

Science Medium Term Plan		
EYFS – Foundation Stage 1		
Animals Including Humans	Plants	Everyday Materials
<p>Links to prior learning: To begin to explore the natural world around them</p> <p>Natural Science – Biology Key Concept – Animals</p> <p>Curricular Goal Pupils can talk about the changes they observe as they watch a caterpillar grow into a butterfly</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> To be able to understand the key features of the life cycle of an animal. To begin to understand the need to respect and care for the natural environment and all living things. <p>Enquiry Types Identifying, classifying and grouping</p> <p>Scientific Enquiry Learning Objectives Closely observes what animals, people and vehicles do The World (8-20 months) Create simple representations of events, people and objects Being Imaginative: (40-60+ months) Answer how and why questions about their experiences ELG: Understanding Make observations of animals and plants and explain why some things occur, and talk about changes ELG: The World Develop their own narratives and explanations by connecting ideas or events ELG: Speaking Builds up vocabulary that reflects the breadth of their experience Understanding: 30-50 months</p> <p>Substantive Knowledge (Sticky Knowledge) (To know and remember) <u>Know that a caterpillar hatches from an egg. Know what a caterpillar is and how it begins to grow. Know that a caterpillar eats leaves and this helps it grow. Know that a caterpillar spins a cocoon. Know the cocoon is a house where the caterpillar changes into a butterfly. Know that a butterfly has wings and can fly. Know how to look after the caterpillar so that it can grow and change. Know that all living things need looking after and taking care of.</u></p> <p>Disciplinary Knowledge (Being a scientist) Use the senses to observe the changes in a caterpillar over time</p> <p>Key Vocabulary Egg, caterpillar, grow, food, leaves, spinning, cocoon, change, butterfly, wings</p>	<p>Links to prior learning: To begin to explore the natural world around them</p> <p>Natural Science – Biology Key Concept – Parts of a Plant</p> <p>Curricular Goal Pupils can talk about the changes they observe after they have planted a seed and watch a plant grow</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> To be able to plant seeds and care for growing plants. To understand the key features of the life cycle of a plant To begin to understand the need to respect and care for the natural environment and all living things <p>Enquiry Types Observing over time Identifying, classifying and grouping</p> <p>Scientific Enquiry Learning Objectives Show curiosity about objects, events and people Playing & Exploring Questions why things happen Speaking: (30-50 months) Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world The World: (30-50 months) Use senses to explore the world around them Playing & Exploring Make links and notice patterns in their experience Creating & Thinking Critically Choose the resources they need for their chosen activities ELG: Self Confidence & Self Awareness Handle equipment and tools effectively ELG: Moving & Handling Answer how and why questions about their experiences ELG: Understanding Make observations of animals and plants and explain why some things occur, and talk about changes ELG: The World Develop their own narratives and explanations by connecting ideas or events ELG: Speaking Builds up vocabulary that reflects the breadth of their experience Understanding: 30-50 months</p> <p>Substantive Knowledge (Sticky Knowledge) (To know and remember) <u>Know that seeds are planted in soil. Know that if a seed is watered it will start to grow. Know that a plant needs a little bit of water every day and it needs to be in the sunshine. Know that a plant grows leaves and sometimes a flower. Know that a flower has a seed that can then be planted again. Know how to look after the plants so that they can grow and change. Know that all living things need looking after and taking care of</u></p> <p>Disciplinary Knowledge (Being a scientist) Use the senses to observe the changes in a plant over time</p> <p>Key Vocabulary Seed, soil, water, sunshine, grow, leaves, flower</p>	<p>Links to prior learning: To begin to explore the feel of different things and objects in sensory play To repeat actions that have an effect through play</p> <p>Natural Science – Chemistry Key Concept – Change</p> <p>Curricular Goal Pupils can use their sense of touch to explore materials and talk about how they are different Pupils can talk about what they see, hear and feel when playing with different toys Pupils can talk about what happens when they push and pull an object</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> To be able to talk about the differences between materials and changes they notice To be able to explore how things work To be able to explore and talk about different forces they can feel. <p>Enquiry Types Identifying, classifying and grouping</p> <p>Scientific Enquiry Learning Objectives Show curiosity about objects, events and people Playing & Exploring Find ways to solve problems / find new ways to do things / test their ideas Creating & Thinking Critically Know about similarities and differences in relation to places, objects, materials and living things ELG: The World Use senses to explore the world around them Playing & Exploring Answer how and why questions about their experiences ELG: Understanding Develop their own narratives and explanations by connecting ideas or events ELG: Speaking Builds up vocabulary that reflects the breadth of their experience Understanding: 30-50 months</p> <p>Substantive Knowledge (Sticky Knowledge) (To know and remember) <u>Know that I use my fingers to feel materials. Know that some materials feel different. Know some words to describe how the materials feel. Know how some materials can change. Know how different toys work. Know how to explore a simple push and pull and how this can affect the movement of an object.</u></p> <p>Disciplinary Knowledge (Being a scientist) Use the senses to observe and explore different materials</p> <p>Key Vocabulary Spikey, soft, hard, push, pull, long way, little way, press, swipe, click, turn, lift,</p>

EYFS – Foundation Stage 2

Animals Including Humans	Plants	Everyday Materials	Seasonal Change	All Living Things and their Habitats
<p>Links to prior learning: To know that animals change as they grow To know we need to respect and care for our environment</p> <p>Natural Science – Biology Key Concept – Animals</p> <p>Curricular Goal Pupils can talk about different animals both in the natural world around them and in other contrasting environments.</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> To be able to explore the natural world around them, making observations and drawing pictures of animals <p>Enquiry Types Identifying, classifying and grouping</p>	<p>Links to prior learning: To know that plants change as they grow To know we need to respect and care for our environment</p> <p>Natural Science – Biology Key Concept – Parts of the Plant</p> <p>Curricular Goal Pupils can describe what they observe as a seed grows into a plant. Pupils can describe what a plant needs to be healthy. Pupils can explore planting seeds in different places</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> To be able to explore the natural world around them, making observations and drawing pictures of plants <p>Enquiry Types Identifying, classifying and grouping</p> <p>Scientific Enquiry Learning Objectives</p>	<p>Links to prior learning: To be able to talk about the differences between materials and changes they notice</p> <p>Natural Science – Chemistry Key Concept – Change/ Materials</p> <p>Curricular Goal Pupils can talk about what they observe when ice is melting in different places Pupils can explore the strength of materials when building a house for the Three Little Pigs Pupils can explore floating and sinking when making a boat for a Pirate</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> To understand some important processes and changes in the natural world around them, including changing states of matter <p>Enquiry Types Identifying, classifying and grouping Observing over time Comparative testing</p> <p>Scientific Enquiry Learning Objectives</p>	<p>Links to prior learning: To begin to explore the natural world around them</p> <p>Natural Science – Physics Key Concept – Change</p> <p>Curricular Goal Pupils can name the seasons and describe some changes to the natural world as the seasons change</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> To understand some important processes and changes in the natural world around them, including the seasons <p>Enquiry Types Identifying, classifying and grouping Observing over time Research using secondary resources</p> <p>Scientific Enquiry Learning Objectives</p>	<p>Links to prior learning: To begin to explore the natural world around them</p> <p>Natural Science – Biology Key Concept – Habitats</p> <p>Curricular Goal Pupils can describe different environments explaining some similarities and differences between them and can compare them to where they live.</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> To 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>Enquiry Types Research using secondary resources</p>

