

# CURRICULUM DESIGN for SCIENCE

## Science INTENT

At Mosaic, our intent is to deliver a high-quality and broad and balanced science curriculum which enables children to confidently explore and discover what is around them, so that they have a deeper understanding of the world we live in and develop a respect for living organisms and the physical environment. We aim to promote positive attitudes to science as an interesting and enjoyable subject, and also to develop pupils' awareness of how science is relevant in our daily lives and plays a pivotal role in shaping the future. The world we live in is constantly changing and pupils need to be equipped with the necessary skills to thrive and be successful in that future.

We aim to instil a passion for science through investigative learning, allowing students to ask questions, explore problems and search for solutions using their creativity. We want them to have no limits to their ambitions and to grow up wanting to be anything from astronauts, forensic scientists, vets or marine biologists.

To achieve this, we will include exciting, practical hands-on experiences that encourage curiosity and questioning. Our aim is that these stimulating and challenging experiences help every child secure and extend their scientific knowledge and vocabulary, as well as promoting a love and thirst for science.

## Science IMPLEMENTATION

Science follows the National Curriculum; objectives are delivered through either weekly lessons or a full week topic. The 'voices' (which form our disciplinary knowledge) ensure skills specific to being a scientist are taught each and every year, so, wherever possible, the units have a practical element. The curriculum makes use of prior substantive knowledge and provides clear references on how learning will be used in future enquiries.

Science learning is structured around the repeated themes of chemistry, biology, physics and earth sciences. These unit studies are assigned key knowledge and vocabulary to be learnt and understood.

For those children that show a particular enthusiasm for the subject, they have the opportunity to become a 'Graduate.' Our Graduation scheme gives children the chance to explore learning beyond the National curriculum. This scheme focuses on Inspirational and Influential people within Science.

## Science IMPACT

The successful approach to the teaching of science at Mosaic Primary School will result in a fun, engaging, high quality science education, that provides children with the foundations for understanding the world that they can take with them once they complete their primary education.

Children at Mosaic Primary School will:

- demonstrate a love of science work and an interest in further study and work in this field
- retain knowledge that is pertinent to Science with a real-life context.
- be able to question ideas and reflect on knowledge.
- be able to articulate their understanding of scientific concepts and be able to reason scientifically using rich language linked to science.
- demonstrate a high love of mathematical skills through their work, organising, recording and interpreting results.
- work collaboratively and practically to investigate and experiment.
- achieve age related expectations in Science at the end of their cohort year.

Impact of teaching and learning will be determined through SLT and subject leader reviews and observations as well as assessment carried out through pre and post tasks. We will know we have been successful if children have met their 'end points' which are specified in the planning document.

	Earth sciences		Chemistry		Biology		Physics
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Aut 1	Floating and sinking Body Parts	Human Body	Living things and their Habitats (Dinosaurs)	Magnets and Forces	Living things and their habitat	Earth and Space	Living Things and Habitats
Aut 2	Light	Everyday Materials	Use of Everyday Materials	Light	Electricity	Forces	Evolution and inheritance
Sp 1	Natural World (seasons)	Seasons and Weather	Animals including Humans (nutrition)	Plants	States of Matter	Plants	Electricity
Sp 2	Materials (Man Made and natural)	Plants	Sound	Nutrition	Sound	Changes in Materials	Light
Sum 1	Animals including Humans	Materials (Recycling)	Plants	Rocks	Food Chains	Living things and their habitats	Animals including Humans
Sum 2	Changes of Matter	Animals including Humans	Survival and Animals (offspring)	Animals including humans (skeletons and muscles)	Animals including Humans (digestion)	Animals including Humans (life cycle)	Animals including Humans (reproduction)

