

Scientific Strand	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Living things in their habitats</p>	<p>Explore the natural world around them, making observations and drawing pictures of animals and plants;</p> <p>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;</p>	<p>Identify, observe and recognise 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, and name parts, e.g. <i>leaves, flowers, roots, stem/trunk</i>.</p>	<p>Reason and speculate to make decisions and classify whether things are alive, dead, or have never been alive</p> <p>Describe the survival needs of animals, including humans</p> <p>Recognise that animals and plants usually live in habitats that are suited to them</p> <p>Categorise and describe how animals and plants depend on each other (links to food chains and feeding relationships)</p> <p>Identify and recognise through first-hand experience, a variety of plants and animals in their habitats, including micro-habitats e.g. under log, on stony path, under bushes</p> <p>Recall and describe how animals get their food from other animals and/or from plants</p> <p>Compare and contrast different sources of food (link</p>	<p>Name and locate the main parts of plants e.g. roots, stem/trunk, leaves and flowers and describe their functions</p> <p>Explain the basic requirements of plants for life and growth, i.e. air, light, water, nutrients from soil, and room to grow</p> <p>Summarise relevant examples of different types of plants with contrasting requirements, e.g. desert cactus, pond marigold, sunflower</p> <p>Explore and describe how water is transported within plants.</p> <p>Name simple parts of a flower and describe their function, i.e. <i>stigma, style, carpel, ovary, pollen</i></p> <p>Describe the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</p>	<p>Group living things in different ways explaining their findings.</p> <p>Use classification keys to group, identify and name living things.</p> <p>Create classification keys to group, identify and name living things.</p> <p>Explain how environments can change and that this can sometimes pose dangers to living things.</p>	<p>Explain and apply their knowledge to compare different life cycles, in some specific types of animals and plants, e.g. <i>bat or hedgehog, newt, bumblebee, peregrine falcon</i></p> <p>Describe and evaluate the differences between different life cycles.</p> <p>Describe the main changes as humans grow into adults and develop to old age, i.e. <i>baby, child, adolescent, adult, old person</i></p> <p>Describe and compare different reproductive processes in some animals and plants, including asexual</p>	<p>Hypothesise and Explain how observable features, similarities and differences between types of plants, animals and micro-organisms are used to group and classify them. Give reasons why this is useful.</p> <p>Describe and justify how living things have been classified.</p> <p>Make reasoned judgements for classifying plants and animals in a specific way.</p>

			<p>to carnivores, herbivores and omnivores Y1)</p> <p>Describe how plants and seeds grow into plants.</p> <p>Recognise that water, light and a suitable temperature are needed for survival and growth</p>				
Working Scientifically		<p>Observe closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants; describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants including trees.</p> <p>Pupils might keep records and recall how plants have changed over time, for example, the leaves falling off trees and buds opening; and compare and contrast what they have found out about different plants.</p>	<p>Sorting and classifying things according to whether they are living, dead or were never alive, and recording their findings using charts.</p> <p>They should describe how they decided where to place things, exploring questions like: 'Is a flame alive? Is a deciduous tree dead in winter?' and talk about ways of answering their questions.</p> <p>They could construct a simple food chain that includes humans (eg, grass, cow, human).</p> <p>They could compare and contrast the conditions in different habitats and microhabitats (under log, on stony path, under bushes); and find</p>	<p>Comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser; discovering how seeds are formed by observing the different stages of plant life cycles over a period of time; looking for patterns in the structure of fruits that relate to explain how the seeds are dispersed.</p> <p>They might observe and explain how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.</p>	<p>Using and making simple guides to explain their knowledge or keys to explore and identify local plants and animals; making a guide to explain and summarise local living things; demonstrating understanding by asking and answering questions based on their observations of animals and what they have found out about other animals that they have researched.</p>	<p>Observing and comparing the life cycles of plants and animals in their local environment with other plants and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times), hypothesising and making reasoned judgements for similarities and differences.</p> <p>Apply their knowledge to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs.</p> <p>They might observe changes in an animal over a period of time (for example, by hatching and rearing chicks), comparing and evaluating how different animals</p>	<p>Using classification systems and keys to identify some animals and plants in the immediate environment.</p> <p>They could research and reach reasoned judgements about unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.</p>