<p>Use secondary resources</p> <p>Scientific Enquiry Learning Objectives</p> <p>Use senses to explore the world around them</p> <p>Playing & Exploring</p> <p>Show curiosity about objects, events and people</p> <p>Playing & Exploring</p> <p>Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world</p> <p>The World: (30-50 months)</p> <p>Closely observes what animals, people and vehicles do</p> <p>The World 8-20 months</p> <p>Make observations of animals and plants and explain why some things occur, and talk about changes</p> <p>ELG: The World</p> <p>Substantive Knowledge (Sticky Knowledge)</p> <p><i>(To know and remember)</i></p> <p><u>Know that there are lots of types of animals that can be found in the natural environment. Know that different animals live in different places in the world. Know that animals are different colours in the jungle and in the arctic. Know that animals change as they grow. Know that some animals live on land and some live in the sea. Know how people can look after animals.</u></p> <p>Disciplinary Knowledge</p> <p><i>(Being a scientist)</i></p> <p>Use the senses to explore the natural world. Observe changes in animals as they grow. Use secondary sources to observe animals that live in different places, how they live and what they eat.</p> <p>Key Vocabulary</p> <p>Baby, adult, head, eyes, nose, mouth, ears, hands, feet, arms, legs, teeth, heart, sight, hear, taste, touch, smell, food, healthy, unhealthy, exercise, animals, birds, fish, mini-beasts</p>	<p>Show curiosity about objects, events and people</p> <p>Playing & Exploring</p> <p>Questions why things happen</p> <p>Speaking: (30-50 months)</p> <p>Use senses to explore the world around them</p> <p>Playing & Exploring</p> <p>Make observations of animals and plants and explain why some things occur, and talk about changes</p> <p>ELG: The World</p> <p>Develop their own narratives and explanations by connecting ideas or events</p> <p>ELG: Speaking</p> <p>Builds up vocabulary that reflects the breadth of their experience</p> <p>Understanding: (30-50 months)</p> <p>Substantive Knowledge (Sticky Knowledge)</p> <p><i>(To know and remember)</i></p> <p><u>Know that there are different types of seeds including bulbs. Know that seeds grow into different types of plants. Know that some plants provide food for animals and humans. Know and name the basic parts of a plant.</u></p> <p>Disciplinary Knowledge</p> <p><i>(Being a scientist)</i></p> <p>Use the senses to observe the changes in a seed to a plant over time</p> <p>Key Vocabulary</p> <p>Seeds, flowers, plants, trees, leaves, soil, water, light, grow, growing</p>	<p>Show curiosity about objects, events and people</p> <p>Playing & Exploring</p> <p>Questions why things happen</p> <p>Speaking: (30-50 months)</p> <p>Take a risk, engage in new experiences and learn by trial and error</p> <p>Playing & Exploring</p> <p>Find ways to solve problems / find new ways to do things / test their ideas</p> <p>Creating & Thinking Critically</p> <p>Know about similarities and differences in relation to places, objects, materials and living things</p> <p>ELG: The World</p> <p>Use senses to explore the world around them</p> <p>Playing & Exploring</p> <p>Choose the resources they need for their chosen activities</p> <p>ELG: Self Confidence & Self Awareness</p> <p>Handle equipment and tools effectively</p> <p>ELG: Moving & Handling</p> <p>Answer how and why questions about their experiences</p> <p>ELG: Understanding</p> <p>Develop their own narratives and explanations by connecting ideas or events</p> <p>ELG: Speaking</p> <p>Builds up vocabulary that reflects the breadth of their experience</p> <p>Understanding: 30-50 months</p> <p>Substantive Knowledge (Sticky Knowledge)</p> <p><i>(To know and remember)</i></p> <p><u>Know that ice melts and ice changes over time. Know how to slow down and speed up the melting process using their own bodies or places the ice can be positioned. Know that salt melts ice and how this is used in a real life situation on roads/ paths. Know that some materials are strong and are used for building houses. Know that some houses are made of different materials. Know that some materials float and some materials sink.</u></p> <p>Disciplinary Knowledge</p> <p><i>(Being a scientist)</i></p> <p>Use the senses to explore different materials and their properties</p> <p>Key Vocabulary</p> <p>Hard, soft, rough, smooth, slimy, furry, wood, metal, plastic, float, sink</p>	<p>Show curiosity about objects, events and people</p> <p>(Playing & Exploring)</p> <p>Questions why things happen</p> <p>Speaking: (30-50 months)</p> <p>Know about similarities and differences in relation to places, objects, materials and living things</p> <p>(ELG: The World)</p> <p>Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world</p> <p>The World: (30-50 months)</p> <p>Use senses to explore the world around them</p> <p>Playing & Exploring</p> <p>Create simple representations of events, people and objects</p> <p>Being Imaginative: (40-60+ months)</p> <p>Make observations of animals and plants and explain why some things occur, and talk about changes</p> <p>(ELG: The World)</p> <p>Develop their own narratives and explanations by connecting ideas or events</p> <p>ELG: Speaking</p> <p>Builds up vocabulary that reflects the breadth of their experience</p> <p>Understanding: (30-50 months)</p> <p>Substantive Knowledge (Sticky Knowledge)</p> <p><i>(To know and remember)</i></p> <p><u>Know the names of the seasons and how the weather changes. Know that in the summer it is warm and in the winter it is cold. In the spring flowers grow and in the autumn trees lose their leaves. Know that people wear different clothes dependent on the weather. Know that some animals go to sleep in the winter and wake up in the spring</u></p> <p>Disciplinary Knowledge</p> <p><i>(Being a scientist)</i></p> <p>Use the senses to observe the changes in the natural world over the course of a year.</p> <p>Key Vocabulary</p> <p>Weather, rain, sun, snow, ice, clouds, hot, cold, warm, melt, dry, wet, frozen, night, day</p>	<p>Identifying, classifying and grouping</p> <p>Scientific Enquiry Learning Objectives</p> <p>Playing & Exploring</p> <p>Questions why things happen</p> <p>Speaking: (30-50 months)</p> <p>Know about similarities and differences in relation to places, objects, materials and living things</p> <p>(ELG: The World)</p> <p>Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world</p> <p>The World: (30-50 months)</p> <p>Use senses to explore the world around them</p> <p>Playing & Exploring</p> <p>Make observations of animals and plants and explain why some things occur, and talk about changes</p> <p>(ELG: The World)</p> <p>Develop their own narratives and explanations by connecting ideas or events</p> <p>ELG: Speaking</p> <p>Builds up vocabulary that reflects the breadth of their experience</p> <p>Understanding: (30-50 months)</p> <p>Substantive Knowledge (Sticky Knowledge)</p> <p><i>(To know and remember)</i></p> <p><u>Know that there are different places to live. Know that there are places to live which are different from where we live. Know that some places are hot and some places are cold and this affects what they look like and what lives there. Know that there are places where people can't live or would find it difficult to live in. Know that different animals live in different environments.</u></p> <p>Disciplinary Knowledge</p> <p><i>(Being a scientist)</i></p> <p>Use the senses to explore the natural world. Use secondary sources to explain similarities and differences in different places: desert, jungle, arctic, space and under the sea, and compare them to where we live</p> <p>Key Vocabulary</p> <p>Natural world, place, live, hot, cold, snow, sun, desert, sand, animals, space, gravity, moon, stars, earth, planets, arctic, jungle, rainforest, rain, sea, water, oxygen, fish</p>
---	--	---	---	--

Year 1				
Animals Including Humans	Plants	Everyday Materials	Seasonal Change	
<p>Links to prior learning:</p> <p><i>To know about the growth of animals</i></p> <p>Natural Science – Biology</p> <p>Key Concept – Parts of the Body</p> <p>Curricular Goal 1:</p> <p>Create a model of the human body, label the parts and link to the senses</p> <p>Curricular Goal 2:</p> <p>Classify animals according to their animal groups</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> To know how to classify a range of animals by amphibian, reptile, mammal, fish and birds To know and classify animals by what they eat (carnivore, herbivore and omnivore) To know how to sort by living and non-living things To know the name of parts of the human body that can be seen <p>Enquiry Types</p> <p>Identifying, classifying and grouping</p> <p>Use secondary resources</p> <p>Scientific Enquiry Learning Objectives</p> <p>Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them</p> <p>Ask people questions and use simple secondary sources to find answers</p> <p>Substantive Knowledge (Sticky Knowledge)</p> <p><i>(To know and remember)</i></p> <p><u>To know that all humans have the same body parts and know the names of the parts. To know the five senses and why they are important. To know what</u></p>	<p>Links to prior learning:</p> <p><i>To know about the changes with regards to planting/growing</i></p> <p><i>To know the names of different plants and their properties</i></p> <p><i>To be able to label plants</i></p> <p>Natural Science – Biology</p> <p>Key Concept – Parts of a plant</p> <p>Curricular Goal:</p> <p>Make observations of plants and know and name the main parts of them</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> To know and name a variety of common and wild garden plants To know and name the petals, stem, leaves and root of a plant To know and name the roots, trunk, branches and leaves of a tree <p>Enquiry Types</p> <p>Identifying, classifying and grouping</p> <p>Use secondary resources</p> <p>Scientific Enquiry Learning Objectives</p> <p>Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying)</p> <p>Ask people questions and use simple secondary sources to find answers</p> <p>Substantive Knowledge (Sticky Knowledge)</p> <p><i>(To know and remember)</i></p> <p><u>To know the names of the plants in the local area</u></p> <p><u>To know and name the different parts of a flower and a tree.</u></p> <p>Disciplinary Knowledge</p> <p><i>(Being a scientist)</i></p> <p>Find different varieties of plants, collect and write questions about them. Sort plants found in the local environment.</p>	<p>Links to prior learning:</p> <p><i>To begin to compare different materials</i></p> <p><i>To begin to compare different textures</i></p> <p><i>To know the purpose and use of different materials</i></p> <p>Natural Science – Chemistry</p> <p>Key Concept – Properties of Materials</p> <p>Curricular Goal:</p> <p>Make a waterproof house using a range of materials</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> To know the name of the materials an object is made from To know about the properties of everyday materials <p>Enquiry Types</p> <p>Research using secondary resources</p> <p>Comparative and fair testing</p> <p>Scientific Enquiry Learning Objectives</p> <p>Ask people questions and use simple secondary sources to find answers</p> <p>Carry out simple tests</p> <p>Use their observations and ideas to suggest answers to questions</p> <p>Talk about what they have found out and how they have found it out</p> <p>Substantive Knowledge (Sticky Knowledge)</p> <p><i>(To know and remember)</i></p> <p><u>To know and be able to recognise wood, plastic, metal and cotton.</u></p> <p><u>To know the properties of wood, plastic, metal and cotton.</u></p> <p><u>To be able to name some objects which are made from wood, metal, plastic and cotton.</u></p> <p><u>To know which materials are waterproof and which materials aren't waterproof.</u></p> <p>Disciplinary Knowledge</p> <p><i>(Being a scientist)</i></p> <p>Sort materials by their properties. Collect materials and sort them into their different groups. Investigate which materials are best for different uses.</p> <p>Create a fair test to investigate which material would be the most waterproof.</p> <p>Key Vocabulary</p> <p>Wood, Plastic, Glass, Paper, Water, Metal, Rock, Hard, Soft, Bendy, Rough, Smooth,</p>	<p>Links to prior learning:</p> <p><i>To know about the features of the seasons</i></p> <p><i>To compare seasons</i></p> <p>Natural Science – Physics</p> <p>Key Concept – Change</p> <p>Curricular Goal:</p> <p>Walk around the local area describing and recording seasonal changes</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> To be able to name the seasons and know about the type of weather in each season <p>Enquiry Types</p> <p>Identifying, classifying and grouping</p> <p>Pattern seeking</p> <p>Use secondary resources</p> <p>Observing over time</p> <p>Scientific Enquiry Learning Objectives</p> <p>Ask people questions and use simple secondary sources to find answers</p> <p>Use their observations and ideas to suggest answers to questions</p> <p>With guidance, they should begin to notice patterns and relationships</p> <p>Talk about what they have found out and how they have found it out</p> <p>Observe closely using simple equipment with help, observe changes over time</p> <p>Substantive Knowledge (Sticky Knowledge)</p> <p><i>(To know and remember)</i></p> <p><u>To know that Autumn, Spring, Summer & Winter are the seasons.</u></p> <p><u>To know what the weather is usually like in each of the seasons.</u></p> <p>Disciplinary Knowledge</p> <p><i>(Being a scientist)</i></p>	

