

Science subject progression

Biology	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Living Things and their Habitats	Pupils will use a range of scientific equipment such as magnifying glasses and human insect catchers to search for minibeasts in the outdoor environment.	<p>ELG: Explore the natural world around them, making observations and drawing pictures of animals and plants (ELG)</p> <p>Pupils will explore the British wildlife and begin to sort and classify animals by their habitats (trip to North Dean Woods and the small world area).</p> <p>Pupils will explore a farm yard and the different types of animals that live there. They will continue to explore the natural world around them making observations and drawing pictures of animas.</p> <p>Pupils will name, observe, explore and describe a range of minibeasts which can be found in the garden and go on their own minibeast hunt.</p> <p>They will record their findings using a pictogram. Pupils</p>		<p>NC: Explore and compare the differences between things that are living, dead, and things that have never been alive</p> <p>Identify that most living things live in habitats to which they are suited and describe how habitats provide for the basic needs 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 microhabitats)</p> <p>Describe how animals obtain their food from plants and other animals using a simple food chain, and identify and name different sources of food</p>		<p>NC: Recognise that living things can be grouped in a variety of ways</p> <p>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p> <p>Recognise that environments can change and that this can sometimes pose dangers to living things</p>	<p>NC: 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</p>	<p>NC: 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>

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		will sort and classify.						
Plants	<p>Pupils will investigate plants and growth through making and growing Grass Heads.</p> <p>They will learn what seeds need to help them grow.</p>	<p>ELG: Understand some important processes and changes in the natural world around them</p> <p>Pupils will explore the life cycle of a plant.</p> <p>Pupils will plant their own bean plant and investigate what plants need to grow and stay healthy.</p> <p>Pupils will predict and then test what will happen to a plant that does not have any light or water.</p> <p>Pupils will record their findings.</p> <p>Pupils will care for the plants in the reception garden.</p> <p>Developing an understanding of</p>	<p>NC: Identify and name a variety of common wild and garden plants, including deciduous/evergreen trees</p> <p>Describe the basic structure of common flowering plants, including trees - seed, root, stem, branch, leaf flower</p>	<p>NC: Observe and describe 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>Pupils to complete a comparative test to see how plants grow (variables of water, light and temperature)</p>	<p>NC: Identify and describe functions of parts of flowering plants</p> <p>Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, room to grow) and how they vary between plants (revision of year 2 but in depth focus on room to grow and a range of plants.</p> <p>Investigate how water is transported within plants Explore the life cycle of flowering plants, including pollination, seed formation and seed dispersal</p>			

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		<p>growth, decay and changes over time</p> <p>Identify similarities and differences in relation to living things</p> <p>ELG: Explore the natural world around them, making observations and drawing pictures of animals and plants</p> <p>Pupils will make observations of the natural world and draw pictures of plants observed.</p> <p>Pupils will visit Butterfly World at Manor Heath Park and observe and explore the plants that they find. They will comment and ask questions about what they saw and make observation and drawings of plants.</p>						
Animals including Humans	<p>Pupils will explore farm animals and learn their names. Pupils will be encouraged to talk about what they can see and describe them (what sounds they make too).</p>	<p>Pupils will begin to make sense of their own life-story. They will look at pictures of themselves as babies and talk about how they have changed since they were babies.</p>	<p>NC: Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</p> <p>Identify and name a variety of common animals that are</p>	<p>NC: Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>Notice that animals, including humans, have</p>	<p>NC: 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>NC: 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 functions</p>	<p>NC: (taught as part of Living Things and Their Habitats Year 5 above)</p> <p>Describe the changes as humans develop to old age</p>	<p>NC: Identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood</p>

