



The Echelford Primary School - Science Progression Document

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working Scientifically EYFS <i>Key Stage 1 (Year 1 and 2)</i> <i>Lower Key Stage 2 (Year 3 and 4)</i> <i>Upper Key Stage 2 (Year 5 and 6)</i>						
<p>Observe their surroundings and answer simple questions about what they have seen.</p> <p>Make predictions by asking simple questions about what they have observed and further this by identifying how they can find the answer.</p> <p>Begin to make comparisons about their environment and how it might be different from another.</p>	<p>Build upon their EYFS knowledge of asking simple questions and begin to recognise that they can be answered in different ways.</p> <p>Observing closely, using simple equipment.</p> <p>Perform simple tests. Can they describe what they hear, see, smell or taste to help them?</p> <p>Identify and classify using their</p>	<p>Confidently ask simple questions to aid their curiosity and continue to recognise that they can be answered in different ways. Can they explain the reasons for this?</p> <p>Use their knowledge of observation to further their acute understanding. Identify the simple equipment needed to do this.</p> <p>Perform simple, comparative tests and begin to understand if it is fair or not. Does their knowledge of describing what they can hear, see, smell or taste influence this?</p> <p>Identify and classify</p>	<p>Ask relevant questions and use different types of scientific enquiries to answer them.</p> <p>Set up simple practical enquiries, comparative and fair tests.</p> <p>Make systematic and careful observations and, where appropriate,</p>	<p>Ask relevant questions and use different types of scientific enquiries to answer them. Can they explain why they would use a certain type of enquiry, as opposed to another?</p> <p>Set up simple practical enquiries, comparative and fair tests. Can they use their skills of: observation, pattern-seeking, grouping and classifying to create these enquiries?</p> <p>Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units (N, g, kg, mm, cm, mins, seconds)</p> <p>They can confidently use a range of equipment, including thermometers and data loggers alongside this.</p>	<p>Plan different types of scientific enquiries to answer questions, which includes identifying and controlling variables.</p> <p>Take measurements, using scientific equipment, with increasing accuracy and precision and take repeat readings when appropriate.</p> <p>Record data and</p>	<p>Can effectively plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. Can they explain why certain variables would need to be controlled?</p> <p>Take measurements, using a range of scientific equipment. Can they identify why they have selected certain equipment? They can do this with increasing accuracy and precision and take repeat readings when they feel it is necessary to do so.</p> <p>Record data and</p>

	<p>observations and ideas to suggest answers to questions.</p> <p>Gather and record data to help in answering questions. Can they record this into a table or draw a picture?</p>	<p>using their observation skills. Formulate ideas to suggest answers to questions. Can they find similarities, differences and use pattern-seeking to support these answers?</p> <p>Gather and record data to help in answering questions. With support, can they identify the best way to record this data? (Text, diagrams, pictures, tables, simple graphs)?</p>	<p>taking accurate measurements using standard units. Can they use a range of equipment to do this?</p> <p>Gather, record, classify and present data in a variety of ways to help in answering questions.</p> <p>Independently record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.</p> <p>Begin to report on findings from enquiries that include oral and written explanations, displays or presentations of results and conclusions.</p> <p>Using results to draw simple conclusions,</p>	<p>Gather, record, classify and present data in a variety of ways to help in answering questions.</p> <p>Independently record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. Can they explain why they recorded it the way they did?</p> <p>Confidently report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Observe for changes, patterns and similarities and differences in data to find a conclusion. From this, can they create further questions in regards to the analysed data? How could they make the data more reliable?</p> <p>Identify differences, similarities or changes related to the children's own enquiry. Can they create a criteria that supports their scientific ideas and processes?</p> <p>Confidently use straightforward scientific evidence to answer questions, to support their findings or own ideas.</p>	<p>results of higher difficulty using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Can they explain patterns they may find?</p> <p>Use test results to make predictions to set up further comparative and fair tests.</p> <p>Report and present findings from enquiries. This includes conclusions, relationships and explanations and when to trust the results. Can they present this in oral and written forms, using relevant scientific language?</p>	<p>results of higher difficulty using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Can they explain the reasons why data would be recorded in different ways? Can they create and answer Scientific questions based on their evidence?</p> <p>Use test results to make predictions to set up further comparative and fair tests. Can they identify and classify links between results? Can they explain why they would use test results to further their enquiry?</p> <p>Report and present findings from enquiries. This includes conclusions, relationships and explanations and when to trust the results. Can they present this in oral and written forms? Can they explain why it needs to be presented in a certain way using relevant scientific language?</p>
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			<p>make predictions for new values, suggest improvements and raise further questions.</p> <p>Identify differences, similarities or changes related to simple scientific ideas and processes.</p> <p>Begin to use straightforward scientific evidence to answer any questions that they may not be able to find out through investigation.</p>		<p>Identify scientific evidence that has been used to support or refute ideas or arguments. Can they identify where they would locate this evidence?</p>	<p>Identify scientific evidence that has been used to support or refute ideas or arguments. Can they use their knowledge of primary and secondary sources to identify if the evidence is reliable and explain their reasons for this?</p>
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Plants