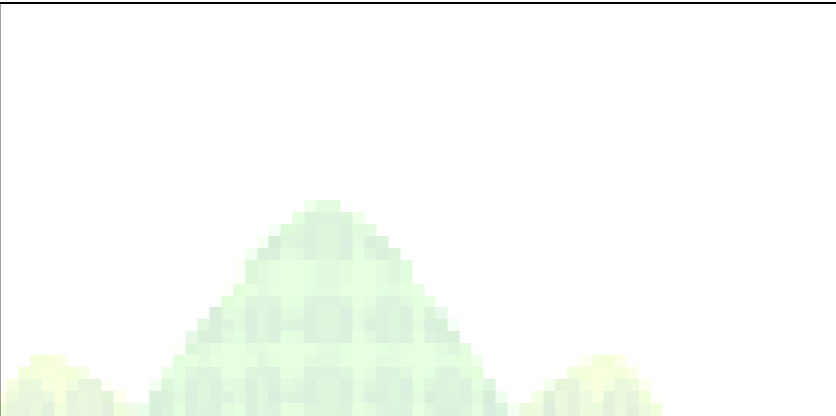
<p>a carnivore, herbivore and omnivore are. To know <u>how animals are different</u>.</p> <p>Disciplinary Knowledge (Being a scientist)</p> <p>Sort animals into groups based on key characteristics. Sort animals based on the food they eat (carnivore, herbivore, omnivore). Recognise key features of different animal groupings, labelling and describing them – use animal x-rays to compare the structure of them.</p> <p>Key Vocabulary Fish (mackerel, Atlantic cod, whiting (all found in north sea)), Reptiles (grass snake, adder, bearded dragon) Mammals (badger, vole, fox, otter (found river Hull), squirrel (in woods)), Birds (blackbird, sparrow, seagull, crow, magpie) Amphibians (common frog, newt, common toad) Herbivore, Omnivore, Carnivore Leg, Arm, Elbow, Head, Ear, Nose, Back, body, eyes, ears, mouth, teeth, Wings, Beak, tail, claw, fin, scales, feathers, fur, paws, hooves</p>	<p>Using real flowers, take apart and label. Identify fruit and vegetables and their different parts especially the parts we eat. Measuring plant growth over time. Sort deciduous and evergreen trees.</p> <p>Key Vocabulary Deciduous (oak, cherry trees, horse chestnut, beech, birch) <i>Found in woods or around school</i> Evergreen trees (pine, spruce (hedges), bay trees (available in garden centres), Eucalyptus (widely available) Leaves, Flowers (blossom, weeds e.g. dandelions, daisy's – allow children to find them themselves in local area hunt) Petals, Fruit, Roots, Bulb, Seed, Trunk, Branches, Stem, berry, bark, stalk, bud</p>	<p>object, material, brick, fabric, elastic, foil, card/cardboard, rubber, wool, clay, stretchy, stiff, floppy, waterproof, absorbent, breaks/tears, shiny, dull, see through, not see through</p>	<p>Observe a tree/plant in school and photograph/draw how it changes during the different seasons. Weather chart over a short period of time. Different types of weather and extreme weather. Hunt for signs of spring, summer, autumn, winter in the area around school. Children given objects which they must sort into which seasons they will be used e.g. sun cream, scarves, gloves and wellies. Tracking the weather – weather diary/rain gauges to challenge misconceptions. Measure rainfall (use the weather station if this is impractical).</p> <p>Key Vocabulary Summer, Spring, Autumn, Winter, Sun, sunrise, sunset, length, monsoon, thunder, Day, Moon, Night, Light, Dark Weather (sunny, rainy, windy)</p>	
---	---	--	---	--

Year 2

Animals Including Humans	Plants	Everyday Materials		All Living Things and their Habitats
<p>Links to prior learning: <i>Know how to classify a range of animals by amphibian, reptile, mammal, fish and birds</i> <i>Know and classify animals by what they eat (carnivore, herbivore and omnivore)</i> <i>Know how to sort by living and non-living things</i> <i>Know the name of parts of the human body that can be seen</i></p> <p>Natural Science – Biology Key Concept – Lifecycles Curricular Goal 1: Describe how I become a healthy person. Curricular Goal 2: Describe the lifecycles of chicks and humans and know how they are different</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> To know the basic stages in a life cycle for animals, (including humans) To know why exercise, a balanced diet and good hygiene are important for humans <p>Enquiry Types Identifying, classifying and grouping Use secondary resources</p> <p>Scientific Enquiry Learning Objectives Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them Ask people questions and use simple secondary sources to find answers With help, they should record and communicate their findings in a range of ways and begin to use simple scientific language</p> <p>Substantive Knowledge (Sticky Knowledge) (To know and remember) <u>To know that humans are born as babies, then become, children, teenager, adult and how we change. To know the life cycle of a chick. To know what makes a balanced diet. To know what the food pyramid is</u></p> <p>Disciplinary Knowledge (Being a scientist) Match offspring with their adult animals. Life cycle of a chick (get chicks and possibly create time lapse videos). Compare what their bodies can do and how this differs from when they were first born. Children to bring in photographs when they were younger/babies. Investigate whether taller children always have bigger feet. Investigate what is meant by a balanced diet and discuss the food pyramid. Research effects of exercise on bones and muscle.</p> <p>Key Vocabulary</p>	<p>Links to prior learning: <i>Know and name a variety of common and wild garden plants</i> <i>know and name the petals, stem, leaves and root of a plant</i> <i>Know and name the roots, trunk, branches and leaves of a tree</i></p> <p>Natural Science – Biology Key Concept – Plants needs Curricular Goal: Grow a sunflower recognise what it needs in order to become a healthy plant</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> To know and explain how seeds and bulbs grow into plants To know what plants need in order to grow and stay healthy (water, light and suitable temperature) <p>Enquiry Types Observing over time Comparative and fair testing</p> <p>Scientific Enquiry Learning Objectives Observe closely using simple equipment with help, observe changes over time Carry out simple tests</p> <p>Substantive Knowledge (Sticky Knowledge) (To know and remember) <u>To know that all plants grow from seeds or bulbs.</u> <u>To know that plants need water, light and suitable temperature to grow and stay healthy.</u></p> <p>Disciplinary Knowledge (Being a scientist) Growing cress in different conditions. Grow plants from bulbs and observe (onions, tulips, daffodils). Observational drawings of different plants. Take a walk around the local area – observe and record trees/plants. Look at time lapse videos on YouTube (e.g. dandelion) Collect lots of different seeds of different sizes and shapes and predict which ones will germinate first.</p> <p>Key Vocabulary (As year 1) - Deciduous (oak, cherry trees, horse chestnut, beech, birch) <i>Found in woods or around school</i> Evergreen trees (pine, spruce (hedges), bay trees (available in garden centres), Eucalyptus (widely available) Leaves, Flowers (blossom, weeds e.g. dandelions, daisy's – allow children to find them themselves in local area hunt) (Year 2 new) Petals, Fruit, Roots, Bulb, Seed, Trunk, Branches, Stem, berry, bark, stalk, bud Light, shade, sun, warm, cool, water, grow, healthy, germinate</p>	<p>Links to prior learning: <i>Know the name of the materials an object is made from</i> <i>Know about the properties of everyday materials</i></p> <p>Natural Science – Chemistry Key Concept – Properties of Materials Curricular Goal: Select the correct materials to make a teabag</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> To know how materials can be changed by squashing, bending, twisting and stretching To know why a material might or might not be used for a specific job <p>Enquiry Types Identifying, classifying and grouping Comparative and fair testing Research using secondary resources</p> <p>Scientific Enquiry Learning Objectives Carry out simple tests Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them</p> <p>Substantive Knowledge (Sticky Knowledge) (To know and remember) <u>To be able to name materials seen around school – wood, metal, plastic, rubber, material, glass.</u> <u>To be able to describe the properties of the materials above.</u> <u>To know and name the material that the object is made of around school.</u></p> <p>Disciplinary Knowledge (Being a scientist) Sorting materials according to different properties. Setting up fair tests to see which materials are best for different jobs e.g. sponge for mopping up spills, bricks to stop houses blowing down, bounciest ball etc. Go on a material hunt around the school, draw and label what objects are made of.</p> <p>Key Vocabulary (As year 1) Wood, Plastic, Glass, Paper, Water, Metal, Rock, Hard, Soft, Bendy, Rough, Smooth, object, material, brick, fabric, elastic, foil, card/cardboard, rubber, wool, clay, (Year 2 new) stretchy, stiff, floppy, waterproof, absorbent, breaks/tears, shiny, dull, see through, not see through Properties of materials –opaque, transparent, translucent, reflective, non-reflective, flexible, rigid, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching</p>		<p>Links to prior learning: <i>To begin to understand the need to respect and care for the natural environment and all living things.</i></p> <p>Natural Science – Biology Key Concept – Food chains Curricular Goal 1: On a walk around the local area can you list things by living, dead and never lived. Curricular Goal 2: Create a woodlice habitat and explain the choices made</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> To be able to classify things by living, dead or never lived To know how a specific habitat provides for the basic needs of things living there (plants and animals) To be able to match living things to their habitat To be able to name some different sources of food for animals To know about and explain a simple food chain <p>Substantive Knowledge (Sticky Knowledge) (To know and remember) <u>To know that living things move, reproduce, eat, excrete, respire and grow.</u> <u>To know where some living things live.</u> <u>Allotment – worm</u> <u>Lily pad – frog</u> <u>School pond – fish</u> <u>Tree tops – birds</u> <u>Rainforest – snake or jaguar</u> <u>To be able to name some plants e.g daffodil and cactus.</u> <u>To know that a daffodil grows in soil in the spring, cactus grows in the desert.</u> <u>To know that woodlice like dark and damp places.</u></p> <p>Disciplinary Knowledge (Being a scientist) Look at real things that are living/non-living. Matching animals to their habitats. Scavenger hunt to find things that are living and not living Present children with envelopes/addresses for animals and they need to think of an animal that may live there, e.g. Allotment Place, Log Pile Lane, Stones End; The Lily Pad, School Pond, Learning Lane; Tree Tops, Rain Forest, Tropical Town. Comparing plants e.g. cactus and daffodil – why do they live in different environments? How can we encourage wildlife into</p>

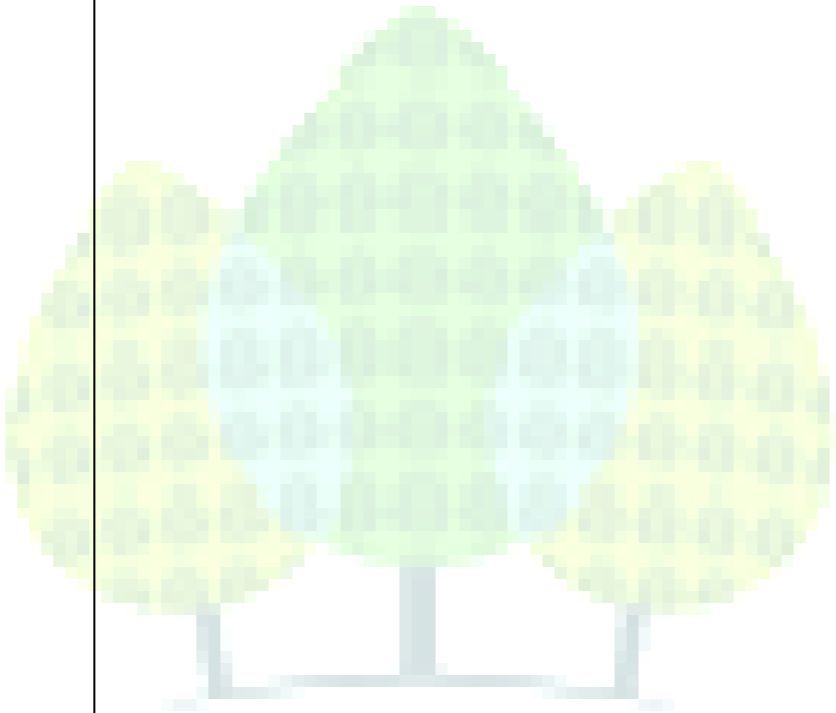
<p>Offspring, reproduction, growth, child young/old stages (e.g. chick/hen, baby/child/adult) exercise, heartbeat, breathing, survival, air, hygiene, germs, disease, food types (e.g. meat, fish, vegetables, bread, rice, pasta),</p>				<p>our school garden? Food chain paper chain – draw animals onto paper chains and connect. Research woodlice habitats Create a habitat for a woodlice to live in based on research Key Vocabulary Living, Dead, never been alive, suited, suitable, basic needs, shelter, food, food chain, move, feed, energy, predator, prey, names of local habitats; pond, woodland, field, river (Hull) names of micro-habitats e.g. under logs, in bushes, under stones</p>
---	--	--	--	--

