

# Science Progression Document



GILES BROOK SCHOOL

Early Years		
<b>Nursery</b>	Communication and Language	<ul style="list-style-type: none"> <li>• Understand 'why' questions, like: "Why do you think the caterpillar got so fat?"</li> </ul>
	Physical Development	<ul style="list-style-type: none"> <li>• Make healthy choices about food, drink, activity and toothbrushing.</li> </ul>
	Understanding the World	<ul style="list-style-type: none"> <li>• Use all their senses in hands-on exploration of natural materials.</li> <li>• Explore collections of materials with similar and/or different properties.</li> <li>• Talk about what they see, using a wide vocabulary.</li> <li>• Begin to make sense of their own life-story and family's history.</li> <li>• Explore how things work.</li> <li>• Plant seeds and care for growing plants.</li> <li>• Understand the key features of the life cycle of a plant and an animal.</li> <li>• Begin to understand the need to respect and care for the natural environment and all living things.</li> <li>• Explore and talk about different forces they can feel.</li> <li>• Talk about the differences between materials and changes they notice.</li> </ul>
<b>Reception</b>	Communication and Language	<ul style="list-style-type: none"> <li>• Learn new vocabulary.</li> <li>• Ask questions to find out more and to check what has been said to them.</li> <li>• Articulate their ideas and thoughts in well-formed sentences.</li> <li>• Describe events in some detail.</li> <li>• Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen.</li> <li>• Use new vocabulary in different contexts.</li> </ul>
	Physical Development	<ul style="list-style-type: none"> <li>• Know and talk about the different factors that support their overall health and wellbeing:               <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> </li> </ul>
	Understanding the World	<ul style="list-style-type: none"> <li>• Explore the natural world around them.</li> <li>• Describe what they see, hear and feel while they are outside.</li> </ul>

ELG			<ul style="list-style-type: none"> <li>• Recognise some environments that are different to the one in which they live.</li> <li>• Understand the effect of changing seasons on the natural world around them.</li> </ul>
	Communication and Language	Listening, Attention and Understanding	<ul style="list-style-type: none"> <li>• Make comments about what they have heard and ask questions to clarify their understanding.</li> </ul>
	Personal, Social and Emotional Development	Managing Self	<ul style="list-style-type: none"> <li>• Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.</li> </ul>
	Understanding the World	The Natural World	<ul style="list-style-type: none"> <li>• Explore the natural world around them, making observations and drawing pictures of animals and plants.</li> <li>• 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.</li> <li>• Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</li> </ul>

## Working Scientifically

### 5 Types of Enquiry:

Observing over time

Noticing patterns

Grouping and classifying

Comparative and fair testing

Research

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Asking Questions	<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• ask simple questions and recognise that they can be answered in different ways</li> </ul> <p>experience different types of scientific enquiries, including practical activities, and begin to recognise ways in which they might answer scientific questions</p>		<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• ask relevant questions and use different types of scientific enquiries to answer them</li> <li>• set up simple practical enquiries, comparative and fair tests</li> </ul>		<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> </ul>	

Measuring & recording	<b>Pupils should be taught to:</b>		<b>Pupils should be taught to:</b>	<b>Pupils should be taught to:</b>
	<ul style="list-style-type: none"> <li>observe closely, using simple equipment (for example, hand lenses, egg timers)</li> </ul> <p>compare and decide how to sort and group things</p> <ul style="list-style-type: none"> <li>perform simple tests</li> <li>gather and record data to help in answering questions</li> </ul>		<ul style="list-style-type: none"> <li>make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>gather, record, classify and present data in a variety of ways to help in answering questions</li> </ul>	<ul style="list-style-type: none"> <li>take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs (Y6), bar and line graphs</li> </ul>
	<b>Pupils should be taught to:</b>		<b>Pupils should be taught to:</b>	<b>Pupils should be taught to:</b>
Concluding	<ul style="list-style-type: none"> <li>identify and classify</li> <li>use their observations and ideas to suggest answers to questions</li> </ul> <p>observe changes over time and begin to notice patterns and relationships.</p>		<ul style="list-style-type: none"> <li>identify differences, similarities or changes related to simple scientific ideas and processes</li> <li>report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>use straightforward scientific evidence to answer questions or to support their findings</li> </ul>	<ul style="list-style-type: none"> <li>identify scientific evidence that has been used to support or refute ideas or arguments</li> <li>report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</li> </ul>
	<b>Pupils should be taught to:</b>		<b>Pupils should be taught to:</b>	<b>Pupils should be taught to:</b>
Evaluating			<ul style="list-style-type: none"> <li>use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> </ul>	<ul style="list-style-type: none"> <li>use test results to make predictions to set up further comparative and fair tests</li> </ul>
	<b>Pupils should be taught to:</b>		<b>Pupils should be taught to:</b>	<b>Pupils should be taught to:</b>

