

SCIENCE SUBJECT LEARNING EXPECTATIONS



Programme of Study

<p>Children should be taught to develop basic scientific skills throughout Key Stage 1. They should be taught to:</p>	<p>Ourselves Humans</p>	<p>The Seasons Seasonal changes (light and dark)</p>	<p>Toys and Games Everyday materials</p>	<p>Africa Animals – classifying</p>	<p>Growth Plants</p>	<p>The seaside Animals – habitats and food</p>
<ul style="list-style-type: none"> ask simple questions observe closely, using simple equipment perform simple tests identify and classify use observations and ideas to suggest answers to questions gather and record data to help in answering questions <p>Year 1 Pupils should be taught:</p> <p>Plants –</p> <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. <p>Animals, including humans –</p> <ul style="list-style-type: none"> 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, including pets) 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>Everyday materials –</p> <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. <p>Seasonal 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. 	<p>I must be able to draw and label the basic parts of the body and associate each part with the correct sense.</p> <p>I should be able to learn and name the main parts of the body (including head, neck, arms, elbows, legs, knees, face, ears, nose, eyes, hair, mouth, eyes, teeth)</p> <p>I could be able to explain the difference between a carnivore, herbivore and omnivore and say which one I am and why.</p>	<p>I must be able to observe changes across the four seasons *</p> <p>I must be able to observe and describe weather associated with the seasons and how day length varies.</p> <p>I should be able to draw a diagram of how the length of daylight changes throughout the year.</p> <p>I should be able to show the changes in the four seasons.</p> <p>I could link the changes in season to types of plant and animals in a local green area.</p>	<p>I must be able to tell the difference between an object and material from which it is made.</p> <p>I must be able to identify and name a variety of everyday materials (wood, metal, glass, plastic, rock and water)</p> <p>I should be able to describe simple physical properties of everyday materials.</p> <p>I could compare and group the everyday materials depending on their physical properties.</p> <p>I could make a graph/diagram to show the differences.</p>	<p>I must be able to identify and name a variety of common animals, birds, mammals, amphibians, reptiles and fish.</p> <p>I should be able to understand how to take care of animals.</p> <p>I should know some common names of fish, amphibians, birds, mammals and reptiles, including those kept as pets.</p> <p>I could make a graph/diagram to show the differences.</p>	<p>I must be able to identify and name a variety of common wild and garden plants.</p> <p>I must be able to know the difference between deciduous and evergreen trees.</p> <p>I should be able to identify and describe the basic structure of a variety of common plants.</p> <p>I should be able to label basic parts of plants and trees.</p>	<p>I must be able to name a variety of common animals that are carnivores, omnivores and herbivores.</p> <p>I could compare and contrast animals and group them, including into what they eat.</p> <p>I should investigate and identify that most living things live in habitats to which they are best suited.</p> <p>I should describe how different habitats provide the basic needs of different kinds of animals and how they depend on each other (food chain).</p> <p>I must investigate and describe the basic needs of animals for survival (water, food and air).</p>
<p>Pupils could spend one/two lesson(s) per term, going to local green area (Kennington park) to study animals in their habitats/changes to plants/weather throughout the year. An ongoing class book could be made and kept/added to each term. They could also spend the lesson(s) noting changes in plant life throughout the seasons (which is another topic in the curriculum)</p>						
<p>*(Each term, the class should spend 1/2 lessons outside observing natural wildlife including animal habitats, plants, weather, length of daytime etc)</p>						

