



## LONG TERM PLAN

### SCIENCE

#### School Organisation

Pupils in Nursery to Year 2 are taught as single-entry year groups.

Key Stage 2 pupils are divided into 3 classes. This consists of one mixed Year 3/4 class, one mixed Year 4/5 class and one mixed Year 5/6 class.

There are three possible journeys pupils can take through key Stage 2. Each pupil will spend two years in one of the Key Stage 2 classes. The majority of pupils spend two years in Deer Class (Years 4/5).

#### How our Curriculum Cycles are organised so that there is coverage of all National Curriculum objectives in all subjects.

Subject Leaders have rigorously planned the curriculum cycles so that all pupils are taught the full National Curriculum, in a sequence which ensures that learning builds on prior learning, no matter how pupils travel through Key Stage 2.

- Pupils from Nursery to Year 2 are taught in single cohorts so no cycle organisation is required.
- A 2-year cycle is in place for pupils who are taught in Rabbit Class (Year  $\frac{3}{4}$ ) Deer Class (Year 4/5) and Stag Class (Year 5/6).

#### How is the curriculum sequenced?

Our Early Years Curriculum offers a wide variety of rich activities and experiences which is crucial to child development. The Science element lies within 'Understanding the World' Educational Programme, although we acknowledge that all areas of learning and development in EYFS are inter-connected.

#### **Understanding the World Educational Programme (0 – 5 years)**

Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension

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Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery	<p>If you go down to the Woods today (Families/ Bears/Woods)</p> <p>Ready, Steady Cook (Colours, Celebrations and environment)</p> <ul style="list-style-type: none"> <li>Communicates seasonal changes around <u>weather</u></li> <li>Notices changes to states of matter (Linked to weather - water – ice/melt/freeze and cooking)</li> <li>Notices and communicates changes of state (Linked to cooking – runny mixture, not runny)</li> <li>Explore the natural outdoor environment (Forest Area)</li> <li>Name some animals (pets, farm and wild animals)</li> <li>Name body parts (Head, shoulders, knees, toes, eyes, ears, mouth, nose, chin, cheeks, fingers, stomach, neck)</li> <li>Name animal parts (Hooves, paw, snout, mane, tail, whiskers)</li> <li>Begin to understand the need to respect and care for the natural world and all living things. (Development Matters)</li> </ul>		<p>Winter Wonderland (Winter)</p> <p>Once upon a Time (Traditional Tales)</p> <ul style="list-style-type: none"> <li>Communicates seasonal changes around <u>weather</u></li> <li>Notices changes to states of matter (Linked to weather - water – ice/melt/freeze and cooking)</li> <li>Explore the natural outdoor environment. (Including School Forest area)</li> <li>Name some animals (Polar regions)</li> <li>Name animal parts (tail, paw, wings)</li> <li>Shows care and concern for living things and the environment. (Birthto5Matters)</li> <li>Plant seeds and care for growing plants (Development Matters)</li> </ul>		<p>All Change (Minibeasts/lifecycles/growing and changing)</p> <p>Ahoy there! Seaside, marine life, pirates, mermaids)</p> <ul style="list-style-type: none"> <li>Communicates seasonal changes around <u>weather</u></li> <li>Notices changes to states of matter (Linked to cooking – runny mixture and not runny mixture. Talk about the differences between materials and changes they notice. (Development Matters)</li> <li>Communicate/identify/name natural features. (Tree, leaf, hill, forest,</li> <li>Name some animals (minibeasts and marine life)</li> <li>Name animal parts (scales, flippers, fin)</li> <li>Developing an understanding of growth, decay and changes over time. (Birthto5Matters) Observe lifecycle of a Butterfly.</li> </ul>	
Reception	<p>If you go down to the Woods today (Families/ Bears/Woods)</p> <p>Ready, Steady Cook (Colours, Celebrations and environment)</p> <ul style="list-style-type: none"> <li>Communicate seasonal changes around <u>weather and animals</u></li> <li>Notices and communicates changes to states of matter (linked to Weather and Cooking)</li> <li>Describe what they see, hear and feel whilst outside (Development Matters)</li> </ul>		<p>Winter Wonderland (Winter)</p> <p>Once upon a Time (Traditional Tales)</p> <ul style="list-style-type: none"> <li>Communicate seasonal changes around <u>weather, animals and plants</u></li> <li>Notices and communicates changes to states of matter (linked to Weather and Cooking)</li> <li>Describe what they see, hear and feel whilst outside (Development Matters)</li> </ul>		<p>All Change (Minibeasts/lifecycles/growing and changing)</p> <p>Ahoy there! Seaside, marine life, pirates, mermaids)</p> <ul style="list-style-type: none"> <li>Communicate seasonal changes around <u>weather animals and plants</u></li> <li>Notices and communicates changes to states of matter (linked to Weather and Cooking)</li> <li>Describe what they see, hear and feel whilst outside (Development Matters)</li> </ul>	

