

Science at Spring Vale Primary School



Science Progression at Spring Vale: Knowledge

Topic	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals Including Humans	<ul style="list-style-type: none"> Observe animals closely through a variety of means e.g. magnifiers & photographs Look at key stages of development from birth to adult Name & identify body parts Observe & describe in words or actions the effects of physical activity on body 	<ul style="list-style-type: none"> Shows some understanding that good practices with regard to exercise, eating, drinking water, sleeping & hygiene can contribute to good health Describe what they see, hear & feel Identify different parts of their body & animals Be able to show care and concern for living things Know the effects exercise has on their bodies Have some understanding of growth and change Talk about things they have observed including animals Observational drawings of animals 	<ul style="list-style-type: none"> Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals Identify and name a variety of common animals that are carnivores, herbivores, and omnivores Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense 					<ul style="list-style-type: none"> 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. Identify and name the main parts of the human circulatory system, and explain the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans.
Living Things and their Habitats	<ul style="list-style-type: none"> Explore different habitats outdoors, e.g. scent, colour & shape Observe growth & decay over time Begin to understand the need to respect & care for the natural environment & all living things Talk about what they see, using a wide vocabulary 	<ul style="list-style-type: none"> Describe what they see, hear & feel whilst outside Observational drawings of the natural world Discuss how to care for the living things & their habitats Examine change over time Understand the key features of the life cycle of a butterfly. Express opinions on natural & built environments & opportunities to hear different points of view on the quality of the environment. Use words such as busy, quiet 	<ul style="list-style-type: none"> Describe how habitats provide for the basic needs of different animals and plants and how they depend on each other Know that living things reproduce Identify and name a variety of plants and animals, including microhabitats Use a simple food chain Observe changes across the 4 seasons. Observe and describe weather associated with the seasons and how day length varies 	<ul style="list-style-type: none"> 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 micro-habitats. Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. 		<ul style="list-style-type: none"> 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. Construct and interpret a variety of food chains, identifying producers, predators and prey. Identify and name a variety of living things (plants and animals) in the local and wider environment, using classification keys to assign them to groups Recognise that environments can change and that this can sometimes pose dangers to living things. 	<ul style="list-style-type: none"> Explain 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. Describe the changes as humans develop from birth to old age. 	

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Plants and Animals / Seasonal Changes & Evolution and</p>	<ul style="list-style-type: none"> • Most plants start growing from a seed or bulb • All plants need water & light to grow & survive • Observe plants closely through a variety of means e.g. magnifiers & photographs • Extend vocabulary: leaves, petals, roots, bulb, trunk, branches, stem, garden plants, wild plants, seeds • Use all the senses in hands-on exploration of plants 	<ul style="list-style-type: none"> • All plants need water, light and warmth to grow and survive • A seed produces roots to allow water to get into the plant and shoots to produce leaves to collect the sunlight • Extend vocabulary: blossom, buds, bulb, evergreen, deciduous • Describe what they see, hear & feel whilst outside • Name & describe some plants • Draw pictures of plants • Understand the effect of changing seasons on the natural world around them • Understand the key features of the life cycle of a plant 	<ul style="list-style-type: none"> • Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • Identify and describe the basic structure of a variety of common flowering plants, including trees 	<ul style="list-style-type: none"> • Observe and describe how seeds and bulbs grow into mature plants. • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. • Notice that animals, including humans, have offspring, which grow into adults. • Find out about and describe the basic needs of animals, including humans, for survival (water, food, and air). • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. 	<ul style="list-style-type: none"> • Identify and describe the functions of different parts of flowering plants: roots, stem, 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. • 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. • Identify that humans and some animals have skeletons and muscles for support, protection, and movement. 			<ul style="list-style-type: none"> • Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. <p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Everyday Materials</p>	<ul style="list-style-type: none"> • Use all their senses in hands-on exploration of natural materials • Explore collections of materials with similar and/or different properties • Talk about what they see, using a wide vocabulary • Explore how things work e.g. pulleys • Explore & talk about different forces they can feel e.g. stretch, snap, rigid, magnetic repulsion, water pushing up when pushing a boat under it • Talk about the differences between materials and changes they notice e.g. cooking, melting, shadows, floating & sinking • Characteristics of liquids & solids e.g. cooking eggs, melting chocolate 	<ul style="list-style-type: none"> • Observe & interact with natural processes, such as ice melting, a sound causing a vibration, light travelling through transparent material, an object casting a shadow, a magnet attracting an object & a boat floating on water • Use vocabulary to name specific features of the natural world, both natural & man-made • Notice & discuss patterns around them 	<ul style="list-style-type: none"> • Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. • Describe the simple physical properties of a variety of everyday materials. • Compare and group together a variety of everyday materials based on their simple physical properties. • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting, and stretching. 	<ul style="list-style-type: none"> • Identify and compare the uses of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard. • Compare how things move on different surfaces. • Observe and name a variety of sources of sound, noticing that we hear with our ears. • Recognise that sounds get fainter as the distance from the sound source increases. 				

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Classes All Around Us / States of Matter</p>						<ul style="list-style-type: none"> • 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 cycle and associate the rate of evaporation with temperature. 	<ul style="list-style-type: none"> • Compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. • Understand that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. • Demonstrate that dissolving, mixing and changes of state are reversible change. • 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 style="writing-mode: vertical-rl; transform: rotate(180deg);">Rocks</p>					<ul style="list-style-type: none"> • Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. • Recognise that soils are made from rocks and organic matter. 			

Earth and Space							<ul style="list-style-type: none"> • Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. • Describe the movement of the Moon relative to the Earth. • Describe the Sun, Earth and Moon as approximately spherical bodies. • Use the idea of the Earth's rotation to explain day and night. 	
Electricity						<ul style="list-style-type: none"> • Identify common appliances that run on electricity. • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. • Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. • Recognise some common conductors and insulators, and associate metals with being good conductors. 		<ul style="list-style-type: none"> • Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. • Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. • Use recognised symbols when representing a simple circuit in a diagram.

Light / Sound					<ul style="list-style-type: none"> • Understand that light is needed to see things and dark is the absence of light. • Notice that light is reflected from surfaces. • Find patterns that determine the size of shadows. 	<ul style="list-style-type: none"> • Identify how sounds are made, associating some of them with something vibrating. • Find patterns between the pitch of a sound and features of the object that produced it. • Find patterns between the volume of a sound and the strength of the vibrations that produced it. 		<ul style="list-style-type: none"> • Understand that light appears to travel in straight lines. • 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 to our eyes. • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them, and to predict the size of shadows when the position of the light source changes.
Forces / Forces and Magnets					<ul style="list-style-type: none"> • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others. • 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. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing. 		<ul style="list-style-type: none"> • Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. • Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. • Understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers, and springs. 	