Programme of Study

<p>Children should be taught to develop basic scientific skills throughout Key Stage 1. They should be taught to:</p>	<p>Superheroes</p> <p>Animals – Including humans</p>	<p>Pirates</p> <p>Use of everyday materials</p>	<p>Castles</p> <p>Plants</p>	<p>Nocturnal Animals</p> <p>Animals, including humans</p>	<p>Space Exploration</p> <p>Earth, moon, sun, stars</p>	<p>Families</p> <p>Living things and their environments</p>
<ul style="list-style-type: none"> ask simple questions observe closely, using simple equipment perform simple tests identify and classify use observations and ideas to suggest answers to questions gather and record data to help in answering questions <p>Year 2 Pupils should be taught:</p> <p>Plants –</p> <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. <p>Animals, including humans –</p> <ul style="list-style-type: none"> notice that animals, including humans, have offspring which grow into adults find out about and describe the basic needs of animals, including humans, for survival (water, food and air) describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. <p>Living things and their environments –</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, including micro-habitats 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>Use of everyday materials –</p> <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. 	<p>I must be able to say how to eat healthy.</p> <p>I must be able to describe the importance of exercise, healthy eating and having a balanced diet.</p> <p>I must be able to talk about the importance of hygiene and keeping clean.</p> <p>I should be able to know the different food types.</p> <p>I should be able to give examples of healthy food and non healthy food.</p> <p>I could be able to say that eating healthily, doing exercise and keeping clean will help me grow into a healthy adult.</p>	<p>I must identify the suitability of a variety of everyday materials- (wood, metal, plastic, glass, brick, rock, paper and cardboard) for particular uses.</p> <p>I must compare the suitability of a variety of everyday materials- (wood, metal, plastic, glass, brick, rock, paper and cardboard) for particular uses.</p> <p>I must know about how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p> <p>I should be able to investigate why some materials are used for certain things – glass for windows, wood for chairs, etc</p> <p>I could find out about people who have developed new materials – John Dunlop, Charles Macintosh. etc</p>	<p>I must observe and describe how seeds/ bulbs grow into mature plants.</p> <p>I must know and describe that plants need water, light and suitable temperature to grow.</p> <p>I should be able to say which environment is best for a plant to grow and live in.</p> <p>I should be able to show which environment is the best place for plants to grow – diary, class book.</p> <p>I could grow plants at home and see if there are any differences.</p> <p>I could measure plants in different environments*</p>	<p>I must explore and compare differences between things that have never been alive, living things and dead things.</p> <p>I must identify that most living things live in 'habitats' suitable for them.</p> <p>I must identify and name a variety of plants and animals in their habitats (including micro-habitats)*</p> <p>I must describe how animals obtain their food – link to idea of a simple food chain.</p> <p>I could decide how to group and classify things depending on if they are alive, dead, never alive.</p> <p>I could ask and answer exploring questions – Is a flame alive? Is a deciduous tree dead in winter? etc</p>	<p>I must be able to draw and label the earth, moon and sun.</p> <p>I must discover that the earth 'orbits' the sun.</p> <p>I must discover that the moon 'orbits' the earth.</p> <p>I should discover that the sun is a star.</p> <p>I should know that the sun provides energy for all living things on earth.</p> <p>I should know that there are millions of other stars and planets in the universe.</p> <p>I should be able to explain the force of gravity and its effect on objects.</p>	<p>I must know that animals, including humans, have offspring which grow into adults.</p> <p>I must know about the basic needs of animals, including humans for survival (water, food and air).</p> <p>I could find out which animals hunt for food, what and how they eat.</p> <p>I should gather and record data to ask and answer questions</p>
<p>Pupils could spend one/two lesson(s) per term, going to local green area (Kennington park) to study animals in their habitats/changes to plants/weather throughout the year. An ongoing class book could be made and kept/added to each term. They could also spend the lesson(s) noting changes in plant life throughout the seasons (which is another topic in the curriculum)</p>						
<p>*(Each term, the class should spend 1/2 lessons outside observing natural wildlife including animal habitats, plants, weather, length of daytime etc)</p>						