Year 3				
Animals Including Humans	Plants	Rocks	Forces	Light
<p>Links to prior learning: <i>To know the basic stages in a life cycle for animals, (including humans)</i> <i>To know why exercise, a balanced diet and good hygiene are important for humans</i> Natural Science – Biology Key Concept – Healthy Bodies Curricular Goal 1: Keep a food diary and describe how this is different to an athlete. Curricular Goal 2: Complete a jigsaw of the human skeleton and muscular system Learning Objectives</p> <ul style="list-style-type: none"> To know about the importance of a nutritious, balanced diet To know how nutrients, water and oxygen are transported within animals and humans To know about the skeletal and muscular system of a human <p>Enquiry Types Identifying, classifying and grouping Use secondary resources Observing over time Scientific Enquiry Learning Objectives Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions Substantive Knowledge (Sticky Knowledge) <i>(To know and remember)</i> <u>Identify and name the bones within the human body. To know what you need to eat to have a healthy diet. To know a balanced diet is made up of foods from the five food groups: starchy carbohydrates, fruits and vegetables, protein, dairy and healthy fats. To know the human body has more than 600 muscles. They do everything from pumping blood throughout the body to helping us lift something heavy</u> Disciplinary Knowledge <i>(Being a scientist)</i> <i>Recognise what would happen if we didn't have muscles and investigate how bones protect our organs. Understand that bones are needed for support.</i> Complete a jigsaw of the human skeleton and muscular system. <i>Create a healthy plate</i> Make a healthy plate for an athlete. Keep a food diary for an athlete making choices about what will help keep their body healthy. Key Vocabulary Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, skull, ribs, spine, joints, support, protect, move,</p>	<p>Links to prior learning: <i>Know and name the roots, trunk, branches and leaves of a tree</i> <i>To know and explain how seeds and bulbs grow into plants</i> <i>To know what plants, need in order to grow and stay healthy (water, light and suitable temperature)</i> Natural Science – Biology Key Concept – Water transportation in plants Curricular Goal: Grow a carnation plant and devise an investigation and make observations of how ink is transported through plants and into the flower Learning Objectives</p> <ul style="list-style-type: none"> To know how water is transported within plants To know the plant life cycle especially the importance of flowers <p>Enquiry Types Observing over time Identifying, classifying and grouping Scientific Enquiry Learning Objectives Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions Substantive Knowledge (Sticky Knowledge) <i>(To know and remember)</i> <u>To know that what a plant life cycle is: seed, germination, growth, reproduction, pollination, and seed spreading stages.</u> <u>To know that water is transported in from the stem to the leaves.</u> Disciplinary Knowledge <i>(Being a scientist)</i> Look at what a plant needs to grow, with a range of plants. Plant a range of plants from bulbs and seeds. Plant some plants in water so you can see the roots system. Keep a growing diary and link to the plant life cycle. Look at time lapse videos on YouTube Plant carnations. Ensure that it has the right conditions to grow .Observe over time and keep a diary. Then put dye in the water to watch transportation of water. Observe over time what happens when they are placed in ink Key Vocabulary Pollen, insect/wind pollination, seed formation, seed dispersal, wind dispersal, animals dispersal, water dispersal Air, Light, Water, Nutrients, Soil, Transportation, Reproduction, Pollination</p>	<p>Links to prior learning: <i>To begin to compare different materials</i> <i>To begin to compare different textures</i> <i>To know the purpose and use of different materials</i> <i>Know the name of the materials an object is made from</i> <i>Know about the properties of everyday materials</i> Natural Science – Chemistry Key Concept – Rocks and Soils Curricular Goal: Group together different kinds of rocks and explain why Learning Objectives</p> <ul style="list-style-type: none"> To be able to compare and group rocks based on their appearance and physical properties, giving reasons To know how soils is made and how fossils are formed To know about and explain the difference between sedimentary, metamorphic and igneous rock <p>Enquiry Types Research using secondary resources Identifying, classifying and grouping Comparative and fair testing Scientific Enquiry Learning Objectives Set up simple practical enquiries, comparative and fair tests Recognise when a simple fair test is necessary and help to decide how to set it up Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions Substantive Knowledge (Sticky Knowledge) <i>(To know and remember)</i> <u>To know what sedimentary, metamorphic, igneous rocks are.</u> <u>To know that soil is formed by rocks and erosion over many years.</u> <u>To know that fossils are formed by living organisms that died many years ago.</u> <u>To know what stone, pebble, boulder, chalk, slate, peat, sandstone, granite, marble are and be able to describe their properties.</u> Disciplinary Knowledge <i>(Being a scientist)</i> Look at a range of rocks and compare similarities and differences. Group into igneous, sedimentary, and metamorphic. Investigate how fossils are made. Describe the properties of soils and examine them. Group rocks into sedimentary, metamorphic and igneous Explain why they have been grouped this way Key Vocabulary Rock, stone, pebble, boulder, grain, layers, hard, soft, texture, absorb, water, chalk, slate, peat, Fossils, Soils, Sandstone, Granite, Marble, Pumice, Crystals, Absorbent Sedimentary, Metamorphic, Igneous</p>	<p>Links to prior learning: <i>To be able to explore how things work</i> <i>To be able to explore and talk about different forces they can feel.</i> Natural Science – Physics Key Concept – Forces in motion Curricular Goal 1: Explain on which surface a car travels the fastest Curricular Goal 2: Investigate different size and strengths of magnets and how these attract or repel a paper clip Curricular Goal 3: Describe and construct how to make a simple pulley Learning Objectives</p> <ul style="list-style-type: none"> To know about and describe how objects move on different surfaces To know how a simple pulley works and use to lift an object To know how some forces require contact and some do not, giving examples To know about and explain how magnets attract and repel To be able to predict whether magnets will attract or repel and give reason <p>Enquiry Types Comparative and fair testing Identifying, classifying and grouping Research using secondary resources Scientific Enquiry Learning Objectives Set up simple practical enquiries, comparative and fair tests Recognise when a simple fair test is necessary and help to decide how to set it up Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions Substantive Knowledge (Sticky Knowledge) <i>(To know and remember)</i> <u>To know that some things move in the park by a pull and some by a push. To know how not all forces need contact. To know how to speed up or slow down a force. To know how a pulley works.</u> <u>To know which objects magnets attract and why.</u> Disciplinary Knowledge <i>(Being a scientist)</i> Discuss what forces are and investigate by going to the local park. Look at how different materials speed up or slow down the effect of forces. Create an investigation to see which surface a car travels on the fastest Look at pulleys and investigate how they work. Explain what forces are used when using pulleys. Construct a simple pulley and explain how it works Go on a treasure hunt to discover magnetic materials. Look at a range of equipment and decide which will find magnetic materials. Investigate how a magnet picks up a paper clip through different mediums. Look at a range of magnets and how they attract or repel a paper clip Key Vocabulary Force, push, pull, twist, contact force, non-contact force, magnet, Magnetic, Force, Contact, Attract, Repel, Friction, Poles, Push,</p>	<p>Links to prior learning:</p> <ul style="list-style-type: none"> To begin to explore the natural world around them <p>Natural Science – Physics Key Concept – Shadows Curricular Goal: Construct and investigate how to make a shadow puppet theatre Learning Objectives</p> <ul style="list-style-type: none"> To know that dark is the absence of light To know that light is needed in order to see and is reflected from a surface To know and demonstrate how a shadow is formed and explain how a shadow changes shape To know about the danger of direct sunlight and describe how to keep protected <p>Enquiry Types Research using secondary resources Observing over time Identifying, classifying and grouping Pattern seeking Scientific Enquiry Learning Objectives Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions Substantive Knowledge (Sticky Knowledge) <i>(To know and remember)</i> <u>To know that light is needed to see. To know that light is reflected from a surface by reflection this is when light bounces off an object. If the surface is smooth and shiny, like glass, water or polished metal, the light will reflect at the same angle as it hit the surface. To know shadows are formed when Shadows are formed when an opaque object or material is placed in the path of rays of light. The opaque material does not let the light pass through it. The light rays that go past the edges of the material make an outline for the shadow. To know When we are outside on a sunny day, we can see how our shadows change throughout the day. The Sun's position in the sky affects the length of the shadow. When the Sun is low on the horizon, the shadows are long. When the Sun is high in the sky, the shadows are much shorter. To know that sunlight can damage skin and ways that we can protect ourselves.</u> Disciplinary Knowledge <i>(Being a scientist)</i> Give children different objects and sort into things that give our light and those that don't. Represent</p>

			Pull, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, metal, iron, steel, north pole, south pole	how light reflects using string/wool. Use mirrors and other reflective surfaces. Use data loggers to measure light Experiment using torches – use different objects to make shadows and notice patterns. Look what happens to the shadow when the torch is moved closer or further away and notice the pattern. Investigate which materials make the best shadows. Investigate how shadows get bigger/smaller Create a shadow puppet theatre Ensure that the light is in the appropriate place to create a show Key Vocabulary Light, Shadows, Mirror, Reflective, Dark, Reflection Light source, absence of light, transparent, translucent, opaque, shiny
--	--	---	--	---

