

KS2 Science Years 3 to 6

		HT1 Our Body	HT2 Our Senses	HT3 Our World	HT4 Our Home	HT5 Our Earth	HT6 Our Solar System
Learning outcomes/composite knowledge: Pupils will be able to...		Pupils will learn about their bodies, how they function and what it means to be healthy.	Pupils will use their senses to observe how light, sound and everyday materials behave. Pupils will test various materials to categorise them by their properties and explore how to separate mixtures.	Pupils will explore Antarctica, the organisms that inhabit it, changes in state and the water cycle and the forces involved in moving through the air, water and on ice.	Pupils will explore the plants and other organisms within their habitat, Their life cycles and place in food chains. Gain an appreciation of how plants are the producers of all food chains and the importance of bees to our food security.	Pupils will explore the structures of the Earth, including its magnetic field. Pupils will develop an understanding of the rock cycle and how fossils are formed.	Pupils will explore the movement of the Earth and Moon relative to other objects in our solar system. Pupils will develop an understanding of why we have day and night.
Knowledge Components	Substantive Knowledge:	<p>Year 3</p> <ul style="list-style-type: none"> - Identify that animals in humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat; - Identify that humans and some other animals have skeletons and muscles for support, protection and movement. <p>Year 4</p> <ul style="list-style-type: none"> - To describe the simple functions of the basic parts of the digestive system in humans - Identify the different types of teeth in humans and their simple functions; <p>Year 5</p> <ul style="list-style-type: none"> - Describe the changes as humans develop to old age. - Recognise that some mechanisms including levers, pulleys and gears 	<p>Year 3</p> <ul style="list-style-type: none"> - 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; find patterns in the way that the size of shadows change. <p>Year 4</p> <ul style="list-style-type: none"> identify how sounds are made, associating some of them with something vibrating; recognise that vibrations from sounds travel through a medium to the ear; find patterns between the pitch of a sound and 	<p>Year 3</p> <ul style="list-style-type: none"> compare how things move on different surfaces; <p>Year 4</p> <ul style="list-style-type: none"> recognise that environments can change and that this can sometimes pose dangers to living things. recognise that living things can be grouped in a variety of ways; compare and group materials together, according to whether they are solids, liquids or gases observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C); identify the part played by evaporation and condensation in the water 	<p>Year 3</p> <ul style="list-style-type: none"> Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers; Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant 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. <p>Year 4</p> <ul style="list-style-type: none"> Construct and interpret a variety of food chains, identifying producers, predators and prey. 	<p>Year 3</p> <ul style="list-style-type: none"> notice that some forces need contact between 2 objects, but magnetic forces can act at a distance; observe how magnets attract or repel each other and attract some materials and not others; describe magnets as having 2 poles; predict whether 2 magnets will attract or repel each other, depending on which poles are facing. 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; 	<p>Year 5</p> <ul style="list-style-type: none"> Know the movement of the Earth and other planets relative to the sun in the solar system Know the movement of the moon relative to the Earth Know that the sun, Earth and moon are approximately spherical bodies Know that Earth's rotation explains day and night and the apparent movement of the sun across the sky

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		<p>allow a smaller force to have a greater effect.</p> <p>Year 6 - Describe the ways in which nutrients and water are transported within animals, including humans. - Parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood; - Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function;</p>	<p>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 sound source increases.</p> <p>Year 5 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>cycle and associate the rate of evaporation with temperature.</p> <p>Year 5 identify the effects of air resistance, water resistance and friction, that act between moving surfaces;</p> <p>Year 6 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>give reasons for classifying plants and animals based on specific characteristics.</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>keys to help group, identify and name a variety of living things in their local and wider environment;</p> <p>Year 5 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>compare and group together different kinds of rocks on the basis of their appearance and simple physical properties;</p> <p>describe in simple terms how fossils are formed when things that have lived are trapped within rock;</p> <p>recognise that soils are made from rocks and organic matter.</p> <p>Year 4 recognise that environments can change and that this can sometimes pose dangers to living things.</p> <p>Year 6 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>	