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Plants</b>	<b>Pupils should be taught to:</b>  Identify and name a variety of common wild and garden plants, including	<b>Pupils should be taught to:</b>  <ul style="list-style-type: none"> <li>observe and describe how seeds and bulbs grow into mature plants and be introduced to the requirements of</li> </ul>	<b>Pupils should be taught to:</b>  <ul style="list-style-type: none"> <li>identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves for</li> </ul>		<b>Pupils should be taught to:</b>  Describe the life process of reproduction in some plants (and animals, including humans)	

	<p>deciduous and evergreen trees</p> <p>Identify and describe the basic structure of a variety of common flowering plants including trees (root, stem, trunk, leaf, flower, blossom, fruit, bulb, seed, bud, petal, branch)</p> <p>Observe the growth of flowers and vegetables they have planted</p> <p>Compare and contrast what they have found out</p>	<p>plants for germination, growth and survival.</p> <ul style="list-style-type: none"> <li>• find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</li> </ul>	<p>nutrition and flowers for reproduction</p> <ul style="list-style-type: none"> <li>• 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</li> <li>• investigate the way in which water is transported within plants</li> <li>• explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</li> </ul>			
<p><b>Animals Including Humans</b></p>	<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</li> </ul> <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</p>	<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</li> <li>• describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</li> </ul> <p>Group and classify a variety of common animals- Recap</p>	<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• 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</li> <li>• identify that humans and some other animals have skeletons and muscles for support, protection and movement</li> </ul>	<p><b>Pupils should be taught to:</b></p> <p>Describe the simple functions of the basic parts of the digestive system in humans</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey</p> <p>Identify the different types of teeth in humans and their simple functions</p>	<p><b>Pupils should be taught to:</b></p> <p>Describe the life processes of reproduction in some (plants) and Animals, including humans.</p> <p>Describe the changes as humans develop from birth to old age and how plants and animals resemble their parents in many features.</p> <p>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird and those common features (birth, growth,</p>	<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood (including pulse and clotting)</li> <li>• recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</li> <li>• describe the ways in which nutrients and water are transported within animals, including humans</li> </ul>

	<p>parts of the human body(including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth) and say which part of the body is associated with each sense</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores (Y1)</p>	<p>carnivores, omnivores and herbivores. Classify animals based on- (fish, amphibians, reptiles, birds and mammals, including pets)</p> <ul style="list-style-type: none"> <li>notice that animals, including humans, have offspring which grow into adults e.g. egg, chick, chicken; egg, caterpillar, pupa, butterfly; spawn, tadpole, frog; lamb, sheep, baby, toddler, child, teenager, adult. (Y2)</li> </ul>			<p>development, reproduction, death)</p>	
<p>Living Things and their Habitats</p>		<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>explore and compare the difference between things that are living, dead, and things that have never been alive</li> <li>identify that most living things live in habitats to which they are suited and describe how different habitats provide the basic needs of different kinds of animals and plants, and how they depend on each other</li> <li>identify and name a variety of plants and animals in their habitats, including micro-habitats</li> </ul>		<p><b>Pupils should be taught to:</b></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><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</li> <li>describe the life process of reproduction in some plants and animals</li> </ul>	<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals</li> <li>give reasons for classifying plants and animals based on specific characteristics</li> </ul>