Year 4

Animals Including Humans	States of Matter	Electricity	Sound	All Living Things and their Habitats
<p>Links to prior learning: To know about the importance of a nutritious, balanced diet To know how nutrients, water and oxygen are transported within animals and humans To know about the skeletal and muscular system of a human</p> <p>Natural Science – Biology Key Concept – Digestion and teeth Curricular Goal 1: Compare and contrast the impact of different substances on teeth in humans and other animals Curricular Goal 2: Compare and contrast the digestive system of an owl and a human</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> To be able to identify and name the parts of the human digestive system To know the functions of the organs in the human digestive system To be able to identify and know the different types of human teeth To know the functions of different human teeth To be able to use and construct food chains to identify <p>Enquiry Types Identifying, classifying and grouping Research using secondary resources Observing over time</p> <p>Scientific Enquiry Learning Objectives Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data Set up simple practical enquiries, comparative and fair tests Recognise when a simple fair test is necessary and help to decide how to set it up Talk about criteria for grouping, sorting and classifying; and use simple key</p> <p>Substantive Knowledge (Sticky Knowledge) <i>(To know and remember)</i> <u>To know what the parts of the human digestive system are; mouth , small intestine , anus , oesophagus , stomach , large intestine .To know the functions of the organs in the human digestive system. To know the different types of teeth canine, incisor, molar etc and their function. To know what a food chain is and be able to explain it. To know without digestion, the food we eat would be excreted in our poo. Digestion happens in the digestive system. This is a series of organs that break down the food so it can be absorbed into our blood and travel around to where it is needed.</u></p> <p>Disciplinary Knowledge <i>(Being a scientist)</i> Make teeth using red and white play dough. Research what each tooth looks like. Label their finished model with canine, incisor, molar etc. Learn about the function of each part of the</p>	<p>Links to prior learning: To begin to compare different materials To begin to compare different textures To know the purpose and use of different materials Know the name of the materials an object is made from Know about the properties of everyday materials</p> <p>Natural Science – Chemistry Key Concept – Melting points and the water cycle Curricular Goal 1: Compare and contrast which materials have a higher melting point and explain why Curricular Goal 2: Compare and contrast how quickly water evaporates from different sized containers</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> To know the temperature at which materials change state To know about and explore how some materials can change state To know the part played by evaporation and condensation in the water cycle <p>Enquiry Types Research using secondary resources Identifying, classifying and grouping Observing over time Comparative and fair testing</p> <p>Scientific Enquiry Learning Objectives Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data Set up simple practical enquiries, comparative and fair tests Recognise when a simple fair test is necessary and help to decide how to set it up Talk about criteria for grouping, sorting and classifying; and use simple key</p> <p>Substantive Knowledge (Sticky Knowledge) <i>(To know and remember)</i> <u>To know what a solid, liquid and gas are. To know the temperature that XXXXXX change state. To know at what temperature boils and freezes and how this links to the water cycle.</u></p> <p>Disciplinary Knowledge <i>(Being a scientist)</i> Learn about the different molecules (solid, liquid, gas) and look at their characteristics. Look at melting and freezing points. Look at the water cycle, recreate and label a diagram Investigate which materials melt and record the temperature Compare materials that have high/low melting points Evaporation investigation to see how quickly it evaporates from different containers on a windowsill</p> <p>Key Vocabulary Solid, Liquid, Gas, State, change, melting, melting point, boiling point, Evaporation, condensation, Particles, Temperature, Freezing, Heating, water cycle</p>	<p>Links to prior learning: To begin to compare different materials To know the purpose and use of different materials To know why a material might or might not be used for a specific job</p> <p>Natural Science – Physics Key Concept – Constructing circuits Curricular Goal: Make a complex circuit coding using a crumble kit to make a toy move, light up or make a sound</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> To be able to identify and name appliances that require electricity to function To be able to construct a series circuit To be able to identify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers) To be able to predict and test whether a lamp will light within a circuit To know the function of a switch To know the difference between a conductor and an insulator; giving examples of each <p>Enquiry Types Identifying, classifying and grouping Research using secondary resources</p> <p>Scientific Enquiry Learning Objectives Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions Talk about criteria for grouping, sorting and classifying; and use simple keys</p> <p>Substantive Knowledge (Sticky Knowledge) <i>(To know and remember)</i> <u>To know which appliances need electricity to work. To know how circuit works. To know the function of a switch. To know the difference between a conductor and an insulator; giving examples of each.</u></p> <p>Disciplinary Knowledge <i>(Being a scientist)</i> Identify and name appliances that require electricity to function. Construct a series circuit. Identify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers). Predict and test whether a lamp will light within a circuit (variables)</p> <p>Key Vocabulary Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, motor, metal, non-metal, symbol</p>	<p>Links to prior learning: To know the name of parts of the human body that can be seen</p> <p>Natural Science – Physics Key Concept – Hearing Curricular Goal: Design and test the best possible telephone and suggest reasons for improvements.</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> To know how sound is made, associating some of them with vibrating To know how sound travels from a source to our ears To know the correlation between the volume of a sound and the strength of vibrations that produced it To know what happens to a sound as it travels away from its source <p>Enquiry Types Comparative and fair testing Identifying, classifying and grouping</p> <p>Scientific Enquiry Learning Objectives Talk about criteria for grouping, sorting and classifying Set up simple practical enquiries, comparative and fair tests Recognise when a simple fair test is necessary and help to decide how to set it up Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used Take accurate measurements using standard units learn how to use a range of (new) equipment, such as data loggers / thermometers appropriately</p> <p>Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions</p> <p>Substantive Knowledge (Sticky Knowledge) <i>(To know and remember)</i> <u>To know that sound is made when objects vibrate. The vibration makes the air around the object vibrate and the air vibrations enter your ear. You hear them as sounds. To know sounds are made when objects vibrate. This makes the air around the object vibrate and the air vibrations then travel to and enter your ear. To know that the volume of a sound is how loud or quiet the sound is. Sounds are vibrations that travel through the air. A nail hit hard with a hammer will make a strong vibration, which means it will make a loud sound. A nail hit gently with a hammer will make a weak vibration, which means it will make a quiet sound. Sound waves can travel through solids (such as metal, stone and wood), liquids (such as water) and gases (such as air). You cannot always see the vibrations, but if something is making a sound, some part of it is always vibrating.</u></p> <p>Disciplinary Knowledge <i>(Being a scientist)</i> Class survey of sound. Investigate how we hear and research how we hear. Investigate whether the length of material affect the pitch, e.g. straw, string, wooden and metal ruler. Use data loggers to measure how sound is heard different at different distances .Get children to make the best string telephone.</p> <p>Key Vocabulary Volume, Vibration, Wave, Pitch, Tone, Speaker</p>	<p>Links to prior learning: To be able to classify things by living, dead or never lived To know how a specific habitat provides for the basic needs of things living there (plants and animals) To be able to match living things to their habitat To be able to name some different sources of food for animals To know about and explain a simple food chain</p> <p>Natural Science – Biology Key Concept – Classification Curricular Goal: Compose a poster about a hedgehog that demonstrates an understanding of the habitat and what it needs to live safely</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> To be able to use classification keys to group, identify and name living things To know how changes to an environment could endanger living things <p>Enquiry Types Identifying, classifying and grouping Research using secondary resources</p> <p>Scientific Enquiry Learning Objectives Talk about criteria for grouping, sorting and classifying; and use simple keys Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them Take accurate measurements using standard units learn how to use a range of (new) equipment, such as data loggers / thermometers appropriately Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions</p> <p>Substantive Knowledge (Sticky Knowledge) <i>(To know and remember)</i> <u>To know how to use a classification key to group, name and identify living things. To know that Hedgehogs live in a broad range of habitats. Apart from very wet areas and extensive pine forests, they live in most parts of Britain. They are also often scarce in upland areas such as moorlands and mountainsides. Hedgehogs enjoy living on the edge of woodlands. They thrive in the mosaic of hedges, fields and woodlands that characterise the British countryside. Hedgehogs can be just as happy in rural or urban locations.</u></p>

<p>digestive system Bite food and identify which teeth they are using when they bite into it. Look at labels on different drinks – look at sugar content and draw graphs to represent which are worse for teeth Look at different animal teeth and group as to whether herbivores, carnivores or omnivores Compare and contrast what happens to teeth by testing the impact of liquids on egg shells. Explore owl pellets- What is inside? What did they eat? Etc Compare the human digestion to an owls.</p> <p>Key Vocabulary Digestive system, digestion, Mouth, saliva, Tongue, Teeth, Oesophagus, Stomach, Small Intestine, Large Intestine, Herbivore, Carnivore, omnivore, Canine, Incisor, Molar, premolars nutrients, rectum, anus, producer, predator, prey, food chain</p>		<p>Sound, source, vibrate, travel, faint, loud, insulation</p>	<p>As the name suggests, hedgehogs are often found near hedgerows. These are ideal nest sites, providing a good supply of food, protection from predators and corridors to move along. The pastures used by farmers to raise cattle, sheep or horses are also important foraging areas for hedgehogs. To know that changes in environments can endanger hedgehogs lives e.g traffic , ponds , swimming pools , strimmer's , garden tools , bonfires ,netting etc</p> <p>Disciplinary Knowledge (Being a scientist) Classify humans and animals using branching databases. Visit a range of different habitats to look for different animals e.g. woods, noddle hill ponds, wild area, and (trip to Bempton cliffs). Make identification key for organisms found. Keep a diary of environmental changes on the first of every month, to identify changes throughout the year in both habitat and organisms present. Link to weather station. Use data in lessons on J2E. Discuss the effect of floods (use Hull as an example), new development etc. on an environment, habitat. Learn about hedgehog's habitats. Look at the dangers that hedgehogs face. Create a poster about how to keep hedgehogs safe in their natural environment.</p> <p>Key Vocabulary Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, motor, metal, non-metal, symbol</p>
--	--	--	--

