

Progression of Skills in Science

Plants								
Preschool 1	Preschool 2	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Explore natural materials, indoors and outside.	<p>Use all their senses in hands-on exploration of natural materials.</p> <p>Explore collections of materials with similar and/or different properties.</p> <p>Plant seeds and care for growing plants.</p> <p>Understand the key features of the life cycle of a plant and an animal.</p> <p>Begin to understand the need to</p>	<p>Draw information from a simple map. (Reception – Living things and their habitats)</p> <p>Explore the natural world around them. (Reception – Living things and their habitats)</p> <p>Describe what they see, hear and feel whilst outside. (Reception – Living things and their habitats)</p> <p>Recognise some environments</p>	<p>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p> <p>Identify and describe the basic structure of a variety of common flowering plants, including trees.</p>	<p>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>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</p> <p>Investigate the way in which water is transported within plants</p>			(see Evolution and inheritance)

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	respect and care for the natural environment and all living things.	that are different to the one in which they live. (Reception – Living things and their habitats) Understand the effect of changing seasons on the natural world around them. (Reception – Seasonal changes)			Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.			
Animals including humans								
Preschool 1	Preschool 2	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Explore natural materials, indoors and outside. Make connections between the features of their family	Use all their senses in hands-on exploration of natural materials. Begin to make sense of their own life-story and family's history.	Talk about members of their immediate family and community. Name and describe people who are familiar to them.	Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals identify and name a variety of common animals that	Notice that animals, including humans, have offspring which grow into adults Find out about and describe the basic needs of	Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get	Describe the simple functions of the basic parts of the digestive system in humans identify the different types of teeth in humans and	Describe the changes as humans develop to old age.	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood

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<p>and other families.</p> <p>Notice differences between people.</p>	<p>Understand the key features of the life cycle of a plant and an animal.</p> <p>Begin to understand the need to respect and care for the natural environment and all living things</p>	<p>Recognise some environments that are different to the one in which they live</p>	<p>are 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>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>nutrition from what they eat</p> <p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p>	<p>their simple functions</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 their bodies function</p> <p>Describe the ways in which nutrients and water are transported within animals, including humans.</p> <p>(see also Evolution and inheritance)</p>
Living things and their habitats								
Preschool 1	Preschool 2	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

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<p>Explore natural materials, indoors and outside</p>	<p>Use all their senses in hands-on exploration of natural materials.</p> <p>Explore collections of materials with similar and/or different properties.</p> <p>Begin to understand the need to respect and care for the natural environment and all living things.</p>	<p>Draw information from a simple map.</p> <p>Explore the natural world around them.</p> <p>Describe what they see, hear and feel whilst outside.</p> <p>Recognise some environments that are different to the one in which they live.</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,</p>		<p>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>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.</p>	<p>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</p> <p>Give reasons for classifying plants and animals based on specific characteristics. (see also Evolution and inheritance)</p>
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				<p>including micro- habitats</p> <p>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.</p>				
Seasonal Changes								
Preschool 1	Preschool 2	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<p>Understand the key features of the life cycle of a plant and an animal. (Preschool 2 – Plants & Animals, excluding humans)</p>	<p>Explore the natural world around them.</p> <p>Describe what they see, hear and feel whilst outside.</p> <p>Understand the effect of changing</p>	<p>Observe changes across the four seasons</p> <p>Observe and describe weather associated with the seasons and</p>					

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		seasons on the natural world around them.	how day length varies					
Everyday materials (Y1)/ Uses of everyday materials (Y2)/ Properties and changes of materials (Y5)								
Preschool 1	Preschool 2	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Explore materials with different properties.</p> <p>Explore natural materials, indoors and outside</p>	<p>Use all their senses in hands-on exploration of natural materials.</p> <p>Explore collections of materials with similar and/or different properties.</p> <p>Talk about the differences between materials and changes they notice</p>	<p>Know about similarities and differences between different materials</p> <p>Make observations and talk about why some things occur, and talk about changes</p> <p>Know the properties of some materials and suggest some of the</p>	<p>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</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>Find out how the shapes of solid objects made from some materials can be changed by</p>			<p>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</p> <p>Know that some materials will dissolve in</p>	

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		<p>purposes they may be used for.</p>	<p>everyday materials Compare and group together a variety of everyday materials on the basis of their simple physical properties.</p>	<p>squashing, bending, twisting and stretching.</p>			<p>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 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</p>	
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							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.	
Rocks								
Preschool 1	Preschool 2	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6



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<p>Explore materials with different properties.</p> <p>Explore natural materials, indoors and outside</p>	<p>Use all their senses in hands-on exploration of natural materials. (Preschool 2 – Living things and their habitats)</p> <p>Explore collections of materials with similar and/or different properties. (Preschool 2 – Living things and their habitats)</p>	<p>Explore the natural world around them. (Reception – Living things and their habitats)</p> <p>Describe what they see, hear and feel whilst outside. (Reception – Living things and their habitats)</p>			<p>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>(see Evolution and inheritance)</p>
Light								
Preschool 1	Preschool 2	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