		<p>compare animals in familiar habitats with animals found in less familiar habitats, for example, on the seashore, in woodland, in the ocean</p> <ul style="list-style-type: none"> <li>describe how animals obtain their food from plants and other animals, using the idea of a simple food chain (eg, grass, cow, human) and identify and name different sources of food</li> </ul>				
Light			<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>recognise that they need light in order to see things and that the dark is the absence of light</li> <li>notice that light is reflected from surfaces</li> <li>recognise that light from the sun can be dangerous and that there are ways to protect their eyes</li> <li>recognise that shadows are formed when the light from a light source is blocked by a solid object</li> <li>find patterns in the way that the size of shadows changes</li> </ul>			<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>recognise that light appears to travel in straight lines</li> <li>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</li> <li>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</li> <li>use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them (predict the size of shadows)</li> </ul>

<b>Forces and Magnets</b>			<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• compare how things move on different surfaces</li> <li>• notice that some forces need contact between two objects, but magnetic forces can act at a distance</li> <li>• observe how magnets attract or repel each other and attract some materials and not others</li> <li>• compare and group together a variety of everyday materials on the basis on whether they are attracted to a magnet, and identify some magnetic materials</li> <li>• describe magnets as having two poles</li> <li>• predict whether two magnets will attract or repel each other, depending on which poles are facing</li> </ul>		<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>• identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> <li>• recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect</li> </ul>	<p>when the position of the light source changes</p>
<b>Seasonal Change</b>	<p><b>Pupils should be taught to:</b></p> <p>Observe changes across the four seasons</p>					

	Observe and describe weather associated with the seasons and how day length varies					
<b>Materials</b>	<p><b>Everyday Materials Pupils should be taught to:</b></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, rock, brick, paper, fabric, elastic, foil.</p> <p>Describe the simple physical properties of a variety of everyday materials such as:  hard/soft;  stretchy/stiff;  shiny/dull;  rough/smooth;  bendy/not bendy;  waterproof/not waterproof;  absorbent/not absorbent;  opaque/transparent.</p> <p>Compare and group together a variety of everyday materials on the basis of their simple physical properties</p>	<p><b>Uses of Everyday Materials Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses (metal can be used for coins, cans, cars and table legs; wood can be used for matches, floors, and telegraph poles) or different materials are used for the same thing (spoons can be made from plastic, wood, metal, but not normally from glass)</li> <li>• find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</li> </ul>	<p><b>Rocks Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</li> <li>• describe in simple terms how fossils are formed when things that have lived are trapped within rock</li> <li>• recognise that soils are made from rocks and organic matter</li> </ul>		<p><b>Properties and Changes of Materials Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</li> <li>• use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</li> <li>• give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</li> <li>• demonstrate that dissolving, mixing and changes of state are reversible changes</li> <li>• 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</li> </ul>	



					<ul style="list-style-type: none"> <li>• 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</li> </ul>	
Evolution and Inheritance						<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</li> <li>• recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</li> <li>• identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</li> <li>• Recognise how and why the human skeleton has changed over time (since separation from primates)</li> </ul>
States of Matter				<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• compare and group materials together, according to whether</li> </ul>		

				<p>they are solids, liquids or gases</p> <ul style="list-style-type: none"> <li>• 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)</li> <li>• identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</li> </ul>		
<p>Earth and Space</p>				<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• describe the movement of the Earth, and other planets, relative to the Sun</li> <li>• describe the movement of the Moon relative to the Earth</li> <li>• describe the Sun, Earth and Moon as approximately spherical bodies</li> <li>• use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</li> </ul>		

<p>Sound</p>					<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• identify how sounds are made, associating some of them with something vibrating</li> <li>• recognise that vibrations from sounds travel through a medium to the ear</li> <li>• find patterns between the pitch of a sound and features of the object that produced it</li> <li>• find patterns between the volume of a sound and the strength of the vibrations that produced it</li> <li>• recognise that sounds get fainter as the distance from the sound source increases</li> </ul>	
<p>Electricity</p>				<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• identify common appliances that run on electricity</li> <li>• construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</li> <li>• identify whether or not a lamp will light in a simple series circuit, based on whether or not</li> </ul>		<p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</li> <li>• 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</li> </ul>

				<p>the lamp is part of a complete loop with a battery</p> <ul style="list-style-type: none"><li>• recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</li><li>• recognise some common conductors and insulators, and associate metals with being good conductors</li></ul>		<ul style="list-style-type: none"><li>• use recognised symbols when representing a simple circuit in a diagram</li></ul>
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