Year 5

Animals including Humans	Properties and changes in materials	Earth and Space	Forces	All Living Things and their Habitats
<p>Links to prior learning: To be able to identify and name the parts of the human digestive system To know the functions of the organs in the human digestive system To be able to identify and know the different types of human teeth To know the functions of different human teeth To be able to use and construct food chains to identify</p> <p>Natural Science – Biology Key Concept – Gestation in the animal kingdom Curricular Goal: Create a presentation indicating the stages of growth in humans and other animals. Learning Objectives</p> <ul style="list-style-type: none"> To be able to create a timeline to indicate stages of growth in humans <p>Enquiry Types Research using secondary resources Identifying, classifying and grouping Observing over time</p> <p>Scientific Enquiry Learning Objectives Use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact Make their own decisions about what observations to make, what measurements to use and how long to make them for Decide how to record data and results of increasing complexity from a choice of familiar approaches: scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>Substantive Knowledge (Sticky Knowledge) (To know and remember)</p>	<p>Links to prior learning: To begin to compare different materials To begin to compare different textures To know the purpose and use of different materials Know the name of the materials an object is made from Know about the properties of everyday materials</p> <p>Natural Science –Chemistry Key Concept – Changes of state Curricular Goal: Apply knowledge of how to recover a substance from a solution and suggest how to separate some materials to fix an accidental mixing of salt, water and rice. Learning Objectives</p> <ul style="list-style-type: none"> To be able to compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity, [electrical & thermal], and response to magnets To know and explain how a material dissolves to form a solution To know and show how to recover a substance from a solution To know and demonstrate how some materials can be separated (e.g. through filtering, sieving and evaporating) To know and demonstrate that some changes are reversible and some are not To know how some changes results in the formation of a new material and that this is usually irreversible <p>Enquiry Types Identifying, classifying and grouping Comparative and fair testing Pattern seeking Research using secondary resources</p> <p>Scientific Enquiry Learning Objectives Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact</p>	<p>Links to prior learning: To 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>Natural Science – Physics Key Concept – Our place in the solar system Curricular Goal: Name and explain where the planets are in solar system and compare the time of day at different places on the earth. Learning Objectives</p> <ul style="list-style-type: none"> To know about and explain the movement of the Earth and other planets relative to the Sun To know about and explain the movement of the Moon relative to the Earth To know and demonstrate how night and day are created To be able to describe the Sun, Earth and Moon (using the term spherical) <p>Enquiry Types Research using secondary resources Identifying, classifying and grouping</p> <p>Scientific Enquiry Learning Objectives Use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact Decide how to record data and results of increasing complexity from a choice of familiar approaches: scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>Substantive Knowledge (Sticky Knowledge) (To know and remember) To know as the Earth rotates, it also moves, or revolves, around the Sun. The Earth's path around the Sun is called its orbit. It takes the Earth one year, or 365 1/4 days, to completely orbit the Sun. To know The Moon moves around the Earth in a movement called revolution. This is very similar to Earth's revolution around the Sun. The path the Moon takes to go all the way around the Earth is called its orbit. It takes about 27 days for the Moon to revolve around the Earth once. The revolution of the Moon around Earth is not its only movement, though! It's also spinning in space. To know The Earth completes one rotation every 24 hours to give us day and night. When Britain faces the Sun it is daytime, but the other side of the world is in darkness. So in Australia it is the middle of the night. To know that there are 8 planets. Starting with Mercury, which is the closest to the Sun, the planets are: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune.</p> <p>Disciplinary Knowledge</p>	<p>Links to prior learning: To know about and describe how objects move on different surfaces To know how a simple pulley works and use to lift an object To know how some forces require contact and some do not, giving examples To know about and explain how magnets attract and repel To be able to predict whether magnets will attract or repel and give reason</p> <p>Natural Science – Physics Key Concept – Gravity Curricular Goal 1: Design and make a parachute. Curricular Goal 2: Create an investigation to test which shape boats travels best in water. Curricular Goal 3: Make a moving toy using pulleys or levers. Learning Objectives</p> <ul style="list-style-type: none"> To know what gravity is and its impact on our lives To be able to identify and know the effect of air and water resistance To be able to identify and know the effect of friction To be able to explain how levers, pulleys and gears allow a smaller force to have a greater effect <p>Enquiry Types Comparative and fair testing Identifying, classifying and grouping Research using secondary resources</p> <p>Scientific Enquiry Learning Objectives Select and plan the most appropriate type of scientific enquiry to use to answer scientific questions Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas, use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degree of trust in results</p>	<p>Links to prior learning: To be able to use classification keys to group, identify and name living things To know how changes to an environment could endanger living things</p> <p>Natural Science – Biology Key Concept – Life Cycles Curricular Goal 1: Describe the differences in life cycles between the different types of animals. Curricular Goal 2: Describe and explain how plants and animals reproduce. Learning Objectives</p> <ul style="list-style-type: none"> To know the life cycle of different living things e.g. mammal, amphibian, insect and bird To know the differences between different life cycles To know the process of reproduction in plants To know the process of reproduction in animals <p>Enquiry Types Identifying, classifying and grouping Pattern seeking Comparative and fair testing Observing over time Research using secondary resources</p> <p>Scientific Enquiry Learning Objectives Use their science experiences to explore ideas and raise different kinds of questions Select and plan the most appropriate type of scientific enquiry to use to answer scientific questions Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why Use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment</p>

To know the life cycle of a human and the terms foetus, Embryo, Womb, gestation, baby, Toddler, Teenager, Elderly, Growth, Development, Puberty and be able to explain them

Disciplinary Knowledge

(Being a scientist)

Describe the common life cycles of animals including humans (birth, growth, development, reproduction, death), and compare these to a variety of plants (growth, reproduction and death). Observe, measure and record information about life processes of plants and animals/ humans through drawings, time lines, charts, and diagrams. Describe how the body changes during puberty in preparation for reproduction. Describe the decisions that have to be made before having a baby. Know some basic facts about pregnancy and conception. Look at the stages of growth for humans and other animals e.g. elephant, tigers etc Create a presentation showing the contrasting stages of growth, including gestation length, size of foetus

Key Vocabulary

Foetus, Embryo, Womb, gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty

Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas, use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degree of trust in results

Use their results to make predictions and identify when further observations, comparative and fair tests might be needed

Substantive Knowledge (Sticky Knowledge)

(To know and remember)

To know which materials are hard, soluble and transparent. To know when a substance dissolves, it might look like it has disappeared, but in fact it has just mixed with the water to make a transparent (see-through) liquid called a solution. Substances that dissolve in water are called soluble substances. When you mix sugar with water, the sugar dissolves to make a transparent solution. Salt is soluble in water too.

Substances that do not dissolve in water are called insoluble substances. When you mix sand or flour with water, they do not dissolve. To know and show how to recover a substance from a solution. To know and demonstrate how some materials can be separated (e.g. through filtering, sieving and evaporating) To know and demonstrate that some changes are reversible and some are not. To know how some changes results in the formation of a new material and that this is usually irreversible.

Disciplinary Knowledge

(Being a scientist)

Compare and group materials based on their properties e.g. hard/soft, stretchy/not stretchy, bouncy/not bouncy, shiny/dull, rough/smooth, flexible/rigid, waterproof/not waterproof, absorbent/not absorbent, opaque/transparent/translucent, magnetic/nonmagnetic, etc Investigate thermal conductors and insulators. Discuss conductors and resistance. Investigate the difference between dissolving and melting and soluble and insoluble. Separate materials in a variety of ways. Investigate irreversible changes. Discuss how to keep ice cream cold or stop the sun warming up houses. Investigate which materials are the best.

Key Vocabulary

Hardness, Solubility, Transparency, Conductivity, Magnetic, Filter, Evaporation, Dissolving, Mixing Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, sieve, reversible, non-reversible, change, burning, rusting, new material

(Being a scientist)

Research the planets in the solar system. Create a solar system using fruit/balls. Create a set of Top Trumps cards – children research key facts about each planet – e.g. distance from sun, temperature, size etc. Take globes into a dark place in the school with torches and use to show day and night – spin axis to model how countries come out of day and night. Take children outside onto school field and measure out the distance between each planet using a scale. (1cm=1000km) Moon – discuss the elliptical orbit pattern and rotation – We always see the same face of the Moon from Earth. Put a pencil into a Satsuma/tangerine and mark the face that is facing Earth. Rotate the base of pencil around larger spherical object to represent the Earth. Make songs and rhymes to remember facts and the order of the planets. Name and explain where the planets are in solar system Compare the time of day at different places on the earth.

Key Vocabulary

Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, star, constellation Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune, spherical, solar system, rotates, orbit, planets

Use their results to make predictions and identify when further observations, comparative and fair tests might be needed

Substantive Knowledge (Sticky Knowledge)

(To know and remember)

To know that gravity is Gravity is the name for a force that pulls everything down toward the centre of the Earth. Gravity also pulls any object with mass toward each other. E.g. the Earth and the Moon or the Moon and the Sun. To know about air and water resistance. Air and water resistance; Friction occurs when objects move through water or air. Air resistance is a type of friction between air and another material. For example, when an aeroplane flies through the air, air particles hit the aeroplane making it more difficult for it to move through the air. To know Friction is a force between two surfaces that are sliding, or trying to slide, across each other. For example, when you try to push a book along the floor, friction makes this difficult. Friction always works in the direction opposite to the direction in which the object is moving, or trying to move. Friction always slows a moving object down. The amount of friction depends on the materials from which the two surfaces are made. The rougher the surface, the more friction is produced. Friction also produces heat. If you rub your hands together quickly, you will feel them get warmer. It's the same for an object moving through water. If you go swimming, there is friction between your skin and the water particles. This is known as water resistance. To know some mechanisms allow a smaller force to have a greater effect e.g. using levers and gears.

Disciplinary Knowledge

(Being a scientist)

Research Isaac Newton and understand where gravity came from. Draw a picture on underneath of desks. Discuss what happened. Investigate what happens when people jump out of a plane with a parachute (air resistance). Look at how water resistance works using plasticine in different shapes (streamline). Make a parachute. Test which shape boats travel best in water. Using pulleys or levels make a moving toy.

Key Vocabulary

Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys, spherical Force, earth, mechanism, simple machines, levers,

Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact

Make their own decisions about what observations to make, what measurements to use and how long to make them for

Decide how to record data and results of increasing complexity from a choice of familiar approaches: scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas, use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degree of trust in results

Use their results to make predictions and identify when further observations, comparative and fair tests might be needed

Substantive Knowledge (Sticky Knowledge)

(To know and remember)

To know the life cycle of a mammal is they are born, grow, reproduce, and die. To know the life cycle of an amphibian: They start their lives as eggs in water then develop into tadpoles who breathe through gills, like fish. They end their lives on land as adults who breathe air using their lungs and skin. To know the life cycle of an insect. There are four possible stages in the insect life cycle: egg, larvae, pupa, and adult. Not all insects will go through all four stages. It depends on the type of metamorphosis their species follows. All insects start out as eggs. To know the life cycle of a bird.

To know how plants reproduce; Pollen is carried by insects or blown by the wind from one flower to another. This process is called pollination. Pollen reaches the new flower and travels to the ovary where it fertilises egg cells (ovules) to make seeds. This is fertilisation.

The seeds are scattered by animals or the wind. This process is called dispersal. Some of the seeds will grow into new plants.

To know how animals reproduce. To reproduce, animals need a male and female.

