-type: none"> <li>• Pupil can identify and manage variables, e.g. distances and sizes in shadow formation.</li> </ul>
<b>Conducting Experiments</b>	<p>questions.</p> <ul style="list-style-type: none"> <li>• Make observations using their senses and simple equipment.</li> <li>• Make direct comparisons.</li> <li>• use equipment to measure.</li> <li>• Record their observations by drawing, taking photographs, using sorting rings or boxes.</li> <li>• Use their observations to help them to answer their questions.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can examine objects to note key features, e.g. observe growth of plants they have planted.</li> <li>• Pupil can, with support, conduct simple tests, e.g. comparing the properties of different materials.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can examine carefully, e.g. using a hand lens.</li> <li>• Pupil can conduct simple tests, e.g. setting up comparative tests to show that plants need water and light.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can use various equipment, as instructed, e.g. using a hand lens to examine rocks.</li> <li>• Pupil can use standard measurements when taking measurements, e.g. measuring distances between a light source and an object.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can use various equipment, as instructed, repeatedly and with care, e.g. thermometers.</li> <li>• Pupil can recognise the importance of using standard units and measures accurately, e.g. measuring temperature when investigating its effect on washing drying.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can, following discussion of alternatives, selects appropriate equipment, e.g. using a shadow stick and measuring length and angle of shadow.</li> <li>• Pupil can take measurements that are precise as well as accurate, e.g. measuring the force needed to pull different shapes of boat through the water.</li> <li>• Pupil can know how to process</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can use appropriate equipment, such as meter rule, to take measurements, such as distance travelled by light.</li> <li>• Pupil can consider how by modifying instrument or technique, measurements can be improved, e.g. when recording route of light rays.</li> <li>• Pupil can identify situations in which taking repeat readings will improve the quality of evidence, e.g. investigating the</li> </ul>

	<ul style="list-style-type: none"> <li>• Talk about what they are doing and have found out.</li> <li>• Identify, sort and group.</li> </ul>					repeat readings, e.g. when timing falling objects.	behaviour of components in a circuit.
<b>Recording Evidence</b>		<ul style="list-style-type: none"> <li>• Pupil can, with prompting, identify what might usefully be recorded, e.g. drawing structures of plants or recording changing day length.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can, with assistance, draw and label diagrams, e.g. recording plants changing over time, starting from seed or bulb.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can, with prompting, draw and label diagrams, e.g. to show how water travels in a plant.</li> <li>• Pupil can, with prompting, use tables to record evidence, e.g. recording what happens when various rocks are rubbed together.</li> <li>• Pupil can, with prompting, gather and display evidence in various ways, e.g. about the ways that magnets behave in relation to each other.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can use words and diagrams to record findings, e.g. how habitats change during the year.</li> <li>• Pupil can use various ways to record evidence, e.g. comparing the teeth of herbivores and carnivores.</li> <li>• Pupil can use various ways to record, group and display evidence, e.g. grouping and classifying various materials.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can start to use labelled diagrams to show more complex outcomes, e.g. comparing the time of day at different places on the earth.</li> <li>• Pupil can, with prompting, use various ways to record complex evidence, e.g. when investigating how gears and levers enable a small force to have a larger effect.</li> <li>• Pupil can use a line graph to record basic data, e.g. length and mass of a baby as it grows.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can use labelled diagrams to show complex outcomes, e.g. relating specific adaptations of organisms to environmental factors.</li> <li>• Pupil can use various ways, as appropriate, to record complex evidence, e.g. in the construction of a key to aid plant identification.</li> <li>• Pupil can use line graphs to display complex data, e.g. size of object in relation to the size of the shadow it casts.</li> </ul>
<b>Reporting Findings</b>		<ul style="list-style-type: none"> <li>• Pupil can identify key findings from an enquiry, e.g. noting how plants have changed over time.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can identify and group key outcomes from enquiry, e.g. describing conditions in different habitats and how these affect the numbers and types of organisms.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can, with prompting, write a conclusion based on evidence, e.g. exploring the strengths of different magnets.</li> <li>• Pupil can indicate findings from an enquiry that could be reported, e.g. answering questions about</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can write a conclusion based on evidence, e.g. effect on brightness of bulbs if more cells are added.</li> <li>• Pupil can present findings either in writing or orally, e.g. relating to investigating which materials are conductors.</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can, with prompting, write a conclusion using evidence and identifying causal links, e.g. investigating what makes a parachute fall quicker.</li> <li>• Pupil can, with support, display and present key findings from enquiries orally and in writing, e.g. suggesting reasons</li> </ul>	<ul style="list-style-type: none"> <li>• Pupil can write a conclusion using evidence and identifying causal links, e.g. in the design of a periscope.</li> <li>• Pupil can display and present key findings from enquiries orally and in writing, e.g. deciding how well classifications fit unfamiliar animals and plants.</li> </ul>



				how rocks are formed.		<p>for similarities and differences between various animals.</p> <ul style="list-style-type: none"> <li>Pupil can, with support, indicate why some results may not be entirely trustworthy, e.g. when timing falling objects.</li> </ul>	<ul style="list-style-type: none"> <li>Pupil can, in conclusions, indicate how trustworthy they are, e.g. in relating brightness of bulb to voltage supplied.</li> </ul>
<b>Conclusions and predictions</b>		<ul style="list-style-type: none"> <li>Pupil can collect data, e.g. comparing and contrasting familiar plants.</li> <li>Pupil can suggest answers to enquiry questions using data, e.g. describe how to group plants.</li> </ul>	<ul style="list-style-type: none"> <li>Pupil can collect data relevant to the answering of questions, e.g. seeing how the shapes of some materials can be changed.</li> <li>Pupil can answer enquiry questions using data and ideas, e.g. to help decide how the properties of certain materials make them suitable for certain applications.</li> </ul>	<ul style="list-style-type: none"> <li>Pupil can, with prompting, recognise patterns that relate to scientific ideas, e.g. investigating the behaviour of magnets.</li> <li>Pupil can, with support, use evidence to produce a simple conclusion, e.g. the changes that occur when rocks are in water.</li> <li>Pupil can suggest how an investigation could be extended, e.g. suggesting creative uses for different magnets.</li> </ul>	<ul style="list-style-type: none"> <li>Pupil can recognise patterns that relate to scientific ideas, e.g. finding out which materials make better earmuffs.</li> <li>Pupil can use evidence to produce a simple conclusion, e.g. the effect of temperature on various substances.</li> <li>Pupil can use evidence to suggest further relevant investigations, e.g. making own instruments, using ideas about pitch and volume.</li> </ul>	<ul style="list-style-type: none"> <li>Pupil can show how evidence supports a conclusion, e.g. researching gestation periods of various mammals and relating them to adult mass.</li> <li>Pupil can suggest further relevant comparative or fair tests, e.g. when testing materials for various properties to determine their suitability for an application.</li> </ul>	<ul style="list-style-type: none"> <li>Pupil can identify how an idea is supported or refuted by evidence, e.g. selective breeding to produce animals or plants with desirable characteristics.</li> <li>Pupil can use evidence to suggest further comparative or fair tests that would develop the investigation, e.g. in the design of rear view mirrors for cars.</li> </ul>