<p>End points:</p>		<p><b>By the end of Key Stage 1</b>, children will have been taught:</p> <p>Plants: identify some common plants and describe basic plant and tree structure.</p> <p>Animals: identify common animals including fish and reptiles, and use the terms carnivore, herbivore and omnivore. Notice how offspring grow into adults.</p> <p>Humans: Label a human diagram and investigate senses. Understand basic human needs and how to sustain healthy life.</p> <p>Materials: name and describe features of a range of common materials and compare their suitability for different uses. Find out how to change shapes of basic materials.</p> <p>Seasons: observe and record changes in seasons and weather.</p> <p>Living things: study habitats and how animals are suited to them and discuss simple food chains.</p> <p>Plants: observe how seeds grow and the conditions that they need.</p>	<p><b>By the end of Key Stage 2</b>, children will build on their <b>prior knowledge</b> of Science and extend this further. Children will have been taught:</p> <p>Plants: understand the functions of plant parts, their life cycles and how they sustain life.</p> <p>Animals: understand nutrition, and the purpose of skeletons, muscles and major organs.</p> <p>Rocks: compare types of rocks and describe fossils.</p> <p>Light: recognised how shadows are formed and change, notice reflections and understand how light travels and how we see objects.</p> <p>Forces and magnets: investigate friction and magnetism, and used the terms repel and attract. Experiment with other forces including air resistance and water resistance and see how pulleys and levers can increase the impact of a force.</p> <p>Living things: group and classify living things, and study how their environment shapes how they behave. Give specific reasons for classifications. Describe basic life cycles and the process of reproduction in some plants and animals.</p> <p>Humans: describe the basic parts of human digestion, including teeth, and create simple food chains. Describe the human life cycle. Identify the main parts of the circulatory system and recognise impacts on it (diet/ exercise)</p> <p>States of matter: understand solids, liquids and gases as states of matter and observe changes in the states, including the water cycle.</p> <p>Sound: understand sound is created by vibration and experiment with pitch and volume.</p> <p>Electricity: construct and draw simple circuits, including with lamps motors and switches. Recognise how the objects perform is related to the number of cells used.</p> <p>Materials: describe changes such as melting, evaporating and making a solution. Understand materials can change in reversible and irreversible ways.</p> <p>Earth and Space: describe the movement of the Earth, moon and other planets relative to the sun in the solar system.</p> <p>Evolution and inheritance: recognise how living things change over time and that offspring usually vary from their parent.</p>
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# Progression of Knowledge

Our Science curriculum for KS1-KS2 follows four main themes: Earth sciences, Chemistry, Biology and Physics.

There is an expectation that children will use their prior learning to build on as they journey through Mosaic. Children will reach an **end point** where their understanding of science has been strengthened and deepened through this purposefully mapped out curriculum.

In **Early Years**, children will encounter Science through Understanding the World. Here children will look at people and communities and are helped to make sense of their physical world. They will leave Early Years having been encouraged to explore and problem solve. Children are well prepared for their Y1 learning on the weather through their daily discussions and observations of whether conditions and seasons. Year 1 build on this prior learning and extend it through their fieldwork studies. The EYFS curriculum is mindful of how their curriculum can be used to create the foundations of prior knowledge which we build upon as children journey through Year 1 and KS1.

## The Voices of Science (Disciplinary Knowledge)

Woven through our Science curriculum are our 'Voices'. It is our intention that the voices are used, where appropriate, during science teaching. Children will therefore encounter these 'Voices' repeatedly throughout their time at Mosaic. We have created voices for both working scientifically and for each of the science themes.