Together they can create offspring, or babies. Some animals, such as chickens, fish and snakes, lay eggs which contain their offspring. Other animals, including humans, tigers and sheep, grow their babies inside them until they are developed enough to be born

Disciplinary Knowledge

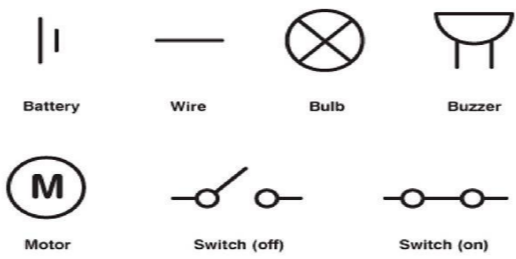
(Being a scientist)

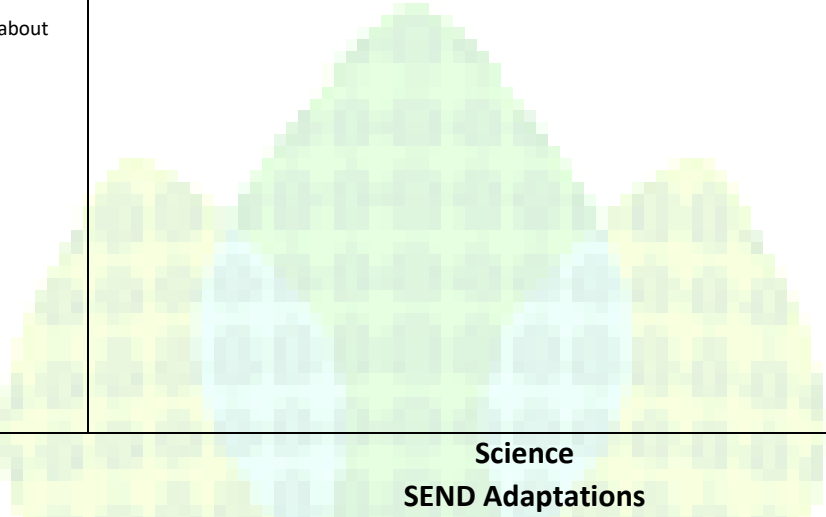
Explore differences in life cycles between different types of animals. Research how different animals reproduce by asking a range of questions- Do all animals either give birth to live young or lay eggs? Why do some animals lay more eggs than they need? Can any male animal have babies? etc Make a lifecycle wheel – comparing similarities and differences between different animals. Investigate Plant reproduction: learn how to plant multiple plants from one plant e.g. fuchsias, collect seeds from plants e.g. peppers, pumpkins, apples, tomatoes, watermelons and grown new plants from them, Regrow vegetables from tops (cut the top off a carrot/onion etc and place it in a saucer of water). Explanation text of pollination, fertilization, seed production, seed dispersal, germination and plant growth.

Compare life cycles of different animals Describe the difference in life cycles Describe and explain how plants and animals reproduce.

Key Vocabulary

Mammal, Reproduction, Insect, amphibian, Bird, Offspring, life cycle, reproduce, sexual,

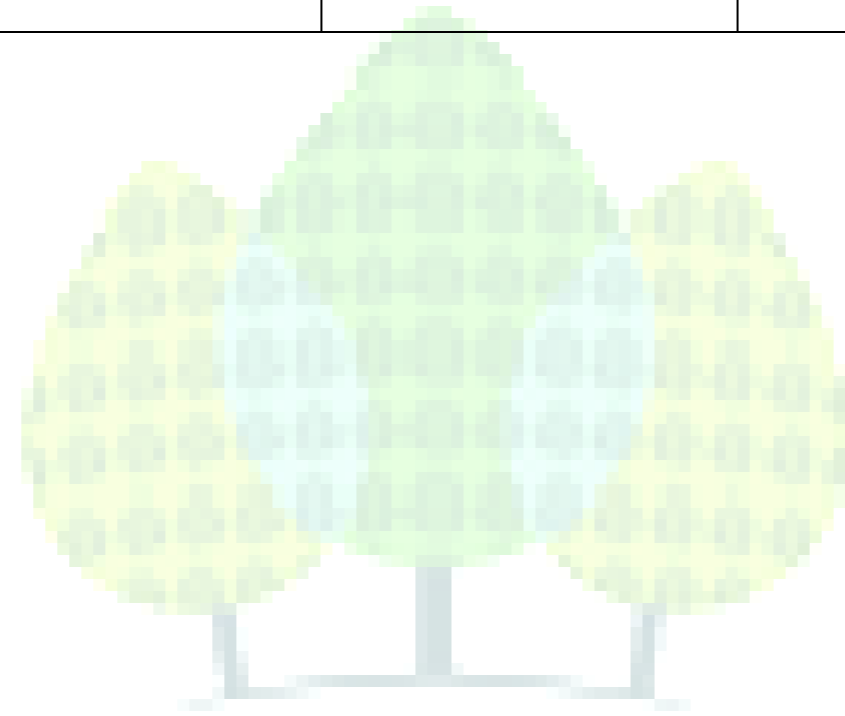
				sperm, fertilise egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cutting
Year 6				
Animals including Humans	Evolution and Inheritance	Electricity	Light	All Living Things and their Habitats
<p>Links to prior learning: <i>To be able to identify and name the parts of the human digestive system</i> <i>To know the functions of the organs in the human digestive system</i> <i>To be able to identify and know the different types of human teeth</i> <i>To know the functions of different human teeth</i> <i>To be able to use and construct food chains to identify</i> <i>To be able to create a timeline to indicate stages of growth in humans</i></p> <p>Natural Science – Biology Key Concept – Heart Health Curricular Goal: Describe and explain how to keep your heart healthy. Learning Objectives</p> <ul style="list-style-type: none"> To be able to identify and name the main parts of the human circulatory system To know the function of the heart, blood vessels and blood To know the impact of diet, exercise, drugs and lifestyle on health To know the ways in which nutrients and water are transported in animals, including humans <p>Enquiry Types Research using secondary resources Identifying, classifying and grouping Scientific Enquiry Learning Objectives Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas, use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degree of trust in results Use their results to make predictions and identify when further observations, comparative and fair tests might be needed Substantive Knowledge (Sticky Knowledge) <i>(To know and remember)</i> To know the circulatory system is made up of 3 important elements: <u>Blood – this liquid circulates around your body carrying food, water, oxygen and waste products.</u> <u>Blood Vessels – these are the tubes that blood flows through.</u> <u>Heart – this vital organ pumps blood through the blood vessels.</u> <u>To know A healthy, balanced diet supports physical development, improves mood and keeps bugs at bay. Foods rich in vitamins and nutrients, like fruit, vegetables and whole grains, give children the fuel they need to develop both physically and mentally.</u> <u>To know exercise helps your body maintain overall good health. It helps build and maintain healthy bones and muscles. It increases flexibility. It feels good, if done right. To know that drugs have a negative impact on your health. To know that people and animals get most of their nutrients from food. Essential nutrients are nutrients that the human body is unable to synthesize. They must be obtained from food or water. Essential nutrients include carbohydrates, proteins, fats, vitamins, and minerals</u> Disciplinary Knowledge <i>(Being a scientist)</i> Children to get into groups and draw around bodies – can they label the main body parts and internal</p>	<p>Links to prior learning: <i>To be able to use classification keys to group, identify and name living things</i> <i>To know how changes to an environment could endanger living things</i> <i>To know the life cycle of different living things e.g. mammal, amphibian, insect and bird</i> <i>To know the differences between different life cycles</i> <i>To know the process of reproduction in plants</i> <i>To know the process of reproduction in animals</i></p> <p>Natural Science – Biology Key Concept – Adaptation Curricular Goal: Choose an animal and explain how they have adapted to their environment. Learning Objectives</p> <ul style="list-style-type: none"> To know how the Earth and living things have changed over time To know how fossils can be used to find out about the past To know about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents) To know how animals and plants are adapted to suit their environment To be able to link adaptation over time to evolution To know about evolution and can explain what it is <p>Enquiry Types Research using secondary resources Pattern seeking Identifying, classifying and grouping Scientific Enquiry Learning Objectives Talk about how scientific ideas have developed over time Use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact Identify scientific evidence that has been used to support or refute ideas or arguments Substantive Knowledge (Sticky Knowledge) <i>(To know and remember)</i> To know how the Earth and living things have changed over time. <u>To know Fossils are the preserved remains or traces of a dead organism. They provide evidence for how living things and the environment have changed over time. To know when living things reproduce they pass on characteristics to their offspring. This is known as inheritance. People inherit key characteristics f</u> <u>All living things produce offspring of the same kind, but normally offspring are not identical to their parents; there are variations that make them different. To know that living things are adapted to their habitats. This means that they have special features that help them to survive. To know that living creatures (animals and plants) adapt or evolve to survive in their environment and to live amongst a specific group of other living things. To know that Evolution is the way that living things change over time.</u> The first person who explained how evolution happens was Charles Darwin with his scientific theory of natural selection. To know Charles Darwin observed that although individuals in a species shared similarities, they were not exact copies of each other; there were small differences or variations between them. He also noticed that everything in the natural world was in competition. The winners were those that had characteristics which made them better adapted for survival. For example, they were stronger, faster, cleverer or more attractive than others in their species. These living things were more likely to reproduce and pass on their useful characteristics to their offspring. Disciplinary Knowledge <i>(Being a scientist)</i></p>	<p>Links to prior learning: <i>To be able to identify and name appliances that require electricity to function</i> <i>To be able to construct a series circuit</i> <i>To be able to identify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers)</i> <i>To be able to predict and test whether a lamp will light within a circuit</i> <i>To know the function of a switch</i> <i>To know the difference between a conductor and an insulator; giving examples of each</i></p> <p>Natural Science –Physics Key Concept – Testing components Curricular Goal: Make a circuit that has an everyday use. Learning Objectives</p> <ul style="list-style-type: none"> To be able to compare and give reasons for why components work and do not work in a circuit To be able to draw circuit diagrams using correct symbols To know how the number and voltage of cells in a circuit links to the brightness of a lamp of the volume of a buzzer <p>Enquiry Types Identifying, classifying and grouping Comparative and fair testing Scientific Enquiry Learning Objectives Use their science experiences to explore ideas and raise different kinds of questions Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas, use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degree of trust in results Use their results to make predictions and identify when further observations, comparative and fair tests might be needed Substantive Knowledge (Sticky Knowledge) <i>(To know and remember)</i> <u>To know what needs to be in circuit for it to work. For a science circuit to work, you'll need an electrical source (a battery), two wires, and a light bulb. When each wire is connected to the electrical power source, and both wires are also connected to the light bulb. To know the symbols:</u></p> <div style="text-align: center;">  <p>Battery Wire Bulb Buzzer</p> <p>Motor Switch (off) Switch (on)</p> </div> <p>To know the brightness of a lamp with the number and voltage of cells used in a circuit. Disciplinary Knowledge <i>(Being a scientist)</i> Recap electrical safety. Revision of what the children already know about circuits. Can they complete & repair circuits? Revise what electrical conductors and insulators are. Match it up – match up cards showing component names, component descriptions and circuit symbols. Examine the differences between series and parallel circuits before working together in small groups to create circuits. Learn about Alessandro Volta – who invented the battery. Design a circuit for an alarm, moving vehicle or torch. Create a circuit to go into your design Key Vocabulary Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators, Amps, Volts, Cell Complete circuit, symbol, motor, voltage,</p>	<p>Links to prior learning: <i>To know that dark is the absence of light</i> <i>To know that light is needed in order to see and is reflected from a surface</i> <i>To know and demonstrate how a shadow is formed and explain how a shadow changes shape</i> <i>To know about the danger of direct sunlight and describe how to keep protected</i></p> <p>Natural Science –Physics Key Concept – How light travels Curricular Goal: Design and make a periscope and explain how it works. Learning Objectives</p> <ul style="list-style-type: none"> To know how light travels To know and demonstrate how we see objects To know why shadows have the same shape as the object that casts them To know how simple optical instruments work e.g. periscope, telescope, binoculars, mirror, magnifying glass etc <p>Enquiry Types Research using secondary resources Comparative and fair testing Identifying, classifying and grouping Scientific Enquiry Learning Objectives Select and plan the most appropriate type of scientific enquiry to use to answer scientific questions Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas, use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degree of trust in results Substantive Knowledge (Sticky Knowledge) <i>(To know and remember)</i> <u>To know light travels in a straight line from a light source and if an object passes in front of it, the light can be blocked. To know 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 . To know that objects that block light (are not fully transparent) will cause shadows. Because light travels in straight lines the shape of the shadow will be the same as the outline shape of the object and the size of the shadow is larger when the light source and object move closer to each other as more of the light is blocked. To know periscope works by light from an object strikes the top mirror at 45° and bounces off at the same angle. This sends light directly down the tube and onto the lower mirror. This mirror, also at a 45° angle, reflects light directly to your eye</u> Disciplinary Knowledge <i>(Being a scientist)</i> Find out how light travels using an object, mirror and ribbon. Draw a diagram and label. Investigate the relationship between light sources and shadows. Focus on what affects their size, direction and shape. How do we see? Look at how the eye works and draw diagrams to show this. Research Isaac Newton and how he discovered light. Design a periscope using mirrors Make a periscope Explain how it works (explain everything, poster) Key Vocabulary Light, Shadows, Mirror, Reflective, Dark, Reflection Light source, absence of light, transparent, translucent, opaque, shiny straight lines, light rays Refraction, Reflection, Light, Spectrum, Rainbow, Colour,</p>	<p>Links to prior learning: <i>To know the life cycle of different living things e.g. mammal, amphibian, insect and bird</i> <i>To know the differences between different life cycles</i> <i>To know the process of reproduction in plants</i> <i>To know the process of reproduction in animals</i></p> <p>Natural Science – Biology Key Concept – Classifying Curricular Goal: Design and explain a way to classify a range of living things. Learning Objectives</p> <ul style="list-style-type: none"> To be able to classify living things into broad groups according to observable characteristics and based on similarities and differences To know how living things have been classified To be able to give reasons for classifying plants and animals in a specific way <p>Enquiry Types Identifying, classifying and grouping Research using secondary resources Scientific Enquiry Learning Objectives Use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact Identify scientific evidence that has been used to support or refute ideas or arguments Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas, use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degree of trust in results Substantive Knowledge (Sticky Knowledge) <i>(To know and remember)</i> <u>To know how to classify living things into broad groups according to observable characteristics and based on similarities and differences. To know how living things have been classified</u> <u>To be able to give reasons for classifying plants and animals in a specific way.</u> Disciplinary Knowledge <i>(Being a scientist)</i> Understand what classification by grouping living things based on similar characteristics. Use MRS GREN to classify living or non-living. Learn about Carl Linnaeus and how his work impacts how we classify living things today. Understand what micro-organisms are and learn about the 3 distinct categories within this group (bacteria, virus and fungi). Activity – Challenge them to suggest names for newly discovered species using Linnaeus two-part system. Look at a range of living things. Create a classification key and explain why they did it this way. Key Vocabulary Insects, Classification, Vertebrates, Invertebrates, Micro-organisms, Amphibians, Reptiles, Mammals, Fish, birds, spiders, snails, worms, flowering and non-flowering</p>