	<ul style="list-style-type: none"> <li>• Explore the natural outdoor environment (Forest Area)</li> <li>• Communicate similarities between our Forest Area and Forest in key texts.</li> <li>• Name some animals (Wild animals – Handa's surprise).</li> <li>• Name animal parts (antlers, hooves)</li> </ul>	<ul style="list-style-type: none"> <li>• Explore the natural outdoor environment. (Including School Forest area)</li> <li>• Communicate similarities and differences between North Pole/South Pole and where they live (linked to key texts)</li> <li>• Name some animals (Polar Regions)</li> <li>• Name animal parts (Blubber, fin, tail)</li> <li>• Looks closely at similarities, differences, patterns and change in nature. (Birthto5Matters)</li> </ul>	<ul style="list-style-type: none"> <li>• Name some animals (minibeasts and marine life)</li> <li>• Name animal parts (wings, tentacles, antennae, shell)</li> <li>• To be able to describe and sequence the lifecycle of a butterfly and a frog using appropriate vocabulary (egg, caterpillar, butterfly, chrysalis and eggs, tadpole, tadpole with 2 legs, tadpole with 4 legs, frog)</li> <li>• Explore the natural world around them, making observations and drawing pictures of animals and plants. (Early Learning Goal)</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. (Early Learning Goal)</li> <li>• Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. (Early Learning Goal)</li> </ul>
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Year group	Autumn1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	<b>Everyday Materials</b>  Enquiry Question <i>What materials can we find?</i> (Simple properties)		<b>Animals including Humans</b>  Enquiry Question <i>How can we use our senses?</i> (Basic structure, senses)		<b>Plants</b>  Enquiry Question <i>Are all plants the same?</i> (Basic structure)	
	Seasonal Changes					

Year 2	<b>Living things and their habitats</b>  Enquiry Question <i>Are all habitats the same?</i> (Life processes, Interdependence)	<b>Uses of Everyday Materials</b>  Enquiry Question <i>How can we compare materials?</i> (Linking property to use)	<b>Animals including Humans</b>  Enquiry Question <i>What do all mammals need to survive?</i> (Life cycle & basic needs)	<b>Living things and their habitats</b>  Enquiry Question <i>How does energy transfer in a food chain?</i> (Life processes, Interdependence)	<b>Plants</b>  Enquiry Question <i>What does a seed need to grow?</i> (Conditions for growth)	
Year 3.4 Cycle A	<b>Sound (4)</b>  Enquiry Question <i>Does the volume of a sound impact the vibration?</i> (Changing state)	<b>States of matter (4)</b>  Enquiry Question <i>Can temperature affect a material?</i> (Changing state)	<b>Electricity (4)</b>  Enquiry Question <i>Can electricity travel through a conductor?</i> (Simple circuits, conductors, insulators)	<b>Forces (3)</b>  Enquiry Question <i>How does resistance and force impact a material?</i> (Magnets, friction)	<b>Living things and their habitats (4)</b>  Enquiry Question <i>How can we classify living things in their environments?</i> (Human influence, classification)	<b>Rocks (3)</b>  Enquiry Question <i>Do all rocks have the same physical properties?</i> (Properties, fossils)
Year 3.4 Cycle B	<b>Animals including humans (Year 3/4)</b> <b>National Curriculum Objectives (Year 3)</b> I know that animals, humans need the right types and amount of nutrition and that they cannot make their own food from what they eat. (carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water) I can identify that humans and some other animals (gorilla, lion) have skeletons and muscles for support, protection and movement. skeleton, bones, muscles, support, protect, skull, ribs, spine, muscles, joints	<b>Living things in their habitats</b> <b>Food Chains (Y4)</b> National Curriculum Objectives (Year 4)  construct and interpret a variety of food chains, identifying producers, predators and prey	<b>Forces and Magnets (Y3)</b> <b>National Curriculum Objectives (Year 3)</b> Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Observe how magnets attract or repel each other and attract some materials and not others. Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.	<b>SCHOOL POND LESSON</b> Focus - Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat	<b>Light (Y3)</b> <b>National Curriculum Objectives (Year 3)</b> - I know that light is needed in order to see things. I know that dark is the absence of light. I can observe that light is reflected from surfaces. -I know that light from the sun be dangerous but there are ways to protect my eyes. (sunglasses, clouds, shade) I can investigate that shadows are formed by when the light source (sun, light bulb, fire, torch) is blocked by an opaque object. I can investigate and recognise the pattern in the way that the size of a shadow changes.	<b>Plants (Y3)</b> <b>Plants</b> <b>National Curriculum Objectives (Year 3)</b> - Recognise that they need light in order to see things and that dark is the absence of light. -Notice that light is reflected from surfaces. -Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. - Recognise that shadows are formed when the light from a light source is blocked by an opaque object. - Find patterns in the way that the size of shadows change.

