

**Hellingly Community Primary School**  
**Progression of Knowledge- 'I know'**

<b>Subject: Science</b>				
	<b>Early Years</b>	<b>Year 1/2</b>	<b>Year 3/4</b>	<b>Year 5/6</b>
<b>Coverage</b>	Understanding the world	Plants and Seasons (Y1) Everyday materials (Y1) Animals including humans: Dinosaurs (Y1) Fish and sea creatures (Y1)  Food chains - predators (Y2) Animals including animals - survival (Y2) Materials (Y2) Plants (Y2) Animals including humans (Y2)	Rocks (Y3) Light (Y3) Forces (Y3) Animals including humans (Y3) Plants (Y3)  Animals including humans (Y4) States of matter (Y4) Electricity (Y4) Living things including habitats (Y4) Sound (Y4)	Animals including humans (Y5) Living things and their habitats (Y5) Properties and changes of materials (Y5) Earth and Space (Y5) Forces (Y5)  Electricity (Y6) Light (Y6) Living things - classification (Y6) Evolution and inheritance (Y6) Animals and humans - healthy living (Y6)
<b>Key dates/ events/ knowledge</b>	<p><b>Understanding the world</b> <b>The Natural World</b></p> <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> <p><b>Communication and Language</b> <b>Listening, attention and understanding</b></p> <p>Make comments about what they have heard and ask questions to clarify their understanding.</p>	<p><b>Year 1:</b></p> <p><b>Plants</b> Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe basic structure of a variety of common flowering plants, including trees.</p> <p><b>Animals including humans</b> Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals Identify and name a variety of common animals that are carnivores, herbivores and omnivores. Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals)</p> <p><b>Seasonal changes</b></p>	<p><b>Year 3:</b></p> <p><b>Plants</b> Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p> <p><b>Animals including humans</b> 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. Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p>Materials/states of matter</p> <p><b>Rocks</b> Compare and group together different kinds of rocks on the basis of their appearance and simple physical</p>	<p><b>Year 5:</b></p> <p><b>Living things and their habitats</b> 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.</p> <p><b>Animals including humans</b> Describe the changes as humans develop to old age.</p> <p><b>Materials</b> Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity 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</p>