<p>organs. Identify the circulatory system and act out how the heart pumps blood around the body. Investigate that the heart is a pump sending blood to every part of the body and carrying oxygen and nutrients. Make blood soup—Plasma – orange cordial. Red blood cells – red sweets (strawberry laces chopped up). White blood cells – mini marshmallows. Platelets- cheerio's. Circulatory system measuring – use secondary resources to research and calculate some of the staggering statistics and measurements linked to the human circulatory system. Focusing on exercise – what does a healthy balanced diet look like? Create an information booklet for a doctors surgery, explaining how to keep your heart healthy (add diagrams and captions).</p> <p>Key Vocabulary Circulatory, Heart, Blood Vessels, Veins, Arteries, Oxygenated, Deoxygenated, Valve, Exercise, Respiration Pulse, rate, pumps, blood, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, diet, drugs, lifestyle</p>	<p>Research Darwin's theory of evolution. Find out about what inheritance is. Cross breeding Mr Men, who are the parents? Investigate fossils and become fossil detectives. Use secondary sources to research more recent fossils (hadrosaur bones found in Alaska (2015). Investigate adaptation. Look at how Darwin observed finches on the Galapagos islands and how they adapted to their environments. Investigate animal and plant adaptations. Using knowledge on adaptation create a presentation about an animal explaining how they have adapted to their environment</p> <p>Key Vocabulary Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics Offspring, sexual reproduction, vary, suited, adapted, environment, inherited, species,</p>			
---	--	--	--	--

**Science
SEND Adaptations**

ASD	Working Memory	Dyslexia	SEMH	Speech Language & Communication	Physical Difficulties	Hearing Impaired
<ul style="list-style-type: none"> Recognise that the language of science may be challenging for many pupils – for example: " the specific scientific use of everyday words such as 'weight', or " terms specific to science, such as 'electrical circuit'. Plan to teach new language explicitly identify pupils' existing science knowledge and prior experience – eg using posters, concept maps or mind-mapping software. Use real objects as a starting point for developing the concepts and the language needed to describe, discuss and explain what pupils have observed or experienced. Using visual or concrete ('real') materials, or activities involving movement, to reinforce or consolidate learning through a range of sensory channels. 	<ul style="list-style-type: none"> Discussion of experiences and investigations is encouraged to help pupils understand them. time to think about questions before being required to respond " time to explain, and " respect for their responses to questions and contributions to discussions. Build up a chart (using a wallchart or other space) to show the focus of each lesson and how successive lesson topics link together to develop understanding of an area of science work. This could include symbols, images or objects to make it more accessible. Revisiting a mind map of the same area of learning, say after three weeks of studying a science topic, can be a good way of demonstrating and assessing – through the added 'branches' of the map – how pupils' understanding of concepts is developing. This approach can be particularly valuable for pupils for whom oral and written communication present a barrier, as pictures and symbols can be included Use a digital camera to capture each stage of an investigation, or important findings on a field trip, for future reference. 	<ul style="list-style-type: none"> Language is clear, unambiguous and accessible. Key words, meanings and symbols are highlighted, explained and written up, or available in some other way. Instructions are given clearly and reinforced visually, where necessary. Wording of questions is planned carefully, avoiding complex vocabulary and sentence structures. Recognise that the language of science may be challenging for many pupils – for example: " the specific scientific use of everyday words such as 'weight', or " terms specific to science, such as 'electrical circuit'. Plan to teach new language explicitly. Build up a chart (using a wallchart or other space) to show the focus of each lesson and how successive lesson topics link together to develop understanding of an area of science work. This could include symbols, images or objects to make it more accessible. Use a digital camera to capture each stage of an investigation, or important findings on a field trip, for future reference. Images can also be used to build a visual record. Use mnemonics to help pupils remember things like the order of the colours in a rainbow or the relative distance of the planets from Earth. 	<ul style="list-style-type: none"> Tasks motivate pupils. They: " stimulate interest and enthusiasm " are challenging but manageable " draw on real and familiar contexts " are relevant to pupils' lives, and " build on previous learning in the subject and in other areas of the curriculum. Pupils understand reward systems and are motivated to achieve the rewards available. 	<ul style="list-style-type: none"> Language is clear, unambiguous and accessible. Key words, meanings and symbols are highlighted, explained and written up, or available in some other way. Instructions are given clearly and reinforced visually, where necessary. Wording of questions is planned carefully, avoiding complex vocabulary and sentence structures. Recognise that the language of science may be challenging for many pupils – for example: " the specific scientific use of everyday words such as 'weight', or " terms specific to science, such as 'electrical circuit'. Plan to teach new language explicitly. time to think about questions before being required to respond " time to explain, and " respect for their responses to questions and contributions to discussions. Revisiting a mind map of the same area of learning, say after three weeks of studying a science topic, can be a good way of demonstrating and assessing – through the added 'branches' of the map – how pupils' understanding of concepts is developing. This approach can be particularly valuable for pupils for whom oral and written communication present a barrier, as pictures and symbols can be included using ICT to log temperature continuously rather than taking frequent readings manually Check pupils' understanding by inviting them to reformulate explanations in their own words or in other ways. For example, after an investigation of floating and sinking, ask pupils to explain what happened using diagrams, as well as explaining it orally or in writing 	<ul style="list-style-type: none"> Pupils' seating and the main board position are planned for the shape of the room. Pupils can see and hear clearly, as necessary: " the teacher " each other, and " the board/TV/screens. Seating allows for peer or adult support. There is room for pupils with mobility difficulties to obtain their own resources, equipment and materials 	<ul style="list-style-type: none"> Build up a chart (using a wallchart or other space) to show the focus of each lesson and how successive lesson topics link together to develop understanding of an area of science work. This could include symbols, images or objects to make it more accessible.

	<p>Images can also be used to build a visual record. Use mnemonics to help pupils remember things like the order of the colours in a rainbow or the relative distance of the planets from Earth.</p>					
--	--	--	--	--	--	--



Kingswood Parks

PRIMARY SCHOOL