	<p><b>National Curriculum Objectives (Year 4)</b> I can describe the simple functions of the basic parts of the digestive system in humans. mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus)</p> <p>I can identify the different parts of teeth in humans and their simple functions. (incisor, canine)</p>		Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing.			
Year 4.5 Cycle A	<p><b>Sound (4)</b></p> <p>Enquiry Question Does the volume of a sound impact the vibration? (Changing state)</p>	<p><b>States of matter (4)</b></p> <p>Enquiry Question <i>Can temperature affect a material?</i> (Changing state)</p>	<p><b>Electricity (4)</b></p> <p>Enquiry Question <i>Can electricity travel through a conductor?</i> (Simple circuits, conductors, insulators)</p>	<p><b>Forces (3)</b></p> <p>Enquiry Question <i>How does resistance and force impact a material?</i> (Magnets, friction)</p>	<p><b>Living things and their habitats (4)</b></p> <p>Enquiry Question <i>How can we classify living things in their environments?</i> (Human influence, classification)</p>	<p><b>Rocks (3)</b></p> <p>Enquiry Question <i>Do all rocks have the same physical properties?</i> (Properties, fossils)</p>
Year 4.5 Cycle B	<p><b>Living things in their habitats (Y5)</b> <b>National Curriculum Objectives (Year 5)</b> - Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. - Describe the life processes of reproduction in some plants and animals.</p>	<p><b>Forces and Magnets (Y3)</b> <b>National Curriculum Objectives (Year 3)</b> - Compare how things move on different surfaces. - Notice that some forces need contact between two objects, but magnetic forces can act at a distance.</p>	<p><b>Earth and Space (Y5)</b> <b>National Curriculum Objectives (Year 5)</b> - Describe the movement of the earth, and other planets, relative to the sun in the solar system. - Describe the movement of the moon relative to the earth. - Describe the sun, earth and moon as</p>	<p><b>Animals digestion Teeth (Y3 Y4)</b> <b>National Curriculum Objectives (Year 3)</b> - Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.</p>	<p><b>Light (Y3)</b> <b>National Curriculum Objectives (Year 3)</b> - Identify and describe different parts of flowering plants, roots, stem, leaves and flowers. - Explore the requirements of plants for life and growth (air, light, water, nutrients from soil and room to grow) and how</p>	<p><b>Plants</b> <b>National Curriculum Objectives (Year 3)</b> - Recognise that they need light in order to see things and that dark is the absence of light. -Notice that light is reflected from surfaces. -Recognise that light from the sun can be dangerous and that</p>

