

# Science Progression of Substantive Knowledge

Topic	EYFS – Knowledge and Understanding of the World	KS1 Cycle A Year 1 Obj.	KS1 Cycle B Year 2 Obj.	LKS2 Cycle A Year 3 Obj.	LKS2 Cycle B Year 4 Obj.	UKS2 Cycle A Year 6 Obj.	UKS2 Cycle B Year 5 Obj.
<b>Animals Including Humans</b>	<ul style="list-style-type: none"> <li>• <u>Little Saints</u></li> <li>• Make connections between the features of their family and other families.</li> <li>• Life cycles - caterpillar into a butterfly</li> <li>• Types of food – food tasting</li> <li>• Identify and name animals from books</li> <li>• <u>Nursery</u></li> <li>• Use all their senses in hands-on exploration of natural resources</li> <li>• Understand the key features of the life cycle of a plant and an animal – eggs hatching into chicks</li> <li>• Talk about what they see using a wide vocabulary</li> <li>• Daily tooth brushing and discussion about why.</li> <li>• Daily talk about healthy eating in snack time</li> <li>• Talk about exercise and keeping our minds and body healthy.</li> <li>• <u>Reception</u></li> <li>• Describe what they see, hear and feel whilst outside</li> <li>• Talk about members of their immediate family and community.</li> <li>• Name and describe people who are familiar to them.</li> <li>• Recognise some similarities and differences between life in this country and life in other countries. – for animals</li> <li>• Draw and label animals</li> </ul>	<ul style="list-style-type: none"> <li>• I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</li> <li>• I can describe and compare the structure of a variety of common animals</li> <li>• I can identify and name a variety of common animals that are carnivores, herbivores and omnivores</li> <li>• I can identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</li> </ul>	<ul style="list-style-type: none"> <li>• I can notice that animals, including humans, have offspring which grow into adults</li> <li>• I can find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</li> <li>• I can describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</li> </ul>	<ul style="list-style-type: none"> <li>• I can identify that humans and some other animals have skeletons and muscles for support, protection and movement.</li> <li>• I can 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> </ul>	<ul style="list-style-type: none"> <li>• I can describe the simple functions of the basic parts of the digestive system in humans</li> <li>• I can identify the different types of teeth in humans and their simple functions</li> <li>• I can construct and interpret a variety of food chains, identifying producers, predators and prey.</li> </ul>	<ul style="list-style-type: none"> <li>• I can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</li> <li>• I can describe the ways in which nutrients and water are transported within animals, including humans.</li> <li>• I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</li> </ul>	<ul style="list-style-type: none"> <li>• I can describe the changes as humans develop to old age.</li> </ul>
<b>Living Things and Habitats</b>	<ul style="list-style-type: none"> <li>• <u>Little Saints</u></li> <li>• Explore and respond to different natural phenomena in their setting - go in the woods on a bear hunt and looking for owls. Go for a walk to the post office – what did you see? What could you bring back that you found?</li> </ul>		<ul style="list-style-type: none"> <li>• I can explore and compare the differences between things that are living, dead, and things that have never been alive</li> <li>• I can identify that most living things</li> </ul>		<ul style="list-style-type: none"> <li>• I can recognise that living things can be grouped in a variety of ways</li> <li>• I can explore and use classification keys to help group, identify and name a variety of living</li> </ul>	<ul style="list-style-type: none"> <li>• I can describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-</li> </ul>	<ul style="list-style-type: none"> <li>• I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</li> <li>• I can describe the life process of reproduction in some plants and animals.</li> </ul>