			<p>out how the conditions affect the number and type(s) of plants and animals that live there.</p> <p>Observing and recording, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb, or observing similar plants at different stages of growth; setting up a comparative test to show that plants need light and water to stay healthy.</p>			reproduce and grow.	
<p>Animals including humans</p>	<p>Explore the natural world around them, making observations and drawing pictures of animals and plants;</p> <p>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;</p>	<p>Identify and recognise a variety of common animals that they have encountered first-hand, e.g. pets or animals they have learned about in their locality, cat, hedgehog, frog, bumblebee, butterfly, blackbird, goldfish.</p> <p>Observe and describe first-hand a variety of animals noticing similarities and differences, e.g. a garden snail and a worm.</p> <p>Categorise</p>	<p>Reason and speculate the main changes as young animals, including humans, grow into adults</p> <p>Describe the basic needs of animals they have found, including humans, for survival i.e. water, food and air.</p> <p>Identify the importance for humans to exercise, have a balanced diet and use good hygiene</p>	<p>Explore the importance of a nutritious balanced diet in animals, including humans.</p> <p>Summarise some of the simple food groups – dairy, vegetables and fruit.</p> <p>Explain how nutrients, water and oxygen are transported within animals and humans.</p> <p>Describe and explain the skeletal and muscular system of</p>	<p>Identify and locate the main parts of the digestive system, i.e. <i>mouth, tongue, teeth, oesophagus, stomach, small intestine, large intestine, in humans.</i></p> <p>Summarise the functions of the organs in the human digestive system.</p> <p>Identify and explain the different types of teeth in humans.</p>	<p>Explain and apply knowledge the changes as humans develop to old age</p>	<p>Identify and locate the main parts of the circulatory system, i.e. heart, blood vessels and blood.</p> <p>Explain the function of the heart, blood vessels and blood.</p> <p>Explain and justify the effects of diet, exercise, drugs and lifestyle on how their bodies function.</p> <p>Reach informed conclusions about the ways in which nutrients and water are transported in animals/humans.</p>

		<p>animals familiar to them (including those listed above) according to what they eat, using words such as omnivore, herbivore and carnivore.</p> <p>Describe and compare the structure of a variety of common animals that they have encountered, e.g. fin, scales, claw, feather, beak, paws, tail.</p> <p>Select and recall simple parts of the human body, including those related to the senses,</p>		<p>a human.</p> <p>Name, locate and describe the functions of the main parts, e.g. skull, spine, ribs of the musculoskeletal system in humans and other animals</p> <p>Describe the purpose of the skeleton in humans and in animals. Identify which parts protect, support or are involved in movement</p>	<p>Explain the functions of different human teeth.</p> <p>Demonstrate understanding of food chains to identify producers, predators and prey.</p>		<p>Describe and apply knowledge about how the earth and living things have changed over time.</p> <p>Explain and evaluate how fossils can be used to find out about the past.</p> <p>Explain about reproduction and off-spring.</p> <p>Explain and make reasoned judgements about how animals and plants are adapted to suit their environment.</p> <p>Apply the basic ideas of inheritance, variation and adaptation to explain how living things have changed over time and evolved.</p> <p>Explain evolution.</p>
Working Scientifically		<p>Using their observations to compare and contrast animals at first hand or through videos and photographs, describing how they identify and classify them; categorizing animals according to what they eat; and using their senses to compare different textures, sounds and smells.</p>	<p>Observing, through video or first-hand observation and measurement, how different animals, including humans, grow; reasoning and speculating questions about which things animals need for survival and what humans need to stay healthy; and suggesting ways to find answers to their questions.</p>	<p>Identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about what would happen if humans did not have skeletons.</p> <p>They might compare and contrast the diets of different animals (including their</p>	<p>Comparing the teeth of carnivores and herbivores and suggesting reasons for differences; Investigate and explaining what damages teeth and how to look after them.</p> <p>They might demonstrate their understanding by drawing and discussing their ideas about the digestive system</p>	<p>Explain the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows.</p>	<p>Explore and apply the work of scientists and scientific research to evaluate the relationship between diet, exercise, drugs, lifestyle and health.</p>