	<ul style="list-style-type: none"> <li>- Describe the changes as humans develop to old age.</li> </ul>	<ul style="list-style-type: none"> <li>- Observe how magnets attract or repel each other and attract some materials and not others.</li> <li>- Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.</li> <li>- Describe magnets as having two poles.</li> <li>- Predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> </ul>	<p>approximately spherical bodies.</p> <ul style="list-style-type: none"> <li>- Use the idea of the earth's rotation to explain day and night and the apparent movement of the sun across the sky</li> </ul>	<ul style="list-style-type: none"> <li>- Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</li> </ul> <p><b>National Curriculum Objectives (Year 4)</b></p> <ul style="list-style-type: none"> <li>- Describe the simple functions of the basic parts of the digestive system in humans.</li> <li>- Identify the different types of teeth in humans and their simple functions.</li> <li>- Construct and interpret a variety of food chains, identifying producers, predators and prey.</li> </ul>	<p>they vary from plant to plant.</p> <ul style="list-style-type: none"> <li>- Investigate the way in which water is transported in plants.</li> <li>- Explore the part that flowers play in a life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> </ul>	<p>there are ways to protect their eyes.</p> <ul style="list-style-type: none"> <li>- Recognise that shadows are formed when the light from a light source is blocked by an opaque object.</li> <li>- Find patterns in the way that the size of shadows change.</li> </ul>
Year 5.6 Cycle A	<p><b>States of matter (4)</b></p> <p>Enquiry Question How can we compare and group materials? (Changing state)</p>	<p><b>Electricity (6)</b></p> <p>Enquiry Question What varies in how components function? (Symbols, components, changing circuits)</p>	<p><b>Evolution &amp; Inheritance (6)</b></p> <p>Enquiry Question What is the difference between evolution and inheritance? (Variation, adaptation)</p>	<p><b>Animals including humans (6)</b></p> <p>Enquiry Question How do we keep our heart healthy? (Circulation, health)</p>	<p><b>Living Things &amp; their habitats (5)</b></p> <p>Enquiry Question Do characteristics impact classification? (Classification)</p>	<p><b>Light (6)</b></p> <p>Enquiry Question Does light always travel in straight lines? (Shadows, reflection, how we see, how light travels)</p>
Year 5.6 Cycle B	<p><b>Earth and Space</b></p> <p><b>National Curriculum Objectives (Year 5)</b></p> <ul style="list-style-type: none"> <li>- Describe the movement of the earth, and other planets, relative to the sun in the solar system.</li> <li>- Describe the movement of the moon relative to the earth.</li> </ul>	<p><b>Electricity</b></p> <p><b>National Curriculum Objectives (Year 6)</b></p> <ul style="list-style-type: none"> <li>- Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</li> </ul>	<p><b>Evolution &amp; Inheritance</b></p> <p><b>National Curriculum Objectives (Year 6)</b></p> <ul style="list-style-type: none"> <li>- Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</li> </ul>	<p><b>Animals including humans</b></p> <p><b>National Curriculum Objectives (Year 6)</b></p> <ul style="list-style-type: none"> <li>- Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</li> </ul>	<p><b>Light</b></p> <p><b>National Curriculum Objectives (Year 6)</b></p> <ul style="list-style-type: none"> <li>- Recognise that lights appears to travel in straight lines.</li> <li>- Use the idea that light travels in straight lines to explain that objects are seen because they give</li> </ul>	<p><b>Living things and their habitats</b></p> <p><b>National Curriculum Objectives (Year 5)</b></p> <ul style="list-style-type: none"> <li>- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</li> <li>- Describe the life processes of</li> </ul>

	<ul style="list-style-type: none"> <li>- Describe the sun, earth and moon as approximately spherical bodies.</li> <li>- Use the idea of the earth's rotation to explain day and night and the apparent movement of the sun across the sky</li> </ul>	<ul style="list-style-type: none"> <li>- 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.</li> <li>- Use recognised symbols when representing a simple circuit in a diagram.</li> </ul>	<ul style="list-style-type: none"> <li>- Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</li> </ul>	<ul style="list-style-type: none"> <li>- Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</li> <li>- Describe the ways in which nutrients and water are transported within animals, including humans</li> </ul>	<ul style="list-style-type: none"> <li>out or reflect light into the eye.</li> <li>- 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.</li> </ul> <p>Use the idea that light travels in straight lines to explain why shadows have the same shape as the object that cast them.</p>	<ul style="list-style-type: none"> <li>reproduction in some plants and animals.</li> <li>- Describe the changes as humans develop to old age.</li> </ul>
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