

INTENT

Science Curriculum Year A: Planning, Progress and Long-Term Knowledge Growth

YEAR 5/6	Substantive scientific content	Recurring substantive themes, ideas and language (Key Concepts)	Subject rationale: Supporting pupils' wider science curriculum journey	Basic disciplinary training in science
<p>Autumn Term</p> <p>VICTORIANS</p>	<p>A study of materials and their properties, including dissolving to form a solution, separating, filtering, sieving and evaporating – reversible and irreversible changes.</p>	<p>Taught alongside the history unit of 'Victorians', this unit explores and deepens the children's understanding of 'Properties and Changes of Materials'. Children will be confident with their knowledge and understanding of different properties of materials. They will develop their knowledge in this area of science through scientific investigations.</p>	<p>This study of 'Properties and Changes of Materials', helps build upon children's understanding of 'Materials' from KS1 and 'States of Matter' from LKS2, which includes: grouping materials into solids, liquids and gases and observing changes of state.</p>	<p>Scientific questioning such as: How can I separate this mixture? Why are irreversible changes irreversible?</p>
	<p>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>	<p>The children's knowledge and understanding of mechanisms from the 'Forces' unit will also be developed as they learn how a smaller force can have a greater effect and apply this learning to Victorian toys.</p> <p>During the 'Properties and Changes of Materials' unit, pupils will embed their understanding of key vocabulary such as: <i>dissolves, evaporation, filtering, flexible, gas, insoluble, irreversible, liquid, melting, particles, permeable, process, properties, reversible, solid, soluble, solution, state, thermal and variable.</i></p> <p>During the children's work on mechanisms from the 'Forces' unit, pupils will embed their understanding of key vocabulary such as: <i>accelerate, brake, decelerate, effect, force, gear, lever, mechanism and pulley.</i></p>	<p>This study of 'Properties and Changes of Materials' helps build upon children's understanding of the key concepts of: Scientific method through questioning, prediction, variables (independent, dependent, control), planning, obtaining evidence, recording evidence, concluding, evaluating.</p>	<p>Understanding variables such as: independent, dependent and control. Planning a complete investigation building upon learning from previous years, focusing on: questioning, predicting, planning, obtaining evidence, recording evidence, concluding and evaluating.</p>

<p>Spring Term</p> <p>ANIMALS</p>	<p>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>This unit of 'Animals', deepens the children's understanding of 'Living things and their habitats' and broadens their understanding of the animal kingdom through the topic of 'Evolution and Inheritance'. Pupils will be confident in recognising and understanding changes to living things over time (evolution) and have a sound understanding of inheritance and classification through developing their knowledge of grouping and identifying like characteristics in all living things.</p>	<p>This study of 'Animals' helps build upon children's understanding of the key concepts of 'living things and their habitats' from LKS2 which includes: grouping and classifying living things and understanding how changes to environments can impact them.</p>	<p>Scientific questioning such as: How do animals and plants adapt to suit their environment?</p> <p>Understanding variables such as: independent, dependent and control. Planning a complete investigation building upon learning from previous years, focusing on: questioning, predicting, planning, obtaining evidence, recording evidence, concluding and evaluating.</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>This unit will make specific reference to the work of Charles Darwin, Alfred Russel Wallace and Carl Linnaeus amongst other significant figures who contributed to theories associated with evolution and inheritance.</p>	<p>This study also helps to build upon the key concepts of: Scientific method through questioning, prediction, variables (independent, dependent, control), planning, obtaining evidence, recording evidence, concluding, evaluating.</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>During the 'Living things and their habitat' unit, pupils will embed their understanding of key vocabulary, such as: <i>amphibians, anther, asexual reproduction, chrysalis, dispersal, fertilisation, filament, ovule, larva, life cycle, life span, mammal, pollination, metamorphosis, reproduction, sepal and stamen.</i></p>	<p>The unit links to our Eco schools topic of bio diversity.</p>	
	<p>Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals.</p>	<p>During the 'Evolution and Inheritance' unit, pupils will embed their understanding of key vocabulary, such as: <i>Adaptation, ancestor, biodiversity, biome, breeding, characteristics, environment, evolution, extinct, fossil, generation, inherit, natural selection, offspring, reproduction, species, survive, theory and variation.</i></p>		
	<p>Give reasons for classifying plants and animals based on specific characteristics.</p>			

<p>Summer Term</p> <p>EGYPTIANS</p> <p>Living things and their habitats and circulatory system (Life processes)</p>	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms , plants and animals.	Taught alongside our history unit on the Ancient Egyptians, the children will focus on microorganisms from the ‘Living Things and their Habitats’ unit. The children will be confident to describe what microorganisms are and apply their knowledge through their understanding of the mummification process and key milestones in the development of vaccinations and immunisation.	This study of microorganisms from the ‘Living Things and their Habitats’ unit, helps to build upon the children’s understanding of life cycles and classification in LKS2. This includes grouping living things in a variety of ways and using classification keys.	Scientific questioning such as: How can I stop the tomato from decomposing? Why does my skin flush and my heart rate increase when I run?
	Give reasons for classifying plants and animals based on specific characteristics.	In their learning of the Year 5 ‘Animals Including Humans’ unit, the children will become confident in explaining the changes in humans as they develop to old age.		Understanding variables such as: independent, dependent and control. Planning a complete investigation building upon learning from previous years, focusing on: questioning, predicting, planning, obtaining evidence, recording evidence, concluding and evaluating.
	Study on Edward Jenner as an important scientist	In their learning of the Year 6 ‘Animals Including Humans’ unit, the children will become confident in their understanding of the human circulatory system and understand the impact of diet, exercise, drugs and lifestyle on the way our bodies function. This study of ‘ourselves’ links to the RSE curriculum in which the children learn the key life process concepts of growing and changing (puberty), sexual reproduction, the importance of stable relationships, a healthy lifestyle and the impact of legal, illegal drugs on the human body. With the use of external professionals the children will be taught about the place in society, the rules of law and their responsibilities.	The study of ‘Animals Including Humans’ in Year 5, builds upon the children’s knowledge that animals, including humans, have offspring which grow into adults from their learning in KS1.	
	Year 5 Describe the changes as humans develop to old age.		The study of ‘Animals Including Humans’ in Year 6, builds upon the children’s knowledge of the digestive system, teeth and their functions, food chains and skeletons and muscles from LKS2.	
	Year 6 Identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood.	During the ‘microorganisms’ unit, pupils will embed their understanding of key vocabulary such as: <i>bacteria, fungi, immunity, microorganism, microscope, species, vaccination and virus.</i>	These studies of ‘Living Things and their Habitats’ and ‘Animals Including Humans’ help build upon children’s understanding of the key concepts of: Scientific method through questioning, prediction, variables (independent, dependent, control), planning, obtaining evidence, recording evidence, concluding, evaluating.	
	Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.	During the Year 5 and Year ‘Animals Including Humans’ units, pupils will embed their understanding of key vocabulary such as: life cycle, reproduce, sexual, sperm, fertilise, egg and live young. Heart, pulse rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs and life style.		
	Describe the ways in which nutrients and water are transported in animals including humans.			