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	<p>Pupils will explore animals from the key texts 'Walking Through the Jungle' and the 'Monkey Puzzle' They will describe the animals and categorise them.</p> <p>Pupils will learn about the butterfly life cycle through the story 'The Very Hungry Caterpillar'.</p> <p>Pupils will observe the life cycle of a butterfly in real life.</p> <p>Pupils to explore using their senses</p>	<p>They will sequence stages of the human life cycle including baby, children, adult and elderly.</p> <p>ELG: 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>ZooLab will come into school and bring in a collection of small wild animals. They will compare and contrast wild animals to domestic pets. They will learn how to take care for animals, specifically pets.</p> <p>They will go on a trip to the farm (Swithens Farm) where they will learn how to take care of different animals such as lambs (bottle feeding).</p> <p>They will continue to get an understanding of the need to respect</p>	<p>carnivores, herbivores and omnivores</p> <p>Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</p> <p>Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</p>	<p>offspring which grow into adults</p> <p>Chick hatching experience</p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</p>	<p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement</p>	<p>Construct and interpret a variety of food chains, identifying producers, predators and prey</p>	<p>Recognise the impact of diet, exercise, drugs and lifestyle on the way bodies function</p> <p>Describe the ways that nutrients/water are transported within humans (revision of year 4)</p> <p>Evolution and Inheritance (NC)</p> <p>Recognise that living things have changed over time and that fossils provide info about living things that inhabited Earth millions of years ago</p> <p>Recognise that living things produce offspring of the same kind but they vary and aren't identical to parents</p> <p>Identify how animals and plants are adapted to suit their environment in different ways and that this leads to evolution</p>
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		<p>and care for the natural environment and living things.</p> <p>Children will look at where food comes from (eggs from chickens, milk from cows, meat from animals) and where materials comes from (wool etc.)</p> <p>They will recap the names of farm animals and begin to name their young (cow, calf, sheep and lamb).</p>						
Chemistry	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Matter	<p>Pupils will go to the Forest School and collect natural materials to investigate and discuss.</p> <p>Use scientific equipment such as magnifying glasses.</p> <p>Using the story 'Three Little Pigs' children will explore natural materials such as straw, stones and sticks.</p> <p>Pupils will explore what would happen to the Gingerbread Man if he tried to swim</p>	<p>Pupils will go to the Forest School and collect natural materials to investigate and discuss. They will begin to classify their findings.</p> <p>Use scientific equipment such as magnifying glasses</p> <p>Children will explore natural materials such as wood, branches, twigs and rocks.</p> <p>ELG: Understand some important processes and changes in the</p>	<p>NC: 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, water, and rock.</p> <p>Describe the simple physical properties of a variety of everyday materials</p> <p>Compare and group together a variety of everyday materials on the basis of their</p>	<p>NC: Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</p> <p>Compare how things move on different surfaces.</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 (NC) 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>States of Matter (NC) Compare and group materials together according to whether they are solids, liquids or gases</p> <p>Observe that some materials change state when heated or cooled, and measure or research the temperature at which this happens in degrees Celsius</p> <p>Identify the part played by</p>	<p>Properties and Changes of Materials (NC)</p> <p>Compare and group together everyday materials on the basis of their properties</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</p>	

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	<p>across the river (changes in state)</p> <p>Pupils will use all of their senses to explore different malleable materials (sand, jelly, polystyrene etc.)</p> <p>Pupils will observe ice as it melts and discuss what they can and talk about what is happening. Pupils will sort and classify objects by materials (wood, plastic and metal)</p>	<p>natural world around them, including the seasons and changing states of matter.</p> <p>Pupils will explore change in materials from one state to another by combining different ingredients to make their own playdough.</p> <p>Pupils will explore what would happen to the <i>Gingerbread Man</i> if he tried to swim across the river (changes in state)</p> <p>Pupils will complete a science experiment to see what happens to gummy bears when they are added to water for days. They will compare and explore the differences.</p> <p>Pupils will use all of their senses to explore different malleable materials (sand, jelly, polystyrene etc.)</p> <p>Pupils will sort and classify objects by materials (metal, wood, plastic and cardboard).</p>	<p>simple physical properties</p>			<p>evaporation and condensation in the water cycle: associate the rate of evaporation with temperature</p>	<p>how mixtures might be separated</p> <p>Give reasons for the particular uses of everyday materials, including metals, wood and plastic</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, and that this kind of change</p>	
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		Magnets Sort objects out if they are magnetic or not magnetic						
Physics	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Light		<p>Pupils will explore shadows, learning how a shadow is made.</p> <p>They will talk about how a shadow can be formed and make their own shadow puppets.</p>			<p>NC: Recognise that we need light in order to see things and that dark is the absence of light</p> <p>Notice that light is reflected from surfaces</p> <p>Recognise that sun rays can be dangerous and that there are ways to protect eyes Recognise that shadows are formed when the light from a light source is blocked by an opaque object</p> <p>Find patterns in the way that the size of shadows change</p>			<p>NC: Recognise that light appears to travel in straight lines (revision)</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 Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then 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>
Sound						<p>NC: Identify how sounds are made, associating some of them with something vibrating</p> <p>Recognise that</p>		

