

Nurture and Challenge

Intent – By the end of Year six our pupils will be proficient in identifying different animals and plants, and describe the life processes of these. As well as comparing everyday materials and have a deeper understanding of how forces, magnets and electricity work.

Science Year R	<p>The following early years goals are prerequisite skills for Science in KS1.</p> <p>Understanding the World (The World) Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.</p> <p>Physical Development (Health and Self-Care) Children know the importance for good health of physical exercise, and a healthy diet, and talk about ways to keep healthy and safe.</p>					
Science	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants	<p>Plants: Identifying and naming a variety of common wild and garden plants, including deciduous and evergreen trees.</p> <p>Identifying and describing the basic structure of a variety of common</p>	<p>Plants: Observing and describing 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>Plants: Identifying and describing the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</p> <p>Explore the requirements of plants for life and growth</p>			

	flowering plants including trees.		Investigate the way in which water is transported within plants Explore the part that flowers play in the life cycle of flowering plants including pollination, seed formation and seed dispersal.			
Animals, including humans	<p>Animals: identifying and naming a variety of common animals, stating if they are an omnivore, carnivore or herbivore.</p> <p>Describing and comparing the structure of a variety of common animals.</p> <p>Identify, name, draw and label the basic parts of the human body, link to the senses.</p>	<p>Animals: Notice that animals, including humans, have offspring which grow into adults</p> <p>Investigate and describe the basic needs of animals for survival</p> <p>Describe the importance for humans of exercise, eating the right amounts of different food and hygiene.</p>	<p>Animals: Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food.</p> <p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p>	<p>Animals: Describe the simple functions of the basic parts of the digestive system in humans.</p> <p>Identify the different types of teeth in humans and their simple functions</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey.</p>	<p>Animals: Describe the changes as humans develop to old age.</p>	<p>Animals: identify and name the main parts of the human circulatory system.</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way bodies function</p> <p>Describe the ways in which nutrients and water are transported in animals, including humans.</p>

Living things and habitats

Living things and habitats:

Explore and compare the differences between things that are living, dead, and things that have never been alive

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

identify and name a variety of plants and animals in their habitats, including microhabitats

Describe how animals obtain

Living things and habitats:

Recognise that living things can be grouped in a variety of ways

Explore and use classification keys to help group, identify and name a variety of living things in the local and wider environment

Recognise that environments can change and that this can sometimes pose dangers to living things

Living things and habitats:

Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird

Describe the life process of reproduction in some plants and animals

Living things and habitats:

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

Give reasons for classifying plants and animals based on specific characteristics

		<p>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>Everyday materials</p>	<p>Materials: Distinguish between an object and the material from which it is made</p> <p>Identify and name a variety of everyday materials</p> <p>Describe the simple physical properties of a variety of everyday materials</p> <p>Compare and group together a variety of everyday materials</p>	<p>Materials: Identify and compare the suitability of a variety of everyday materials</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>Rocks: Compare and group together different kinds of rocks.</p> <p>Describe in simple terms how fossils are formed.</p> <p>Recognise that soils are made from rocks and organic matter.</p>	<p>States of matter: Compare and group materials together</p> <p>Observe that some materials change state when they are heated or cooled</p> <p>Identify the part played by evaporation and condensation in the water cycle.</p>	<p>Properties and changes of materials: Compare and group together everyday materials</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 gas to decide how mixtures might be separated</p>	<p>Evolution and inheritance: Recognise that living things have changed over time and that fossils provide information from billions 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</p>

					<p>Give reasons, based on evidence, for the particular uses of everyday materials</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, (non-reversible) including changes associated with burning and the action of acid on bicarbonate of soda</p>	<p>in different ways and that adaptation may lead to evolution</p>
<p>Seasonal Changes, light and sound</p>	<p>Seasonal Changes: Observe changes across the four seasons</p> <p>Observe and describe weather associated with the seasons and</p>		<p>Light: Recognise that they need light in order to see things and that dark is the absence of light</p>	<p>Sound: Identify how sounds are made</p> <p>Recognise that vibrations from sounds travel through a medium to the ear</p>	<p>Earth and Space: Describe the movement of the earth and other planets relative to the sun in the solar system</p>	<p>Light: Recognising that light travels in straight lines</p> <p>Explain that we see things because light travels from light</p>

	how day length varies		<p>Notice that light is reflected from surfaces</p> <p>Recognise light from the sun can be dangerous</p> <p>Recognise that shadows are formed when the light is blocked</p> <p>Find patterns in the way that the size of shadows change</p>	<p>Find patterns between the pitch of a sound and features of the object that produced it.</p> <p>Find patterns between the volume of a sound and the strength of the vibrations that produced it</p> <p>Recognise that sounds get fainter as the distance from the source increases</p>	<p>Describe the movement of the moon relative to the Earth</p> <p>Use the idea of the Earth's rotation to explain day and night</p>	<p>sources 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>
Forces, magnets and electricity			<p>Forces and magnets: Compare how things move on different surfaces</p> <p>Notice that some forces need contact between two objects, but magnetic forces can act at a distance</p>	<p>Electricity: Identify common appliances that run on electricity</p> <p>Construct a simple series electrical circuits</p> <p>Identify whether or not a lamp will light in a simple series circuit</p>	<p>Forces: Explain that unsupported objects fall towards Earth because of the force of gravity.</p> <p>Identify the effects of air and water resistance, and friction.</p>	<p>Electricity: 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</p>

			Observe how magnets attract and repel each other and make predictions.	Recognise that a switch opens and closes a circuit Recognise some common conductors and insulators	Recognise that some mechanisms allow a smaller force to have greater effect.	components function Use recognised symbols when representing a simple circuit in a diagram
Scientific Enquiry	<ul style="list-style-type: none"> • Asking simple questions • Observing closely using simple equipment • Performing simple tests • Identifying and classifying • Using observations to answer questions • Gathering and recording data to help in answering questions 	<ul style="list-style-type: none"> • Ask relevant questions and use different types of scientific enquiries to answer them. • Set up simple practical enquiries, comparative and fair tests. • Making systematic and careful observations. • Gathering, recording, classifying and presenting data in a variety of ways to help answering questions. • Report on findings from enquires. • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • Identify differences, similarities or changes related to simple scientific ideas and processes. • Use straightforward scientific evidence to answer questions or support their findings. 	<ul style="list-style-type: none"> • 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 a degree of trust in results, in oral and written forms such as displays and other presentations 			

			<ul style="list-style-type: none"> Identifying scientific evidence that has been used to support or refute ideas or arguments
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Vocabulary

Fish, mammals, birds, amphibians, reptiles, herbivore, omnivore, carnivore, offspring, survival, movement, muscles, bones, skeleton, exercise, nutrition, seeds, plants, growth, dispersal, pollination, flower, classification, light, shadow, reflection, solid, liquid, gas, evaporation, freezing, heating, fossils, adaptation, evolution, magnets, force, electricity, gravity, air resistance, water resistance, friction,

Characteristics for Effective Learning

Analysing and Evaluating	Making Connections	Asking Questions	Constructing Arguments
Thinking Critically	Collaborating with Others	Showing Empathy	Reflecting

Actions for Science Intent

- Liaise with Year group leaders to discuss studying an inspirational scientist that has shaped our world. E.g. Year 5 learning kicking off their topic on forces by learning about Isaac Newton. Who could other year groups learn about? Why we are studying these people. How they shaped the future/nation/world/left a lasting legacy