<p>Know the basic needs to help a plant grow.</p> <p>Make observations of plants and begin to explain why some things occur.</p> <p>Use senses to explore</p>	<p>Identify and name a variety of everyday garden plants, including deciduous and evergreen trees.</p> <p>Recognise the structure of a plant including leaves, petals, stem, roots and flowers. How</p>	<p>Observe and describe how seeds and bulbs grow into mature plants.</p> <p>Compare the different parts of a flowering plant and a tree.</p> <p>Find out and describe how plants need water,</p>	<p>Explore the requirements of plants for life and growth and how they vary from plant to plant.</p> <p>Investigate the way in which water is transported within</p>			
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<p>and talk about plants.</p> <p>Describe what a plant looks like. Identify, name and describe the basic structure of common plants, including garden plants and trees.</p>	<p>can they show an understanding of the parts of a plant?</p> <p>Identify and classify different flowers and begin to explain how these differ.</p> <p>Observe closely the growth of flowers and vegetables to identify the change over time.</p>	<p>light and a suitable temperature to grow and stay healthy.</p>	<p>plants.</p> <p>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p> <p>Identify and explain the functions of different parts of flowering plants.</p>			
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Living Things

<p>Begin to understand what a life cycle is. Look at the life cycles of different animals and how they differ from each other.</p> <p>Understand that we need to take care of living things.</p>		<p>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 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 microhabitats.</p> <p>Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain,</p>		<p>Recognise that living things can be grouped in a variety of ways. Begin to put vertebrate animals into groups such as fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects.</p> <p>Use simple classification keys to help group, identify and name a variety of living things in their local and wider environment.</p> <p>Know that environments can change and that this can sometimes pose dangers to living things.</p> <p>Explore how humans can have a positive and negative impact on our environment.</p>	<p>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 in their local environment. Children might try to grow new plants from different parts of the parent plant. For example: seeds, stem and root cuttings, tubers, bulbs.</p> <p>Children might observe changes in an animal over a period of time (for example, by hatching and rearing chicks) and comparing how different animals reproduce and grow.</p>	<p>Describe how living things (microorganisms, plants and animals) are classified into broad groups according to common observable characteristics and that this is also based on similarities and differences between them.</p> <p>Give reasons for classifying plants and animals based on specific characteristics.</p> <p>Know that micro-organisms, plants and animals can be subdivided.</p> <p>Research key scientists who are pioneers in classification.</p>
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		and identify and name different sources of food.			Find out about the work of naturalists and animal behaviourists, for example: David Attenborough and Jane Goodall.	
Animals, including humans						
<p>Identify, name, draw and label the basic parts of the human body. Know what each part of the body is used for linking to senses.</p> <p>Know what is needed to be clean and healthy.</p> <p>Name, describe and categorize a variety of common animals including fish, reptiles, birds, carnivores and herbivores.</p> <p>Know what some animals eat.</p> <p>Talk about where animals can be found.</p>	<p>Identify and name a variety of common animals such as mammals, reptiles, amphibians and birds.</p> <p>Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).</p> <p>Identify and name animals that are carnivores, herbivores and omnivores.</p> <p>Understand how to take care of animal habitats and the local environments.</p> <p>Identify, name, draw and label human body parts and say the function of each.</p>	<p>Notice that animals, including humans, have offspring which grow into adults.</p> <p>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) .</p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	<p>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>Explain why humans and some other animals have skeletons and muscles and what these roles are.</p>	<p>Describe the simple functions of the basic parts of the digestive system in humans, including mouth, tongue, teeth, oesophagus, stomach and small and large intestine</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>Compare carnivore, omnivore and herbivore teeth. What is different about them? Can you tell if something is a predator by the type of teeth they have?</p>	<p>Describe the changes as humans develop to old age.</p> <p>Research the gestation periods of other animals and compare them with humans. Children may find out and record the length and mass of a baby as it grows.</p>	<p>Identify and name the main parts of the human circulatory system. Describe the functions of the heart, blood vessels and blood.</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. How can we keep the body healthy? What might damage the body?</p> <p>Describe the ways in which nutrients and water are transported within animals, including humans. Does this differ depending on the living thing?</p>
Materials						
Children know about similarities and differences in relation to	Distinguish between an object and the material from which it is made.	Identify and compare the suitability of a variety of everyday materials, including wood, metal,			Compare and group together everyday materials on the basis of their properties,	