	<p>Spring walk. Trip to the 'woods' and on the street.</p> <ul style="list-style-type: none"> <li>• Mini beast hunt. Looking for minibeasts under logs etc.</li> <li>• Looking at habitats.</li> <li>• Explore and respond to natural phenomena - straw, animal fields etc. – suitability of materials.</li> <li>• Outdoor play – noticing around them</li> <li>• Observing animals in outdoor area- feed birds, observe worms and other mini-beasts.</li> <li>• Identify and name animals from books</li> </ul> <p>• <u>Nursery</u></p> <ul style="list-style-type: none"> <li>• begin to understand the need to respect and care for the natural environment and all living things</li> <li>• Visit to the farm</li> </ul> <p>• <u>Reception</u></p> <ul style="list-style-type: none"> <li>• Explore the natural world around them</li> <li>• Recognise some environments that are different from the one in which they live.</li> <li>• Visit to the zoo to learn about animals</li> </ul>		<p>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> <ul style="list-style-type: none"> <li>• I can identify and name a variety of plants and animals in their habitats, including micro-habitats</li> <li>• I can 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.</li> </ul>		<p>things in their local and wider environment</p> <ul style="list-style-type: none"> <li>• I can recognise that environments can change and that this can sometimes pose dangers to living things</li> </ul>	<p>organisms, plants and animals</p> <ul style="list-style-type: none"> <li>• I can give reasons for classifying plants and animals based on specific characteristics.</li> </ul>	
Plants	<p>• <u>Little Saints</u></p> <ul style="list-style-type: none"> <li>• Explore and respond to different natural phenomena – planting winter bulbs</li> <li>• Plant beans to grow beanstalks.</li> <li>• Plant seeds to grow sunflowers</li> </ul> <p>• <u>Nursery</u></p> <ul style="list-style-type: none"> <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> </ul>	<ul style="list-style-type: none"> <li>• I can identify and describe the basic structure of a variety of common flowering plants, including trees.</li> <li>• I can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</li> </ul>	<ul style="list-style-type: none"> <li>• I can observe and describe how seeds and bulbs grow into mature plants</li> <li>• I can find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</li> </ul>	<ul style="list-style-type: none"> <li>• I can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</li> <li>• I can 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>• I can investigate the way in which water is transported within plants</li> <li>• I can explore the part that flowers</li> </ul>			

				play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.			
Evolution and Inheritance						<ul style="list-style-type: none"> <li>I can 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>I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</li> <li>I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</li> </ul>	
Seasonal Changes	<ul style="list-style-type: none"> <li><u>Little Saints</u></li> <li>Explore and respond to different natural phenomena in their setting – for example, splashing in the rain for Incey Wincey.</li> <li>Explore and respond to different natural phenomena in their setting and on trips – outdoor area and looking at the weather and noticing around them</li> <li>Visit to the community garden in different seasons.</li> <li><u>Nursery</u></li> <li>Autumn – change in weather changes in nature, walk in the woods and use senses. Draw what they see.</li> <li><u>Reception</u></li> <li>Explore the natural world around them</li> <li>Describe what they see, hear and feel whilst outside</li> </ul>	<ul style="list-style-type: none"> <li>I can observe changes across the four seasons</li> <li>I can observe and describe weather associated with the seasons and how day length varies.</li> </ul>					

	<ul style="list-style-type: none"> <li>Understand the effect of changing seasons on the natural world around them.</li> </ul>						
<p><b>Materials, States and Properties</b></p>	<ul style="list-style-type: none"> <li><u>Little Saints</u></li> <li>Explore materials - baking gingerbread men</li> <li>Explore and respond to the natural phenomena - make ice for the children to explore.</li> <li>Explore and respond to different natural phenomena in their setting and on trips – outdoor area and looking at the weather.</li> <li>Explore materials with different properties such as ice, sand, mud, straw</li> <li>Explore and respond to natural phenomena - straw, animal fields etc. – suitability of materials.</li> <li>Explore and respond to different natural phenomena in their setting – Splashing in the rain for Incey Wincey.</li> <li><u>Nursery</u></li> <li>Explore materials - baking gingerbread men, birthday cake, soup</li> <li>Use all their senses in hands-on exploration of natural resources</li> <li>Explore and talk about different forces they can feel</li> <li>Talk about the differences between materials and changes they notice changes in materials</li> <li>Use science vocabulary stretch, snap, bend</li> <li>Explore magnetic attraction and repulsion</li> <li>Explore collections of materials with similar or different properties</li> <li>Explore suitability of materials e.g. 3 little pigs</li> <li>Melting ice – investigate what makes ice melt.</li> <li><u>Reception</u></li> <li>Changing materials - Baking/cooking e.g. soup</li> <li>Investigate different materials for superheroes and which material</li> </ul>	<ul style="list-style-type: none"> <li>I can identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</li> <li>I can distinguish between an object and the material from which it is made</li> <li>I can describe the simple physical properties of a variety of everyday materials</li> <li>I can compare and group together a variety of everyday materials on the basis of their simple physical properties</li> </ul>	<ul style="list-style-type: none"> <li>I can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> <li>I can find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</li> </ul>		<ul style="list-style-type: none"> <li>I can compare and group materials together, according to whether they are solids, liquids or gases</li> <li>I can 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>I can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> </ul>		<ul style="list-style-type: none"> <li>I can 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> <li>I know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</li> <li>I can use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</li> <li>I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</li> <li>I can demonstrate that dissolving, mixing and changes of state are reversible changes</li> <li>I can 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</li> </ul>