Asking questions and recognising that they can be answered in different ways			
EYFS	Year 1 and 2	Year 3 and 4	Year 5 and 6
-Talk confidently to adults and peers about their family and local community. -Can talk about people who are familiar to them e.g. police, doctors, teachers etc.	Asking simple questions and recognising that they can be answered in different ways	Asking relevant questions and using different types of scientific enquiries to answer them, making some decisions about the enquiry.	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
Making observations and taking measurements			
-Explore the natural world around them, making observations and drawing pictures of animals and plants.	Observing closely, using simple equipment	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
Engaging in practical enquiry to answer questions			

-Explore the natural world around them, making observations and drawing pictures of animals and plants.	Performing simple tests Identifying and classifying	Setting up simple practical enquiries, comparative and fair tests	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
<b>Recording and presenting evidence</b>			
-Explores the natural world around them, making observations and drawing pictures of animals and plants.	Gathering and recording data to help in answering questions Use simple features to compare objects and sort them.	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Look for patterns in data.	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
<b>Answering questions and concluding</b>			
-Can talk about people who are familiar to them e.g. police, doctors, teachers etc. - Can talk about people who are familiar to them e.g. police, doctors, teachers etc.	Using their observations and ideas to suggest answers to questions, including using simple measurements.  Experience different types of scientific enquiry	Using straightforward scientific evidence to answer questions or to support their findings Identifying differences, similarities or changes related to simple scientific ideas and processes  Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	Identifying scientific evidence that has been used to support or refute ideas or arguments  Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
<b>Evaluating and raising further questions and predictions</b>			
-Daily weather conversations and comparisons from yesterday and predictions for tomorrow's weather.		Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral
		Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	and written forms such as displays and other presentations Using test results to make predictions to set up further comparative and fair tests
<b>Communicating their findings</b>			

<p>-Talk confidently to adults and peers about their family and local community.</p> <p>-Can talk about people who are familiar to them e.g. police, doctors, teachers etc. - making observations and drawing pictures of animals and plants.</p>		<p>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p>	<p>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</p>
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	Develop Biology knowledge	Develop Chemistry knowledge	Develop Physics knowledge	Develop Earth Sciences knowledge.
KS1	<ul style="list-style-type: none"> <li>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</li> <li>Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</li> <li>Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).</li> <li>Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</li> <li>Notice that animals, including humans, have offspring which grow into adults.</li> <li>Find out about and describe the basic needs of animals, including humans, for survival.</li> <li>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</li> <li>Explore and compare the differences between things that are living, dead, and things that have never been alive.</li> <li>Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.</li> <li>Identify and name a variety of plants and animals in their habitats, including microhabitats.</li> <li>Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food</li> </ul>	<ul style="list-style-type: none"> <li>Distinguish between an object and the material from which it is made.</li> <li>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. <ul style="list-style-type: none"> <li>Describe the simple physical properties of a variety of everyday materials.</li> <li>Compare and group together a variety of everyday materials on the basis of their simple physical properties</li> <li>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</li> </ul> </li> <li>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</li> </ul>	(Non-statutory) <ul style="list-style-type: none"> <li>What sources of light are. Features of day and night, including temperature.</li> <li>Electricity as a source of light</li> <li>Observe and describe shadows</li> <li>Identify sources of sound</li> <li>Identify louder and softer sounds</li> </ul>	<ul style="list-style-type: none"> <li>Observe changes across the four seasons.</li> <li>Observe and describe weather associated with the seasons and how day length varies.</li> </ul>