	<p><b>Personal, Social and Emotional development</b>  <b>Managing self</b>  Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.</p>	<p>Observe changes across the four seasons  Observe and describe weather associated with the season and how day length varies.</p> <p><b>Materials</b>  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.</p> <p><b>Year 2:</b></p> <p><b>Plants</b>  Observe and describe how seeds and bulbs grow into mature plants. Describe how plants need water, light and a suitable temperature to grow and stay healthy.</p> <p><b>Living things and their habitats</b>  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, including microhabitats. 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> <p><b>Animals including humans</b>  Notice that animals, including humans,</p>	<p>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.</p> <p><b>Light</b>  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.</p> <p><b>Forces</b>  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.  Describe magnets as having two poles.  Predict whether two magnets will attract or repel each other, depending on which poles are facing.</p> <p>Sound</p> <p>Electricity</p> <p>Working scientifically</p> <p><b>Year 4:</b></p>	<p>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.  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.</p> <p>Earth and Space</p> <p>Evolution and inheritance</p> <p><b>Forces</b>  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 small force to have a greater effect.</p> <p><b>Earth and Space</b>  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.</p> <p><b>Year 6:</b>  <b>Living things and their habitats</b>  Describe how living things are</p>
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			<p>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.</p> <p><b>Electricity</b>          Identify common appliance 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 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 and associate this with whether or not a lamp lights in a simple series circuit.          Recognise some common conductors and insulators, and associated metals with being good conductors.</p>	<p>them.</p> <p><b>Electricity</b>          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>
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<p><b>Key people</b></p>		<p><b>Year 1:</b>  <b>Seasonal change</b>  John Dalton (1766 – 1844)  Gabriel Fahrenheit (1686 – 1736)  Inez Fung (1941 - )  <b>Animal and Humans</b>  Carl Linnaeus (1707-1778)  Amy Vedder (1951 - )  <b>Everyday materials</b>  John Boyd Dunlop (1840 – 1921) -  Charles Macintosh (176 – 1843) -  John McAdam (1756 – 1836)  <b>Living things and habitats</b>  <b>Plants</b></p> <p><b>Year 2:</b>  <b>Animal and Humans</b>  David Attenborough (1926 - )  <b>Materials</b>  Leo Hendrik Baekeland (1863 -1944)  Charles Goodyear (1800 – 1860)  Dr Alex King  Dr Frances Ross  <b>Living things and habitats</b>  Kate Humble (1968 - ) – Steve  Backshall (1973 - )–  Chris Packham (1961 - ) -  <b>Plants</b>  Barbara McClintock (1902 – 1992)  Joseph Banks (1743 – 1820)  Gregor Mendel (1822 -1884)  Carl Linnaeus (1707 – 1778)  George Forrest (1873 – 1932)</p>	<p><b>Year 3:</b>  <b>Animal and Humans</b>  Diane France (1954 - )  <b>Force and Magnets</b>  William Gilbert (1544 – 1603) - Hans  Christian Oersted (1777 – 1851) -  <b>Light</b>  James Clerk Maxwell (1831- 1879) -  Thomas Young (1773 – 1829)  <b>Plants</b>  Barbara McClintock (1902 – 1992)  Joseph Banks (1743 – 1820)  Gregor Mendel (1822 -1884)  Carl Linnaeus (1707 – 1778)  George Forrest (1873 – 1932)  <b>Rocks</b>  Adriana Ocampo (1955 - )  Friedrich Mohs (1773-1839)  Inge Lehmann (1888-1993)  Alfred Wegener (1880 – 1930)  Tuzo Wilson (1908- 1993)  Marie Tharp(1920 – 2006)  Dorothea Bate (1878 – 1951)</p> <p><b>Year 4:</b>  <b>Animal and Humans</b>  Al-Jahiz (9<sup>th</sup> Century)  Charles Elton (1900 – 1991)  <b>Electricity</b>  Benjamin Franklin (1706-90).  Charles Augustine Coulomb  (1736-1806).  Alessandro Volta (1745-1827)  Andre-Marie Ampere (1775-1836)  <b>Living things and habitats</b>  Carl Linnaeus (1707 – 1778)  <b>Sound</b>  Robert Boyle (1627- 1691)  Ernst Mach (1838-1916).  Heinrich Hertz (1857-94)  <b>States of matter</b>  Alfred Barnhard Nobel (1833-1896)</p>	<p><b>Year 5:</b>  <b>Animal and Humans</b>  Professor Robert Winston (1940 - )  <b>Earth and Space</b>  Aristarchus (310 – 230 B.C.).  Nicolas Copernicus (1473 – 1543).  Galileo Galilei (1564 – 1642).  Aristotle  Edwin Hubble (1889-1953).  William Huggins.  Cecilia Payne-Gaposchkin (1900-79).  Arthur Eddington (1882- 1944).  Professor Brian Cox (1968 -)Heidi  Hammel (1960 -) Astronomer  <b>Forces</b>  Sir Isaac Newton (1642 – 1727)  Christopher Cockerell (1910- 1999)</p> <p>Archimedes (c.287 - c.212 BC)  <b>Living things and habitats</b>  Berry J. Brosi  Heather M. Briggs,  <b>Properties and changing materials</b>  Antoine Lavoisier (1743 - 1794)  Dmitri Mendeleev (1834 - 1907)  Sir Humphry Davy (1778 - 1829)  John Dalton (1766 - 1844)  Marie Curie (1967-1934)</p> <p><b>Year 6:</b>  <b>Animal and Humans</b>  William Harvey (1578 – 1657)  <b>Electricity</b>  Thomas Edison (1847-1931).  Benjamin Franklin (1706-90).  Charles Augustine Coulomb  (1736-1806).  Alessandro Volta (1745-1827).  Andre-Marie Ampere (1775-1836)  <b>Evolution</b>  Charles Darwin (1809 – 1882)  Alfred Russel Wallace (1823 - 1913)  Richard Owen (1804 – 1882)  <b>Light</b>  Thomas Young (1773 – 1829)  Sir David Brewster (1781 – 1868)  Jean-Bernard-Leon Foucault  (1819-1868)  <b>Living things and habitats</b>  Carl Linnaeus (1707-1778)</p>
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<b>Key vocabulary</b>		<p>Year 1 Plants Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud Names of trees in the local area Names of garden and wild flowering plants in the local area</p> <p>Year 1 animals Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves • Names of animals experienced first-hand from each vertebrate group Senses – touch</p> <p>Year 1 Seasonal Changes Weather (sunny, rainy, windy, snowy etc.) • Seasons (winter, summer, spring, autumn) • Sun, sunrise, sunset, day length</p> <p>Year 2 Living things Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed • Names of local habitats e.g. pond, woodland etc. • Names of micro-habitats e.g. under logs, in bushes etc.</p> <p>Year 2 plants As for Year 1 plus light, shade, sun, warm, cool, water, grow, healthy</p> <p>Year 2 Animals including humans Offspring, reproduction, growth, child, young/old stages (examples - chick/hen, baby/child/adult, caterpillar/butterfly), exercise, heartbeat, breathing, hygiene, germs, disease, food types (examples – meat, fish, vegetables, bread, rice, pasta)</p> <p>Year 2 Everyday materials Names of materials – wood, metal, plastic, glass, brick, rock, paper, cardboard Properties of materials – as</p>	<p>Year 3 Plants Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal)</p> <p>Year 3 animals Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine</p> <p>Year 3 Rocks Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, soil, peat, sandy/chalk/clay soil</p> <p>Year 3 Light Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous</p> <p>Year 3 Forces and Magnets Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole</p> <p>Year 4 Living things and their habitats Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate</p> <p>Year 4 Animals including humans Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore,</p>	<p>Year 5 Living things and their habitats Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings</p> <p>Year 5 Animals including humans Puberty – the vocabulary to describe sexual characteristics</p> <p>Year 5 Properties and changes of materials Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material</p> <p>Year 5 Earth and Space Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, solar system, rotates, star, orbit, planets</p> <p>Year 5 Forces Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears</p> <p>Year 6 Living things and their habitats Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering, non-flowering</p> <p>Year 6 Animals including humans Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle</p> <p>Year 6 Evolution and inheritance Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils</p>

		<p>for Year 1 plus opaque, transparent and translucent, reflective, nonreflective, flexible, rigid Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching</p>	<p>omnivore, producer, predator, prey, food chain</p> <p>Year 4 States of matter Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle</p> <p>Year 4 Sound Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation</p> <p>Year 4 Electricity Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol</p>	<p>Year 6 Light As for Year 3 - Light, plus straight lines, light rays</p> <p>Year 6 Electricity Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage N.B. Children do not need to understand what voltage is, but will use volts and voltage to describe different batteries. The words "cells" and "batteries" are now used interchangeably.</p>
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