	will allow/not allow a laser beam to shine through.						action of acid on bicarbonate of soda.
Rocks				<ul style="list-style-type: none"> <li>• I can compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</li> <li>• I can describe in simple terms how fossils are formed when things that have lived are trapped within rock.</li> <li>• I can recognise that soils are made from rocks and organic matter.</li> </ul>			
Forces and Magnets	<ul style="list-style-type: none"> <li>• <u>Nursery</u></li> <li>• Explore how things work</li> <li>• Floating and sinking – creating boats to see which float</li> <li>• Magnetism – materials – think about hand cuffs – what are they made from? Why? Properties use magnets see what is magnetic.</li> <li>• Explore magnetic attraction and repulsion</li> <li>• Toys – explore wind-up toys and mechanical toys.</li> </ul>			<ul style="list-style-type: none"> <li>• I can notice that some forces need contact between two objects, but magnetic forces can act at a distance</li> <li>• I can compare how things move on different surfaces</li> <li>• I can observe how magnets attract or repel each other and attract some materials and not others.</li> </ul>			<ul style="list-style-type: none"> <li>• I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>• I can identify the effects of air resistance, water resistance and friction, that act</li> </ul>

				<p>describe magnets as having two poles</p> <ul style="list-style-type: none"> <li>I can predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> <li>I can 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</li> </ul>			<p>between moving surfaces</p> <ul style="list-style-type: none"> <li>I can recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</li> </ul>
Light	<ul style="list-style-type: none"> <li><u>Little Saints</u></li> <li>Explore and respond to different natural phenomena in their setting – for example, making dens to make it dark.</li> <li><u>Nursery</u></li> <li>Exploring shadows and light with torches in dark dens.</li> <li><u>Reception</u></li> <li>Investigate different materials for superheroes and which material will allow/not allow a laser beam to shine through.</li> </ul>			<ul style="list-style-type: none"> <li>I can recognise that they need light in order to see things and that dark is the absence of light</li> <li>I can notice that light is reflected from surfaces</li> <li>I can recognise that light from the sun can be dangerous and that there are ways to protect their eyes</li> <li>I can recognise that shadows are formed when the light from a light source is blocked by a solid object</li> <li>I can find patterns in the way that the size of shadows change.</li> </ul>		<ul style="list-style-type: none"> <li>I can 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>I can 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>I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</li> </ul>	
Electricity					<ul style="list-style-type: none"> <li>I can identify common appliances that run on electricity</li> <li>I can construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</li> <li>I can identify whether or not a</li> </ul>	<ul style="list-style-type: none"> <li>I can 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>I can compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of</li> </ul>	

					<p>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> <ul style="list-style-type: none"> <li>I can 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>I can recognise some common conductors and insulators, and associate metals with being good conductors.</li> </ul>	<p>buzzers and the on/off position of switches</p> <ul style="list-style-type: none"> <li>I can use recognised symbols when representing a simple circuit in a diagram.</li> </ul>	
<p>Sound</p>	<ul style="list-style-type: none"> <li><u>Reception</u></li> <li>When creating music for the minibeast bop investigate sounds and vibrations.</li> </ul>				<ul style="list-style-type: none"> <li>I can identify how sounds are made, associating some of them with something vibrating</li> <li>I can recognise that vibrations from sounds travel through a medium to the ear</li> <li>I can find patterns between the pitch of a sound and features of the object that produced it</li> <li>I can find patterns between the volume of a sound and the strength of the vibrations that produced it</li> <li>I can recognise that sounds get fainter as the distance from the sound source increases.</li> </ul>		
<p>Earth and Space</p>	<ul style="list-style-type: none"> <li><u>Little Saints</u></li> <li>Explore and respond to different natural phenomena in their setting – for example, looking at the sky when singing twinkle twinkle.</li> </ul>						<ul style="list-style-type: none"> <li>I can describe the movement of the Earth, and other planets, relative to the Sun in the solar system</li> <li>I can describe the movement of the</li> </ul>

							<p>Moon relative to the Earth</p> <ul style="list-style-type: none"><li>• I can describe the Sun, Earth and Moon as approximately spherical bodies</li><li>• I can 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>
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