Y3/4	<ul style="list-style-type: none"> <li>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</li> <li>Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant.</li> <li>Investigate the way in which water is transported within plants.</li> <li>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> <li>Recognise that living things can be grouped in a variety of ways.</li> <li>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</li> <li>Recognise that environments can change and that this can sometimes pose dangers to living things.</li> <li>Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.</li> </ul>	<ul style="list-style-type: none"> <li>Compare and group materials together, according to whether they are solids, liquids or gases.</li> <li>Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C).</li> <li>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> <li>Recognise some common conductors and insulators, and associate metals with being good conductors.</li> </ul>	<ul style="list-style-type: none"> <li>Recognise that they need light in order to see things and that dark is the absence of light.</li> <li>Notice that light is reflected from surfaces.</li> <li>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</li> <li>Recognise that shadows are formed when the light from a light source is blocked by an opaque object.</li> <li>Find patterns in the way that the size of a shadow changes.</li> <li>Compare how things move on different surfaces.</li> <li>Notice that some forces need contact between two objects, but magnetic forces can act at a distance.</li> <li>Observe how magnets attract or repel each other and attract some materials and not others.</li> <li>Compare and group together a variety of everyday materials based on whether they are attracted to a magnet and identify some magnetic materials.</li> <li>Describe magnets as having two poles.</li> <li>Predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> </ul>	<ul style="list-style-type: none"> <li>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</li> <li>Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</li> <li>Recognise that soils are made from rocks and organic matter.</li> </ul>
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	<ul style="list-style-type: none"> <li>Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</li> <li>Describe the simple functions of the basic parts of the digestive system in humans.</li> <li>Identify the different types of teeth in humans and their simple functions.</li> <li>Construct and interpret a variety of food chains, identifying producers, predators and prey.</li> </ul>		<ul style="list-style-type: none"> <li>Identify how sounds are made, associating some of them with something vibrating.</li> <li>Recognise that vibrations from sounds travel through a medium to the ear.</li> <li>Find patterns between the pitch of a sound and features of the object that produced it.</li> <li>Find patterns between the volume of a sound and the strength of the vibrations that produced it.</li> <li>Recognise that sounds get fainter as the distance from the sound source increases.</li> <li>Identify common appliances that run on electricity.</li> <li>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</li> <li>Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.</li> <li>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</li> </ul>	
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|  |  |  | <ul style="list-style-type: none"><li>• Recognise some common conductors and insulators, and associate metals with being good conductors.</li></ul> |  |
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<p>Y5/6</p>	<ul style="list-style-type: none"> <li>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</li> <li>Describe the life process of reproduction in some plants and animals. Year 6</li> <li>Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals.</li> <li>Give reasons for classifying plants and animals based on specific characteristics.</li> <li>Describe the changes as humans develop to old age.</li> <li>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</li> <li>Recognise the impact of diet, exercise, drugs and lifestyle on the way their body's function. • Describe the ways in which nutrients and water are transported within animals, including humans.</li> <li>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</li> <li>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. Key Stage 3</li> <li>Heredity as the process by which genetic information is transmitted from one generation to the next. • A simple</li> </ul>	<ul style="list-style-type: none"> <li>Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.</li> <li>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</li> <li>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</li> <li>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</li> <li>Demonstrate that dissolving, mixing and changes of state are reversible changes.</li> <li>Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning</li> </ul>	<ul style="list-style-type: none"> <li>Recognise that light appears to travel in straight lines. • Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.</li> <li>Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</li> <li>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</li> <li>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.</li> <li>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</li> <li>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</li> <li>Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.</li> <li>Use recognised symbols when representing a simple circuit in a diagram.</li> </ul>	<ul style="list-style-type: none"> <li>Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>Describe the movement of the Moon relative to the Earth.</li> <li>Describe the Sun, Earth and Moon as approximately spherical bodies.</li> <li>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> </ul>
	<p>model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model.</p> <ul style="list-style-type: none"> <li>The variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection.</li> <li>Changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction.</li> </ul>	<p>and the action of acid on bicarbonate of soda.</p>		

# Year 1

Theme	Plants	Animals inc Humans	Materials	Seasons
<b>National Curriculum</b>	<p>-Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</p> <p>-Identify and describe the basic structure of a variety of common flowering plants, including trees.</p>	<p>-Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</p> <p>-Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</p> <p>-Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</p> <p>-Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</p>	<p>-Distinguish between an object and the material from which it is made</p> <p>-Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</p> <p>-Describe the simple physical properties of a variety of everyday materials</p> <p>- Compare and group together a variety of everyday materials on the basis of their simple physical properties.</p>	<p>-Observe changes across the four seasons</p> <p>-Observe and describe weather associated with the seasons and how day length varies.</p>
<b>Specific content Substantive knowledge</b>	<p>Can you name and describe the parts of a plant? Can they identify and name a range of common plants and trees? Can they recognise deciduous and evergreen trees?</p>	<p>Human focus:            Can you name parts of human body of what you can see?            Can they link parts of the body to their senses?            Can they name parts of an animal's body?            Can they compare the bodies of different animals?            Can they see the difference between human and animal bodies?            Can they sort living and non-living things?</p>	<p>Use of different materials            Classifying and grouping            Changing materials by bending ect.</p>	<p>Identify how plants change.            Compare similarities and differences between seasons.</p> <p>What do we wear in different seasons?</p>