Programme of Study

<p>Children should be taught to develop basic scientific skills throughout Key Stage 2. They should be taught to:</p>	<p>London Now and Then The Human Body – Death and Disease</p>	<p>Reduce, Reuse, Recycle Forces and Magnets</p>	<p>The Egyptians Rocks - link to sandstone pyramids</p>	<p>Mysterious Creatures Animals – classifying animals</p>	<p>The Caribbean Light – sources of light</p>	<p>Fairy Tale Twists Plants – The Flora and Fauna of Epping Forest</p>
<ul style="list-style-type: none"> ask relevant questions set up simple practical enquires and comparative and fair tests make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers gather, record, classify and present data in a variety of different ways record finding using simple language, labelled diagrams, bar charts and tables report on findings from enquiries, including oral and written explanations, displays or presentations of results use results to draw simple conclusions and suggest improvements, new questions and predictions for further tests identify differences and similarities or changes related to simple, scientific ideas and processes use straightforward, scientific evidence to answer questions or to support findings <p>Year 3 Pupils should be taught:</p> <p>Rocks -</p> <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. <p>Light -</p> <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 a solid object find patterns in the way that the size of shadows change. <p>Forces and Magnets -</p> <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 describe magnets as having two poles predict whether two magnets will attract or repel each other, depending on which poles are facing. 	<p>I must identify that humans need a balanced, nutritional diet.</p> <p>I must identify that humans cannot make their own food (unlike plants) but get nutrition from what they eat.</p> <p>I must identify that humans have skeletons and muscles to help support them and help them move.</p> <p>I could investigate the differences in different food types available in London today and in Victorian times.</p> <p>I could investigate they effect this had on people.</p> <p>I could discover how Victorian children in the work houses would often be malnourished and find out why this was so (and the effect it had – rickets, scurvy, etc)</p>	<p>I must compare how things move on different surfaces.</p> <p>I should notice that some forces need contact between two objects, but magnetic forces can act at a distance .</p> <p>I must observe how magnets attract or repel each other and attract some materials and not others.</p> <p>I must 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>I should describe magnets as having two poles and predict whether two magnets will attract or repel each other, depending on which poles are facing.</p> <p>I could discover which materials would be suitable for recycling and why.</p>	<p>I must compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</p> <p>I must describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p> <p>I must recognise that soils are made from rocks and organic matter.</p> <p>I should say why the Egyptians used the rocks they did and how they made them.</p> <p>I could say if or how these rocks have changed over time.</p>	<p>I must identify that animals – as well as humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.</p> <p>I should know how different types of animals get their food</p> <p>I must identify that some other animals (as well as humans) have skeletons and muscles for support, protection and movement.</p> <p>I should know which animals have a skeleton (vertebrates) and which don't) vertebrates).</p> <p>I could know why some animals have a skeleton and muscles for movement, protection and support.</p>	<p>I must recognise that people need light in order to see things and that dark is the absence of light, not the opposite.</p> <p>I must notice that light is reflected from surfaces rather than emitted – the moon, mirrors, etc.</p> <p>I must recognise that light from the sun can be dangerous and that there are ways to protect our eyes/skin</p> <p>I must recognise that shadows are formed when the light from a light source is blocked by a solid object.</p> <p>I could make/ describe a Caribbean sunset to show how shadows are formed.</p> <p>I could find patterns in the way that the sizes of shadows change.</p>	<p>I must identify, describe and label the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</p> <p>I must 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>I should know that different plants have different needs for life and explain which plants need what to survive.</p> <p>I should investigate the way in which water is transported within plants.</p> <p>I should explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p> <p>I could show and explain the different ways different plants pollinate and disperse seeds.</p>
<p>Animals – classifying animals</p>						
<p>Light – sources of light</p>						
<p>Plants – The Flora and Fauna of Epping Forest</p>						