				<p>pets) and explain ways of grouping them according to what they eat.</p> <p>They might research different food groups and summarise how they keep us healthy, and design meals based on what they find out.</p>	<p>and compare them with models or images.</p>		
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Materials	<p>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;</p>	<p>Identify and recognise a variety of everyday materials, e.g. a variety of objects/items made of wood, plastic, glass, metal, water, and rock</p> <p>Use simple language to describe the physical properties of a variety of everyday materials.</p> <p>Use the physical properties of a variety of everyday materials to compare and categorise them to identify a variety of common materials and objects made from them.</p>	<p>Identify, compare and contrast the properties of a variety of everyday materials, to assess their suitability for particular purposes</p> <p>Suggest why a material might or might not be used for a specific job.</p> <p>Discover (through investigation) 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 rocks in different ways demonstrating understanding of their properties, based on first-hand observation</p> <p>Explain how fossils are formed</p> <p>Explain, in simple terms, that soils are made when rocks are weathered and break down into small particles which combine with organic matter to become soil.</p> <p>Describe and explain the difference between sedimentary and igneous rock.</p>	<p>States of matter- Group and summarise materials based on their state of matter (solid, liquid, gas).</p> <p>Explain how a variety of materials change state when they are heated or cooled.</p> <p>Explain how materials change state.</p> <p>Measure the temperature of materials which change state.</p> <p>Summarise and explain the water cycle.</p> <p>Explain the part played by evaporation and condensation in the water cycle.</p>	<p>Reversible and Irreversible Changes- Compare and group materials based on their properties – hardness, solubility, transparency, conductivity and evaluate their findings.</p> <p>Explain and justify what happens when dissolving occurs in everyday situations; explaining the process of dissolving.</p> <p>Apply their knowledge to describe processes that might be used to separate mixtures (i.e. dry or wet mixture – no dissolved solids) and solutions (solid dissolved in liquid) into their component materials.</p> <p>Apply their knowledge on how to recover a</p>	

						<p>substance from a solution.</p> <p>Describe and justify their findings on how some materials can be separated including through filtering, sieving and evaporating</p> <p>Give evidenced and reasoned judgements on why materials should be used for specific purposes.</p> <p>Demonstrate understanding and apply the knowledge that some changes are reversible, and some are not.</p> <p>Explain and justify how some changes result in the formation of a new material and that this is usually irreversible (include changes associated with burning and the action of acid on bicarbonate of soda).</p>	
Working Scientifically		<p>Performing simple tests to explore and select questions, for example: 'What is the best material for an umbrella? ... for lining a dog basket? ... for curtains? ... for a bookshelf? ... for a gymnast's leotard?'</p>	<p>Compare and contrast the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs); observing closely, identifying and classifying the</p>	<p>Observing rocks, including those used in buildings and gravestones, and exploring and explaining how and why they might have changed over time; using a hand lens or microscope to help them to identify and classify rocks according to whether they have</p>	<p>Grouping and classifying a variety of different materials; exploring and explaining the effect of temperature on substances such as chocolate, butter, cream.</p> <p>They could synthesise information about the temperature at</p>	<p>Carrying out tests to answer questions, for example, 'Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?'</p> <p>They might compare materials</p>	

			uses of different materials, and recording their observations.	<p>grains or crystals, and whether they have fossils in them.</p> <p>Pupils might synthesise information and explain the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed.</p> <p>Pupils could explore different soils and explain similarities and differences between them and investigate what happens when rocks are rubbed together or what changes occur when they are in water.</p> <p>They can raise and answer questions about the way soils are formed.</p>	<p>which materials change state, for example, when iron melts or when oxygen condenses into a liquid.</p> <p>They might observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying or snowmen melting.</p>	<p>in order to make a switch in a circuit.</p> <p>They could observe and compare the changes that take place, for example, when burning different materials or baking bread or cakes leading to informed conclusions.</p> <p>They might synthesise and explain how chemical changes have an impact on our lives, for example, cooking, and discuss the creative use of new materials such as polymers, super-sticky and super-thin materials.</p>	
Seasonal Changes/Earth and Space	Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	<p>Observe and describe changes across four seasons, including changes to trees</p> <p>Observe and recognise how the weather varies and describe the changes</p> <p>Observe and describe how day lengths</p>				<p>Justify and explain the movement of the Earth and other planets relative to the Sun.</p> <p>Describe and explain the movement of the Moon relative to the Earth.</p> <p>Explain the Sun, Earth and Moon (using the term spherical).</p>	
Light and Sound				Explain that we need light in order to see and that	Explain how sound is made, associating		Explain and make reasoned