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						<p>vibrations from sounds travel through a medium to the ear</p> <p>Find patterns between the pitch of sounds and features of the object</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 distance from source increases</p>		
Forces	<p>Pupils will explore floating and sinking using everyday materials in the water trays.</p> <p>Pupils will have access to cars and other wheeled vehicles and ramps to investigate/understand how the movement of a wheel makes an object move.</p> <p>Pupils will explore and investigate mechanical</p>	<p>Pupils will explore floating and sinking using everyday materials in the water trays. They will discuss what they can see and will sort objects accordingly.</p> <p>Pupils will have access to cars and other wheeled vehicles and ramps to investigate/understand how the movement of a wheel makes an object move. Use of</p>			<p>NC: Compare how things move on different surfaces</p> <p>Notice that some forces need contact between two objects, but magnetic forces act at a distance</p> <p>Observe how magnets attract or repel each other and attract some materials and not others</p>		<p>N:C Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p>	

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	<p>equipment such as wind-up toys, pulleys, set of cogs with pegs and boards. They will spend time exploring how things work.</p>	<p>a range of vehicles and different surfaces/textures</p> <p>Pupils will explore and investigate mechanical equipment such as wind-up toys, pulleys, set of cogs with pegs and boards. They will spend time exploring how things work.</p> <p>They will discuss their findings and record them accordingly.</p>			<p>Group everyday materials on the basis of whether they are attracted to a magnet, and identify magnetic materials (revision)</p> <p>Describe magnets as having two poles</p> <p>Predict whether two magnets will attract or repel each other, depending on which poles are facing</p>		<p>Recognise that some mechanisms, including levers, pulleys, gears, allow a smaller force to have a greater effect</p>	
Electricity		<p>Children will make a basic circuit of bulb, battery and wire.</p> <p>Children will build their own robot model. Their robot must have a specific purpose. They will make it out of junk model and add a bulb.</p>				<p>NC: Identify common appliances that run on electricity Make simple series circuit - cells, wires, bulbs, switches and buzzers</p> <p>Identify if a lamp will light in a simple circuit, based on being part of a complete loop with a battery</p> <p>Recognise that a switch opens/closes a circuit and associate this with whether or not a lamp lights in a series circuit</p>		<p>NC: Associate the brightness of a lamp or volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>Compare/give reasons for variations in how components function, including brightness of bulbs, loudness of buzzers and on/off position of switches (open and closed circuits)</p> <p>Use recognised symbols when representing a simple circuit in a diagram</p>

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						Recognise conductors & insulators		
Space							<p>NC: Describe the movement of the Earth, and other planets, relative to the Sun in the solar system</p> <p>Describe the movement of the Moon relative to the Earth</p> <p>Describe the Sun, Earth and Moon as approximately spherical bodies</p> <p>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</p>	
Seasons and weather	Pupils will learn about the weather throughout the year and begin to learn the names of the four seasons and begin to sort and classify items.	<p>Pupils will explore the seasonal feature associated with autumn; changes associated with autumn to winter; winter to spring and spring to summer.</p> <p>Pupils will sort and classify items associated with different seasons.</p>	<p>NC: Observe changes across the four seasons</p> <p>Observe and describe weather associated with the seasons and how day length varies.</p>					

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By the end of Reception pupils will be able to:

- Explore the natural world around them, making observations and drawing pictures of animals and plants
- 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
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.