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<p>Children should be taught to develop basic scientific skills throughout Key Stage 2.</p> <p>In lower Key Stage 2 they should be taught to:</p>	<p>Wilderness and Survival</p> <p>Living things and their habitats (Animals – teeth, food chains, predators, prey)</p>	<p>The Victorians</p> <p>Animals including humans (The Human Body – teeth and the digestive system)</p>	<p>Inventions</p> <p>Electricity and Circuits</p>	<p>Journeys</p> <p>The Water Cycle -Evaporation and Condensation</p>	<p>Volcanoes</p> <p>States of matter (Materials – Solids, Liquids, Gases and Changing States)</p>	<p>The Romans</p> <p>Sound – sound travel</p>
<ul style="list-style-type: none"> ask relevant questions set up simple practical enquires make accurate measurements gather, record, classify and present data in a variety of different ways record finding using simple language, labelled diagrams, bar charts and tables report on findings from enquiries use results to draw simple conclusions and suggest improvements, identify differences and similarities or changes use straightforward, scientific evidence to answer questions or to support findings <p>Year 4</p> <p>Pupils should be taught:</p> <p>Animals, including humans -</p> <ul style="list-style-type: none"> describe the simple functions of the basic parts of the digestive system in humans identify the different types of teeth in humans and their simple functions construct and interpret a variety of food chains, identifying producers, predators and prey <p>Materials - States of Matter -</p> <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 the temperature at which this happens 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 <p>Sound -</p> <ul style="list-style-type: none"> identify how sounds are made, associating some of them with something vibrating recognise that vibrations from sounds 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>Electricity -</p> <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 associate this with whether or not a lamp lights in a simple series circuit recognise some common conductors and insulators, and associate metals with being good conductors. 	<p>I must know that animals get their energy from eating other plants and animals</p> <p>I must know that plants get their energy from the sun</p> <p>I should know that animals and plants are linked by food chains</p> <p>I should know the difference between a producer and a consumer</p> <p>I should know the difference between a predator and prey</p> <p>I should know the difference between a herbivore, carnivore and omnivore</p> <p>I should be able to identify producers, consumers, predators and prey</p> <p>I could make and explain a variety of food chains</p>	<p>I must be able to ask scientific questions to find out about the digestive system</p> <p>I must be able to name and identify the main body parts that make up the digestive system</p> <p>I should be able to ask and explore questions about the different function of each body part</p> <p>I should know the function of the mouth, teeth and oesophagus</p> <p>I could know the function of the stomach, small and large intestine</p>	<p>I must know the difference between mains and battery power and be able to identify electrical appliances that run on both.</p> <p>I should be able to name and identify the basic parts of a simple circuit</p> <p>I should be able to explain (in non-technical vocabulary) the function of each part of the circuit (battery, bulb, wires etc.)</p> <p>I should be able to make a simple series circuit and recognise when/ why a circuit won't work</p> <p>I should be able to explain how a simple circuit works using non-technical language</p> <p>I should know that a switch opens and closes a circuit</p> <p>I should know the difference between a conductor and an insulator</p> <p>I should be able to identify some common conductors and insulators</p> <p>I could know the difference between a battery and a cell</p> <p>I could explain how a circuit works using technical language</p> <p>I could make a circuit with a switch</p> <p>I could make predictions about which materials will act as conductors</p>	<p>I should know the different stages of the water cycle</p> <p>I must be able to group materials into solids, liquids or gases.</p> <p>I should identify the part played by evaporation and condensation in the water cycle</p> <p>I should experiment and investigate the water cycle and what happens at each stage.</p> <p>I should gather and record simple data in a variety of ways to show how the water cycle works.</p> <p>I should associate the rate of evaporation with temperature</p> <p>I could sketch a diagram to show the water cycle using relevant vocabulary.</p>	<p>I must be able to group materials into solids, liquids or gases.</p> <p>I should be able to make comparisons between solids, liquids or gases</p> <p>I must know that some materials change state when they are heated or cooled</p> <p>I should measure or research the temperature at which this happens in degrees Celsius (°C)</p> <p>I should identify the part played by evaporation and condensation in the water cycle</p> <p>I should associate the rate of evaporation with temperature</p>	<p>I should be able to identify how sounds are made, associating some of them with something vibrating</p> <p>I should recognise that vibrations from sounds travel through a medium to the ear</p> <p>I should recognise and find patterns between the pitch of a sound and features of the object that produced it</p> <p>I should find patterns between the volume of a sound and the strength of the vibrations that produced it</p> <p>I should recognise that sounds get fainter as the distance from the sound source increases.</p>