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			<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>Year 6 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>				
Disciplinary Knowledge:	Asking questions and carrying out fair and comparative tests	Observing and measuring changes	Drawing conclusions, noticing patterns and presenting findings.	Identifying, classifying, recording and presenting data	Asking questions and carrying out fair and comparative tests	Observing and measuring changes	

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	<p>Lower KS2</p> <p>asking relevant questions using different types of scientific enquiry to answer them</p> <p>setting up simple practical enquiries, comparative and fair tests</p> <p>Upper KS2</p> <p>Planning different types of scientific enquiries to answer questions including recognizing and controlling variables where necessary</p> <p>using test results to make predictions to set up further comparative and fair tests</p>	<p>Lower KS2</p> <p>making systematic and careful observations and where appropriate making accurate measurements using standard units a range of equipment including thermometers and data loggers.</p> <p>Upper KS2</p> <p>Taking measurements using a range of scientific equipment increasing accuracy and precision taking repeat readings where appropriate</p>	<p>Lower KS2</p> <p>Using results to draw simple conclusion, make predictions for new values suggesting improvements and raise further questions</p> <p>Reporting on findings from enquiries including oral and written explanations displays or presentations of results and conclusion</p> <p>Upper KS2</p> <p>Reporting and presenting findings from enquiries including conclusions causal relationships and explanations of and degree of trust in the results in oral and written forms such as displays and in other presentation</p>	<p>Lower KS2</p> <p>gathering, recording classifying and presenting data in a variety of ways to help in answering questions</p> <p>recording findings using simple scientific language drawings labelled diagrams keys bar charts and tables</p> <p>Upper KS2</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels classifications keys tables scatter graphs bar and line graphs</p>	<p>Lower KS2</p> <p>asking relevant questions using different types of scientific enquiry to answer them</p> <p>setting up simple practical enquiries, comparative and fair tests</p> <p>Upper KS2</p> <p>Planning different types of scientific enquiries to answer questions including recognizing and controlling variables where necessary</p> <p>using test results to make predictions to set up further comparative and fair tests</p>	<p>Lower KS2</p> <p>making systematic and careful observations and where appropriate making accurate measurements using standard units a range of equipment including thermometers and data loggers.</p> <p>Upper KS2</p> <p>Taking measurements using a range of scientific equipment increasing accuracy and precision taking repeat readings where appropriate</p>
National Curriculum reference	<p>Explore and compare the differences between things that are living, dead and never been alive.</p> <p>Identify, name, draw and label the basic parts of the human body.</p> <p>Find out about the basic needs of animals, including humans for survival (water, food, and air)</p>	<p>Identify, name, draw and label the part of the human body is associated with each sense</p> <p>Describe how animals obtain their food from plants and other animals, using the ideas of a simple food chain, and identify and name different sources of food.</p>	<p>Identify and name a variety of common animals, including fish, amphibians, reptiles, birds and mammals</p> <p>Describe and compare the structure of a variety of common animals</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores</p>	<p>Identify and name a variety of common wild and garden plants including deciduous and evergreen trees</p> <p>Identify and describe the basic structure of a variety of common flowering plants including trees</p> <p>Observe and describe how seed and bulbs grow into mature plants</p>	<p>Compare and group together a variety of materials on the basis of their simple and physical properties.</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>Observe changes across the four seasons</p> <p>Observe and describe the weather associated with the seasons and how day length varies.</p> <p>Changes in plants over a year</p>

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	<p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</p> <p>Notice that animals, including humans have offspring which grow into adults</p>	<p>Distinguish between an object and the material from which it is made</p> <p>Identify and name a variety of everyday materials, including wood, plastic, glass, metal</p> <p>Describe the simple properties of a variety of materials</p>		<p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</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 mircohabitats</p>		