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<p>Repeat actions that have an effect.</p>	<p>Explore how things work. Talk about the differences in materials and changes they notice</p>	<p>Describe what they see, hear and feel whilst outside.</p>			<p>Recognise that they 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 light from the sun can be dangerous and that there are ways to protect their eyes</p> <p>Recognise that shadows are formed when the light from a light source is blocked by a solid object</p> <p>Find patterns in the way that the size of</p>			<p>Recognise that light appears to travel in straight lines</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</p> <p>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</p> <p>Use the idea that light travels in straight lines to explain why</p>
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					shadows change			shadows have the same shape as the objects that cast them.
Forces and magnets (Y3)/ Forces (Y5)								
Preschool 1	Preschool 2	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Repeat actions that have an effect.	<p>Explore how things work.</p> <p>Explore and talk about different forces they can feel.</p> <p>Talk about the differences between materials and changes they notice</p>	<p>Develop ideas of grouping, sequences, cause and effect- in relation to movement i.e. toys, cars, rough surfaces</p> <p>Familiar with the basic scientific concepts of floating, sinking and experimentation</p>			<p>Compare how things move on different surfaces</p> <p>Notice that some forces need contact between two objects, but magnetic forces can act at a distance</p> <p>Observe how magnets attract or repel each other and attract some materials and not others</p>		<p>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>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</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 and gears, allow a smaller force to have a greater effect.</p>	
States of matter								
Preschool 1	Preschool 2	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6



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						<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 ($^{\circ}\text{C}$)</p> <p>Identify the part played by evaporation and condensation in the water cycle and associate the</p>		
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						rate of evaporation with temperature		
Sound								
Preschool 1	Preschool 2	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Repeat actions that have an effect. Describe what they see, hear and feel whilst outside.	Explore how things work.	Describe what they see, hear and feel whilst outside.				<p>Identify how sounds are made, associating some of them with something vibrating</p> <p>Recognise 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</p>		



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						<p>object that produced it</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 the distance from the sound source increases</p>		
Electricity								
Preschool 1	Preschool 2	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Repeat actions that have an effect.	Explore how things work.					<p>Identify common appliances that run on electricity</p> <p>Construct a simple series electrical circuit,</p>		Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit

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						<p>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</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>Use recognised symbols when representing a simple circuit in a diagram.</p>
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						conductors and insulators, and associate metals with being good conductors.		
Earth and Space								
Preschool 1	Preschool 2	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Explore and respond to different natural phenomena in their setting and on trips.		<p>Explore the natural world around them.</p> <p>Describe what they see, hear and feel whilst outside.</p>					<p>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>	



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								Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.
Evolution and Inheritance (note for Year 6 – see Plants; Animals, including humans; Living things and their habitats; and Rocks for how some of these aspects have been covered lower down the school)								
		Early Years	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
								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

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								<p>offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</p>
Working Scientifically- Ongoing throughout the year								
		Early Years	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Playing and exploring – children investigate and experience things, and ‘have a go’	Observing: Sensory observation of animals and plants; simple description of the world around them.	Know that we can ask questions about the world and that when we observe the world to answer these	Know that we can ask questions about the world and that when we observe the world to answer these	Know that we can ask questions and answer them by setting up scientific enquiries	Know that we can ask questions and answer them by setting up scientific enquiries	Know how to choose appropriate variables to test a hypothesis (e.g. plant height as a dependent	Know how to choose appropriate variables to test a hypothesis (e.g. plant height as a dependent