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<p>Children should be taught to develop basic scientific skills throughout Key Stage 2.</p> <p>In upper Key Stage 2 they should be taught to:</p>	<p>Ancient Greece</p> <p>The Solar System</p>	<p>Climate Change</p> <p>Gravity and other Forces</p>	<p>The Tudors</p> <p>Life Cycles</p>	<p>Brazil</p> <p>My Body</p>	<p>Legends</p> <p>Changing Materials</p>	<p>Local Landmarks</p> <p>The Water Cycle – Evaporation and Condensation</p>
<ul style="list-style-type: none"> planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs using test results to make predictions to set up further comparative and fair tests reporting and presenting 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 identifying scientific evidence that has been used to support or refute ideas or arguments. <p>Year 5 Pupils should be taught:</p> <p>Living Things and their habitats -</p> <ul style="list-style-type: none"> living Things and their habitats 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>Animals Including Humans -</p> <ul style="list-style-type: none"> describe the changes as humans develop to old age. <p>Earth and Space -</p> <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. <p>Properties and Changes of Materials -</p> <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 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>Forces -</p> <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. 	<p>I must know that the sun is a star and the centre our solar system</p> <p>I must know the Sun, Earth and Moon as approximately spherical bodies</p> <p>I should know the names of the eight planets in the solar system</p> <p>I should be able to use a model of the earth, sun and moon to demonstrate the movement of the Earth relative to the Sun and the Moon relative to the Earth</p> <p>I should be able to explain the reason for day and night</p> <p>I should be able to use the idea of the earth's rotation to explain the apparent movement of the sun across the sky.</p>	<p>I must be able to name different kinds of forces and give real examples of forces at work</p> <p>I must be able to raise scientific questions about forces and how they work</p> <p>I should be able to decide on different ways to test forces at work</p> <p>I should be able to test and identify the effects of air resistance</p> <p>I should be able to test and identify the effects water resistance</p> <p>I should be able to test and identify the effects of friction,</p> <p>I could recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect</p>	<p>I must be able to raise scientific questions about the life cycle of animals and plants</p> <p>I should be able to plan a scientific enquiry to answer questions about life cycles.</p> <p>I should be able make my own decisions about what observations to make about life cycle changes in living things</p> <p>I should observe and describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>I should be able to make decisions about how to record this information</p> <p>I should describe the life process of reproduction in a plant</p> <p>I should describe the life process of reproduction in an animal.</p> <p>I could look for different causal relationships</p>	<p>I must know and be able to describe the changes that occur to the body from 0 years to puberty</p> <p>I must know and be able to describe the changes that occur as adults develop to old age</p> <p>I should describe the life process of reproduction in an animal</p> <p>I should be able to describe (using scientific language) the changes as humans develop to old age.</p>	<p>I must be able to ask scientific questions about materials and their properties.</p> <p>I must be able to group a range of materials on based on their properties (hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets)</p> <p>I should be able to decide on ways to test the properties of materials</p> <p>I should be able to make comparisons between materials based on their properties</p> <p>I should be able to give reasons, based on evidence from comparative and fair tests, for the uses of materials including metals, wood and plastic</p> <p>I should be able to decide how to separate materials</p> <p>I must know that some materials will dissolve in liquid to form a solution</p> <p>I should be able to plan a scientific enquiry to recover a substance from a solution</p> <p>I should be able to explain how to recover a substance from a solution</p>	<p>I must discover how the water cycle works.</p> <p>I must know and be able to describe what occurs throughout the water cycle.</p> <p>I must know and be able to use scientific language throughout the water cycle.</p> <p>I should discover what evaporation is and how it happens.</p> <p>I should discover what condensation is and how it happens.</p> <p>I should experiment with everyday examples of how the water cycle happens and which factors affect it.</p> <p>I should be able to give reasons as to why these processes happen</p>
<p>Practical activities that help children learn about the Solar System</p> <ul style="list-style-type: none"> Children could make a sun dial to show the apparent movement of the sun across the sky and explore shadows. They could make models of the sun, moon and earth to show the demonstrate and explain the movement Teachers should look at the teacher's resources on the Royal Observatory website and could plan a visit for the children to the Royal Observatory at Greenwich http://www.rmg.co.uk/schools/royal-observatory/ . Link the learning to Greek astronomy 						
<p>Practical activities that help children learn about Gravity and other Forces</p> <ul style="list-style-type: none"> Use real examples of forces at work to allow children the opportunity to raise questions about forces. For example, a model boat moving through water, a play parachute floating back down, a bike braking 						
<p>Practical activities that help children learn about Living things and their habitats</p> <ul style="list-style-type: none"> Children should regularly have the opportunity to go outside and explore their local environment to help them raise scientific questions about the life-cycles of animals and plants and the changes to their habitat throughout the year. Walworth Garden Farm (http://www.walworthgardenfarm.org.uk) in Kennington have a wildlife garden. Children can visit the farm to take part in pond dipping, mini beast hunts, gardening or to look at the apiary. Children could take regular visits to Vauxhall city farm to measure and observe changes in animals over a period of time. Children could hatch and raise chicks to observe changes to an animal over a period of time (Vauxhall City Farm offer this service). 						
<p>Practical activities that help children learn about changes that occur to the body as it grows</p> <ul style="list-style-type: none"> Children could look at the reproductive process 						

