

Progression in Science

The programmes of study, within the National Curriculum, describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. Insecure, superficial understanding will not allow genuine progression: pupils may struggle at key points of transition, build up serious misconceptions, and/or have significant difficulties in understanding higher-order content.

Sequential learning in science is vital to ensure progression in knowledge, understanding and challenge.

The document below shows how the threads of learning for a particular subject strand are interwoven.

It is essential that everyone should know where their teaching is coming from and where it will continue to be built upon.

Before beginning each unit please consider the following questions:

How does the learning build on what has come before?

How does the prior content prepare pupils for their current learning?

How does this teaching lay the foundations for what will come?

Please use this document in conjunction with the Science Vocabulary Coverage document which shows the progression of skill and content vocabulary.

Plants – What is taught & how it progresses

		FS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Biology	Plants	Children know about similarities and differences in relation to living things. They make observations of plants and explain why some things occur, and talk about changes.	<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. 	<ul style="list-style-type: none"> ▪ identify and describe the functions of different parts of flowering plants: roots, stem/trunk, 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. 			

Living things and their habitats – What is taught & how it progresses

		FS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Biology	Living things and their habitats	<p>Children know about similarities and differences in relation to places and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and explain why some things occur, and talk about changes.</p>		<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, 		<ul style="list-style-type: none"> ▪ 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 ▪ recognise that environments can change and that this can sometimes pose dangers to living things. 	<ul style="list-style-type: none"> ▪ 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. 	<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.

				<p>including micro-habitats</p> <ul style="list-style-type: none">▪ 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.				
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Materials and Rocks – What is taught & how it progresses

		FS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Materials and Rocks	Children know about similarities and differences in relation to objects and materials.	<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 on the basis of their simple physical properties. 	<ul style="list-style-type: none"> ▪ identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses ▪ 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"> ▪ 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. 	<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 on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets ▪ know 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 filtering, sieving 	

							<p>and evaporating</p> <ul style="list-style-type: none">▪ 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 changes▪ 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.	
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Seasonal Change, Light and Earth and Space– What is taught & how it progresses

		FS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Physics	Seasonal Change, Light and Earth and Space	<p>Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.</p>	<ul style="list-style-type: none"> ▪ observe changes across the four seasons ▪ observe and describe weather associated with the seasons and how day length varies. 		<ul style="list-style-type: none"> ▪ recognise that they need light in order to see things and that dark is the absence of light ▪ notice that light is reflected from surfaces ▪ recognise that light from the sun can be dangerous and that there are ways to protect their eyes ▪ recognise that shadows are formed when the light from a light source is blocked by an opaque object ▪ find patterns in the way that the size of shadows change. 		<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 and the apparent movement of the sun across the sky. 	<ul style="list-style-type: none"> ☑ recognise 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.

Forces and Magnets – What is taught & how it progresses

		FS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Forces and Magnets	Children know about similarities and differences in relation to objects and materials. Explain why some things occur, and talk about changes.			<ul style="list-style-type: none"> ▪ compare how things move on different surfaces ▪ 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 		<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 ▪ recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. 	

					<ul style="list-style-type: none">▪ describe magnets as having two poles▪ predict whether two magnets will attract or repel each other, depending on which poles are facing.			
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Electricity – What is taught & how it progresses

		FS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	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 		<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.

						<p>associate this with whether or not a lamp lights in a simple series circuit</p> <ul style="list-style-type: none">▪ recognise some common conductors and insulators, and associate metals with being good conductors.		
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