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<p>Active learning – children concentrate and keep on trying if they encounter difficulties, and enjoy achievements</p> <p>Creating and thinking critically – children have and develop their own ideas, make links between ideas, and develop strategies for doing things</p>	<p>Researching: Looking at objects and pictures and discussing what they can see.</p> <p>Questioning: Ask questions about aspects of their familiar world</p> <p>Planning: Generating a variety of ideas for testing (not always realistic or appropriate)</p> <p>Predicting: Simple predictions- what might happen?</p> <p>Measuring: Measure by direct comparison;</p>	<p>questions, this is science</p> <p>Know that we can use magnifying glasses to observe objects closely</p> <p>Know that we can test our questions to see if they are true</p> <p>Know that objects can be identified or sorted into groups based on their observable properties</p> <p>Know that we can write down numbers and words or draw pictures to record what we find</p>	<p>questions, this is science</p> <p>Know that we can use magnifying glasses to observe objects closely</p> <p>Know that we can test our questions to see if they are true</p> <p>Know that objects can be identified or sorted into groups based on their observable properties</p> <p>Know that we can write down numbers and words or draw pictures to record what we find</p>	<p>Know how to make relevant predictions that will be tested in a scientific enquiry</p> <p>Know that in a fair test one thing is altered (independent variable) and one thing that may change as a result is measured (dependent variable) while all other conditions are kept the same</p> <p>Know how to use a range of equipment to measure accurately, including thermometers, data loggers, rulers and stopwatches</p>	<p>Know how to make relevant predictions that will be tested in a scientific enquiry</p> <p>Know that in a fair test one thing is altered (independent variable) and one thing that may change as a result is measured (dependent variable) while all other conditions are kept the same</p> <p>Know how to use a range of equipment to measure accurately, including thermometers, data loggers, rulers and stopwatches</p>	<p>variable when measuring effect of light on plant growth)</p> <p>Know how to identify conditions that were imperfectly controlled and can explain how these might affect results</p> <p>Know how to accurately use further measuring devices, including digital and analogue scales, measuring cylinders and beakers, recognizing the relative accuracy of each device</p>	<p>variable when measuring effect of light on plant growth)</p> <p>Know how to identify conditions that were imperfectly controlled and can explain how these might affect results</p> <p>Know how to accurately use further measuring devices, including digital and analogue scales, measuring cylinders and beakers, recognizing the relative accuracy of each device</p>
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		<p>non-standard units of measurement; simple comparative vocabulary i.e. bigger, smaller.</p> <p>Reporting: Talking about objects and events; simple recording-drawing.</p> <p>Interpreting: Noticing 'which worked best' - simple comparative statements; provide simple answers to initial questions.</p>			<p>Know how to draw bar charts; how to label a diagram using lines to connect information to the diagram; how to use a coloured key how to draw a neat table; how to draw a classification key; how to show the relationship between an independent variable in a two-way table; and how to label specific results in a two-way table</p> <p>Know – with structured guidance - how to write a simple</p>	<p>Know how to draw bar charts; how to label a diagram using lines to connect information to the diagram; how to use a coloured key how to draw a neat table; how to draw a classification key; how to show the relationship between an independent variable in a two-way table; and how to label specific results in a two-way table</p> <p>Know how – with structured guidance - to write a simple</p>	<p>Know how and when to repeat measurements , how to find an average of a set of measurements and how to recognize and remove outliers from a set of data, justifying the removal as a potential mis-measurement</p> <p>Know how to independently write a simple scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of</p>	<p>Know how and when to repeat measurements , how to find an average of a set of measurements and how to recognize and remove outliers from a set of data, justifying the removal as a potential mis-measurement</p> <p>Know how to independently write a simple scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion</p>
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					<p>scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion</p> <p>Know how to precis a scientific enquiry write-up into a brief oral discussion of what was found in a scientific enquiry</p> <p>Know that scientific enquiries can suggest relationships, but that they do <u>not</u> prove whether a</p>	<p>scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion</p> <p>Know how to precis a scientific enquiry write-up into a brief oral discussion of what was found in a scientific enquiry</p> <p>Know that scientific enquiries can suggest relationships, but that they do <u>not</u> prove whether a</p>	<p>results and a conclusion</p> <p>Know how to present brief oral findings from an enquiry, speaking clearly and with confidence and using notes where necessary</p> <p>Know examples of instances where scientific evidence has been used to support or refute ideas or arguments (e.g. fossil records as evidence of natural selection)</p>	<p>Know how to present brief oral findings from an enquiry, speaking clearly and with confidence and using notes where necessary</p> <p>Know examples of instances where scientific evidence has been used to support or refute ideas or arguments (e.g. fossil records as evidence of natural selection)</p>
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					prediction is true	prediction is true		
					Know that scientific enquiries are limited by the accuracy of the measurements (and measuring equipment) and by the extent to which conditions can vary even, and that repeating enquiries, measurements and taking measures to keep conditions as consistent as possible can improve an enquiry	Know that scientific enquiries are limited by the accuracy of the measurements (and measuring equipment) and by the extent to which conditions can vary even, and that repeating enquiries, measurements and taking measures to keep conditions as consistent as possible can improve an enquiry		
					Know that the conclusions of scientific	Know that the conclusions of scientific		

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					<p>enquiries can lead to further questions, where results can be clarified or extended to different contexts (e.g. effect of changing sunlight on a plant – does this work with other plants / different types of light / etc)</p> <p>Know that they can draw conclusions from the findings of other scientists</p> <p>Know that a theory is an explanation of observations that has been tested to some extent and that a</p>	<p>enquiries can lead to further questions, where results can be clarified or extended to different contexts (e.g. effect of changing sunlight on a plant – does this work with other plants / different types of light / etc)</p> <p>Know that they can draw conclusions from the findings of other scientists</p> <p>Know that a theory is an explanation of observations that has been tested to some extent and that a</p>		
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					hypothesis is an explanation that has not yet been tested, but that can be tested through a scientific enquiry	hypothesis is an explanation that has not yet been tested, but that can be tested through a scientific enquiry		
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