Programme of Study

<p>Children should be taught to develop basic scientific skills throughout Key Stage 2.</p> <p>In upper Key Stage 2 they should be taught to:</p>	<p>WW2 Forces</p>	<p>WW2 Electricity Materials</p>	<p>Immigration Evolution and Inheritance</p>	<p>No place like home Light</p>	<p>Moving On Animals including Humans</p>	<p>Shakespeare Living Things and their habitats</p>
<ul style="list-style-type: none"> plan enquires, including recognising and controlling variables where necessary use appropriate techniques, apparatus and materials during fieldwork and laboratory work take measures, using a range of scientific equipment, with increasing accuracy and precision record data and results of increasing complexity using scientific diagrams, labels, classification keys, tables, bar and line graphs report findings from enquiries, including oral and written explanation of results, explanations involving casual relationships and conclusions present findings in written form, displays and other presentations use test results to make predictions to set up further comparative and fair tests use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments <p>Year 6 Pupils should be taught:</p> <p>Animals Including Humans -</p> <ul style="list-style-type: none"> identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function describe the ways in which nutrients and water are transported within animals, including humans. <p>Living Things and their habitats -</p> <ul style="list-style-type: none"> give reasons for classifying plants and animals based on specific characteristics. 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>Light -</p> <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. <p>Evolution and Inheritance -</p> <ul style="list-style-type: none"> 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 offspring of the same kind, but normally offspring vary and are not identical to their parents identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. <p>Electricity -</p> <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>To understand that when forces are balanced no movement occurs and that gravity is an attraction between objects and the Earth</p> <p>To understand that it is the up-thrust in liquids that causes some objects to float and others to sink</p> <p>To investigate what happens as an elastic band stretches under force</p> <p>Understand that without air resistance all objects would fall at the same rate</p> <p>To understand that forces are all around us and that when they are balanced objects do not move speed up, slow down or change direction.</p>	<p>To investigate the relationship between the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>To investigate, 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>To use recognised symbols and vocabulary when representing a simple circuit in a diagram.</p> <p>To identify faults in electrical circuits and circuit diagrams before suggesting how to fix the problem</p> <p>To investigate whether the thickness or length of wire changes the brightness of a bulb.</p> <p>To research and understand the difference between series and parallel circuits</p>	<p>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>Identify how animals and plants have adapted to suit their environment in different ways and that adaptations may lead to evolution</p> <p>To recognise that characteristics are passed from parents to offspring, and that living things change over time</p> <p>To understand that changes can be an advantage and a disadvantage</p>	<p>Recognise that light appears to travel in straight lines</p> <p>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</p> <p>Predict (with reasons) the size of shadows when the position of the light source changes</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>I must be able to identify and name the main parts of the human circulatory system.</p> <p>I must discover and describe the functions of the heart, blood vessels and blood.</p> <p>I must research the importance of diets, drugs, exercise and the impact they have on the body.</p> <p>I should reason why these things have an impact on the body.</p> <p>I should explore the work of scientists who have worked in this area of science.</p> <p>I must research and describe the ways in which nutrients and water are transported.</p> <p>I should use the correct scientific vocabulary.</p> <p>I should research and identify scientific evidence that has been used to support or refute ideas or arguments.</p>	<p>To appreciate that there are physical differences between members of the same species</p> <p>To rehearse knowledge of life cycles in animals and plants</p> <p>To be aware of the changes that have taken place (both physical and developmental) since birth. Compare with other living things</p> <p>To understand that plants and animals have adapted to suit their habitats</p> <p>To understand that plants and animals living in a habitat are interdependent</p> <p>To model complex feeding relationships between living things</p>
	<p>Animals Including Humans - Possible links to WW2: looking at army training; fitness, diet, exercise</p> <p>Forces - Children could design and make parachutes, linking the learning to the effects of air resistance</p>					