				<p>darkness is the absence of light.</p> <p>Summarise that light is needed in order to see. Explain that light is reflected from surfaces of a variety of objects (and this enables us to see them)</p> <p>Explain that shadows are formed when light from a source is blocked by an opaque object and that the position and shape of a shadow can vary (based on practical investigations of shadow length).</p> <p>Explain the danger of direct sunlight and describe how to keep protected.</p>	<p>some of them with something vibrating.</p> <p>Explain how sound travels from a source to our ears.</p> <p>Explain the place of vibration in hearing</p> <p>Explore and summarise the correlation between pitch and the object producing a sound.</p> <p>Demonstrate understanding by explaining the correlation between the volume of a sound and the strength of the vibrations that produced it.</p> <p>Describe and Explain what happens to a sound as it travels away from its' source.</p>		<p>judgements about how light travels.</p> <p>Apply the knowledge that the idea that light from light sources, or reflected light, travels in straight lines and enters our eyes, to explain how we see objects,</p> <p>Apply the idea that light travels in straight lines to explain the formation, shape and size of shadows.</p> <p>Explain and justify why shadows have the same shape as the objects that casts them.</p>
Forces and Magnets				<p>Describe and compare how things move on different surfaces e.g. comment on the effects of simple forces like friction on the way objects move</p> <p>Explain how some forces require contact and some do not, giving examples.</p> <p>Summarise, using key vocabulary, how magnetic forces can act at a distance and in different ways.</p>			<p>Explain and justify the apparent movement of the sun across the sky in terms of the earth's rotation and that this results in day and night.</p> <p>Explain what gravity is and make reasoned judgements the impact on our lives.</p> <p>Identify and explain the effect of air resistance and of water resistance.</p>

				<p>Predict whether objects will be magnetic and carry out an enquiry to test this out.</p> <p>Describe how magnets work.</p> <p>Predict whether magnets will attract or repel and give a reason.</p>		<p>Identify and explain the effect of friction.</p> <p>Explain and justify how levers, pulleys and gears allow a smaller force to have a greater effect.</p>	
Electricity					<p>Identify and explain appliances that need electricity to function and why.</p> <p>Conduct a series circuit.</p> <p>Identify and name the components in a series circuit.</p> <p>Draw a circuit diagram.</p> <p>Predict and test whether a lamp will light within a circuit, based on whether or not the lamp is part of a complete loop with a battery.</p> <p>Demonstrate understanding by recognising that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</p> <p>Name common conductors (such as metals and water) and insulators (such as wood, plastic).</p>	<p>Identify and explain the effect of friction.</p> <p>Explain and justify how levers, pulleys and gears allow a smaller force to have a greater effect.</p>	<p>Explain and make informed conclusions about how simple optical instruments work – periscope, telescope, binoculars, etc.</p> <p>Explain and justify how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer.</p> <p>Compare and give reasoned judgements for why components work and do not work in a circuit.</p> <p>Draw and evaluate circuit diagrams using correct symbols.</p>

					<p>Describe the difference between a conductor and an insulator.</p>		
<p>Working Scientifically</p>		<p>Making tables and charts about the weather; and making displays of what they recognise happens in the world around them, including describing day length, as the seasons change.</p>		<p>Looking for and summarising patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.</p> <p>Comparing how different things move and grouping them; raising questions and carrying out tests to find out how far things move on different surfaces, and gathering and recording data to find answers to their questions;</p> <p>Exploring the strengths of different magnets and finding a fair way to compare them; sorting materials into those that are magnetic and those that are not; looking for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another;</p> <p>Identifying and explaining how these properties make magnets useful in everyday</p>	<p>Finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses.</p> <p>They might make earmuffs from a variety of different materials to investigate which provides the best insulation against sound.</p> <p>They could make and play their own instruments to demonstrate understanding about what they have found out about pitch and volume.</p> <p>Observing patterns and synthesise, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.</p>	<p>Comparing and applying their knowledge the time of day at different places on the Earth through internet links and direct communication; creating simple models of the solar system; applying knowledge to construct simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day; finding out why some people think that structures such as Stonehenge might have been used as astronomical clocks and reaching informed conclusions.</p> <p>Exploring falling paper cones or cupcake cases, and designing and applying their knowledge to a variety of parachutes and carrying out fair tests to determine which designs are the most effective and evaluating the results.</p> <p>They might explore, hypothesise and evaluate resistance in water by making</p>	<p>Apply knowledge to decide where to place rear-view mirrors on cars; design, make and evaluate a periscope using the idea that light appears to travel in straight lines to explain how it works.</p> <p>They might investigate the relationship between light sources, objects and shadows by using shadow puppets reaching informed conclusions.</p> <p>They could extend their experience of light by looking a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water, and coloured filters and making hypothesise (they do not need to explain why these phenomena occur).</p> <p>Systematically identifying the effect of changing one component at a time in a circuit evaluating and justifying their choices; designing, making and evaluating a set of</p>

				items and suggesting creative uses for different magnets.		and testing boats of different shapes. They might design, make and evaluate products that use levers, pulleys, gears and/or springs and explore their effects.	traffic lights, a burglar alarm or some other useful circuit.
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