<p>materials.</p> <p>Recognise and identify some everyday materials.</p> <p>They know the properties of some materials and can suggest some of the purposes they are used for.</p>	<p>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</p> <p>Begin to 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 simple physical properties. Can they explain which material would be best for a given purpose?</p>	<p>plastic, glass, brick, rock, paper and cardboard for particular uses.</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>including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. It is sufficient for them to observe that some conductors will produce a brighter bulb in a circuit than others and that some materials will feel hotter than others when a heat source is placed against them.</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>Demonstrate that dissolving, mixing and changes of state are reversible changes</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>Explain that some changes result in the formation of new materials, and that this kind of change is not</p>	
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					usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	
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Seasonal Changes

Looks closely at similarities, differences, patterns and changes in relation to the four seasons and when different weather occurs.	Observe change across all four seasons. Observe and describe weather associated with the seasons and how day length varies.					
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Rocks

			<p>Explain that soils are made from rocks and organic matter.</p> <p>Describe simply how fossils are formed when things that have lived are trapped within rock.</p> <p>Examine and do practical experiments on various types of rocks in order to group them on the basis of their appearance and simple physical properties.</p>			
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Light

Observe and name some sources of everyday light, including electric lights, flames and the Sun.

Show that light is reflected from surfaces.

Explain that I need light in order to see things and that dark is the absence of light.

Explain that light from the sun can be dangerous and there are ways to protect eyes.

Show that there are patterns in the way that the size of shadows change

Show how shadows are formed when the light from a light source is blocked by a solid/opaque object.

Recognise that light appears to travel in straight lines.

Understand 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

Understand that light travels in straight lines and explain why shadows have the same shape as the objects that cast them.

Use further observation skills to extend their experience of light by looking at a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters.

Forces and Magnets

Talk about and describe movement. E.g squashing, rolling, pushing etc.

Compare how things move on different surfaces.

Understand that some forces need contact between

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

			<p>two objects but magnetic forces can act at a distance.</p> <p>Describe magnets as having two poles.</p> <p>Observe how magnets attract or repel each other and attract some materials and not others.</p> <p>Compare and group some materials on the basis of whether or not they are attracted to a magnet, and identify some magnetic materials.</p>		<p>resistance, water resistance and friction, that act between moving surfaces.</p> <p>Pupils should explore falling objects and raise questions about the effects of air resistance.</p> <p>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p> <p>Pupils might find out how scientists, for example, Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.</p>	
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States of Matter

			<p>Compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>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).</p> <p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>			
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Sound

<p>Observe and explore a variety of sounds.</p> <p>Explore how sounds can be changed.</p>				<p>Identify how sounds are made, associating some of them with something vibrating.</p> <p>Know that vibrations from sounds travel through a medium to the ear.</p> <p>Find patterns between the pitch of a sound and features of the object that produced it, and 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>		
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Electricity

				<p>Identify common appliances that run on electricity, considering whether they are mains or battery powered.</p> <p>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</p> <p>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.</p> <p>Recognise 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>Recognise some common conductors and insulators, and associate metals with being good conductors.</p>		<p>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit and understand what units these would be measured in.</p> <p>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.</p> <p>Fluently use recognised symbols when representing a simple circuit in a diagram.</p>
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Earth and Space

Begin to identify the four seasons and the changes that take place during these times.

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 and the apparent movement of the sun across the sky.

Pupils should learn that the Sun is a star at the centre of our solar system and that it has eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006)

Evolution and Inheritance

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. Can they explain why, using their knowledge of inherited and adaptive traits?

Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

Can they talk about the work of Charles Darwin, Mary Anning and Alfred Wallace (Pioneers in evolution)?