

'We will show everyone love and respect, living and learning with courage and joy.'



## Science Knowledge Progression

### EYFS

The EYFS framework is structured very differently to the national curriculum as it is organised across seven areas of learning rather than subject areas. Statements are from the 2020 Development Matters and are prerequisite skills for Science within the national curriculum. The table below outlines the most relevant statements taken from the Early Learning Goals in the EYFS statutory framework and the Development Matters age ranges for Three and Four-Year-Olds and Reception to match the programme of study for Science.

The most relevant statements for Science are taken from the following areas of learning:

- Communication and Language
- Personal, Social and Emotional Development
- Understanding the World

Science		
<b>Three and Four-Year-Olds</b>	Communication and Language	Understand 'why' questions, like: "Why do you think the caterpillar got so fat?"
	Personal, Social and Emotional Development	Make healthy choices about food, drink, activity and toothbrushing.
	Understanding the World	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. Begin to make sense of their own life-story and family's history. Explore how things work. Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things. Explore and talk about different forces they can feel. Talk about the differences between materials and changes they notice.

<b>Reception</b>	Communication and Language		<p>Learn new vocabulary.</p> <p>Ask questions to find out more and to check what has been said to them.</p> <p>Articulate their ideas and thoughts in well-formed sentences.</p> <p>Describe events in some detail.</p> <p>Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.</p> <p>Use new vocabulary in different contexts.</p>
	Personal, Social and Emotional Development		<p>Know and talk about the different factors that support their overall health and wellbeing:</p> <ul style="list-style-type: none"> <li>- regular physical activity</li> <li>- healthy eating</li> <li>- toothbrushing</li> <li>- sensible amounts of 'screen time'</li> <li>- having a good sleep routine</li> <li>- being a safe pedestrian</li> </ul>
	Understanding the World		<p>Explore the natural world around them.</p> <p>Describe what they see, hear and feel while they are outside.</p> <p>Recognise some environments that are different to the one in which they live.</p> <p>Understand the effect of changing seasons on the natural world around them.</p>
<b>ELG</b>	Communication and Language	Listening, Attention and Understanding	<p>Make comments about what they have heard and ask questions to clarify their understanding.</p>
	Personal, Social and Emotional Development	Managing Self	<p>Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.</p>
	Understanding the World	The Natural World	<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>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</p>

## Key Stage 1 and Key Stage 2

<b>Biology Plants</b>		
<b>KS1</b>	<b>Lower KS2</b>	<b>Upper KS2</b>
Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.	Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers	
Identify and describe the basic structure of a variety of common flowering plants, including trees.	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.	
Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	Investigate the way in which water is transported within plants.	
Observe and describe how seeds and bulbs grow into mature plants.	Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	Describe the life process of reproduction in some plants and animals, including humans.
<b>Biology Living Things and their Habitats</b>		
<b>KS1</b>	<b>Lower KS2</b>	<b>Upper KS2</b>
Explore and compare the differences between things that are living, dead, and things that have never been alive.	Recognise that living things can be grouped in a variety of ways.  Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.	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.
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.	Recognise that environments can change and that this can sometimes pose dangers to living things.	Give reasons for classifying plants and animals based on special characteristics.
Identify and name a variety of plants and animals in their habitats, including micro-habitats.		Describe the life process of reproduction in some plants and animals.
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.	Construct and interpret a variety of food chains, identifying producers, predators and prey.	

Biology Animals, including humans		
KS1	Lower KS2	Upper KS2
Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.	Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	
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.	Describe the simple functions of the basic parts of the digestive system in humans.	Describe the ways in which nutrients and water are transported within animals, including humans.
Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).	Identify that animals, including humans, 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.	
	Describe the simple functions of the basic parts of the digestive system in humans.	Identify and name the main parts of the circulatory system, and explain the functions of the heart, blood vessels and blood.
	Identify the different types of teeth in humans and their simple functions.	
Notice that animals, including humans, including humans, have offspring which grow into adults.		Describe the life processes of reproduction in some animals, including humans. Describe the changes as humans develop from birth to old age. Describe the differences in the life cycles of mammal, amphibian, insect and bird.
Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.		Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.
Identify and name a variety of common animals that are carnivores, herbivores and omnivores.		

<b>Biology Evolution &amp; Inheritance</b>		
<b>KS1</b>	<b>Lower KS2</b>	<b>Upper KS2</b>
		Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.
		Identify how animals, including humans and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
	Describe in simple terms how fossils are formed when things that have lived are trapped within rock.	Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.

<b>Chemistry Materials</b>		
<b>KS1</b>	<b>Lower KS2</b>	<b>Upper KS2</b>
Distinguish between an object and the material from which it is made.	Compare and group materials together, according to whether they are solids, liquids or gases.	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.
Describe the simple physical properties of a variety of everyday materials  Identify and name a variety of everyday materials, including wood, metal, plastic, glass, metal, water and rock.	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>Compare and group together a variety of everyday materials on the basis of their simple physical properties.</p> <p>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>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p>
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<b>Chemistry      Rocks</b>		
<b>KS1</b>	<b>Lower KS2</b>	<b>Upper KS2</b>
	Recognise that soils are made from rocks and organic matter.	
	Describe in simple terms how fossils are formed when things that have lived are trapped within rock.	
	Compare and group together different kinds of rocks on the basis of their simple physical properties.	

<b>Physics      Light</b>		
<b>KS1</b>	<b>Lower KS2</b>	<b>Upper KS2</b>
	Notice that light is reflected from surfaces.	Recognise that light appears to travel in straight lines.
	Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.	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.
	Recognise that they need light in order to see things and that dark is the absence of light.	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.
	Recognise that shadows are formed when the light from a light source is blocked by a solid object Find patterns that determine the size of shadows.	Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

Physics Sound		
KS1	Lower KS2	Upper KS2
	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 features of the object that produced it.	
	Find patterns between the volume of a sound and the strength of the vibrations that produced it.	
	Recognise that sounds get fainter as the distance from the sound source increases.	

Physics Forces and Magnets		
KS1	Lower KS2	Upper KS2
<b>Materials:</b> Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	Notice that some forces need contact between two objects and some forces act at a distance	Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.
	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.	Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.
	Observe how magnets attract or repel each other and attract some materials and not others.	Understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs.
	Describe magnets as having two poles.	Recognise that some mechanisms, including gears, pulleys, levers and springs, allow a smaller force to have a greater effect.
	Predict whether two magnets will attract or repel each other, depending on which poles are facing.	
	Compare how things move on different surfaces.	

Physics Earth and Space		
KS1	Lower KS2	Upper KS2
<b>Seasonal changes:</b> Observe changes across the four seasons.		Describe the movement of the Earth and other planets relative to the Sun in the solar system.
Observe and describe weather associated with the seasons and how day length varies.		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.

Physics Electricity		
KS1	Lower KS2	Upper KS2
	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.	Use recognised symbols when representing a simple circuit in a diagram.
	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.	Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.
	Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series 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.
	Recognise some common conductors and insulators, and associate metals with being good conductors.	