<p><b>Enquiries and main focus skills</b> (Though all need to be taught).</p>	<p>Grow beans in transparent food bags to observe roots and shoots.</p> <p><i>Ask simple questions</i> <i>Suggest ways of answering questions</i></p>	<p>Exploring the outdoor environment to compare and explore living animals. (Minibeasts, pond life)</p> <p>Measuring heart rate through completing a range of exercises. <i>Making predictions.</i></p>	<p>Which roof is waterproof? Design and build a house for the three little pigs.</p> <p>Create material feely bags to explore properties.</p> <p><i>Use observations to suggest answers to questions.</i></p>	<p>Collect photos, create pictures – These can be done at stages throughout the year in a class book.</p> <p><i>Use observations for discussions.</i></p>
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	<p><i>Using their observations and ideas to suggest answers to questions, including using simple measurements</i></p>	<p><i>Observing closely, using simple equipment Identify and classify Use simple measurement</i></p>	<p><i>Perform simple tests Observe closely, using simple equipment</i></p>	<p><i>Gather and record data to help answer questions</i></p>
<p><b>Scientists</b></p> <p>Red – women in science</p> <p>Blue – Woman from diverse background</p> <p>Green – Men from diverse backgrounds</p>	<p><b>Beatrix Potter</b> Author &amp; Botanist</p> 	<p>Chris Packham-Animal Conservationist</p> 	<p>William Addis Toothbrush Inventor</p> <p>Charles Mackintosh (Waterproof coat)</p>   <p>Chester Greenwood-Earmuffs</p>	<p>Dr Steve Lyons (Extreme Weather)</p> <p>Holly Green (Meteorologist)</p> 

<p><b>Sequencing knowledge</b></p>	<p><b>Prior</b> - Reception          Begin to understand the need to respect and care for the natural environment and all living things.          .-Make observations of animals and <b>plants</b> through pictures, words or photographs.</p> <p><b>Future</b> – Year 2 plants.</p>	<p><b>Prior</b> – Reception - Talk about members of their immediate family and community. - Name and describe people who are familiar to them.          - Recognise some environments that are different to the one in which they live.</p> <p><b>Future</b> – Year 2 animals inc humans.</p>	<p><b>Prior – Reception</b>          -Explore the natural world around them, making observations and drawing pictures.          -Describe what they see, hear and feel whilst outside.</p> <p><b>Future</b> – Year 2 Animals inc Humans</p>	<p><b>Prior</b> – reception - Explore the natural world around them. - Describe what they see, hear and feel whilst outside. - Understand the effect of changing seasons on the natural world around them.</p> <p><b>Future</b> - Year 5 Earth and Space</p>
<p><b>Tier 2 and Tier 3 vocabulary</b></p>	<p>Names of locally found garden plants / wild plants / flowering plants / trees          Vegetable          Name of plants grown          Leaf / leaves          Flower          Blossom          Petal</p>	<p>Names of common animals – fish, birds etc.          Meat-eaters          Plant feeders          Habitat          Wild animals          Pets          Senses          Hear/hearing</p>	<p>Object          Material          Wood          Plastic          Glass          Metal          Solid          Liquid          Gas</p>	<p>Season          Autumn          Winter          Spring          Summer          Weather          Names of common weather features Days</p>

	Fruit Berry Names of vegetables grown Root Bulb Seed Trunk Branch Stem stalk	See/seeing Touch / touching Taste/tasting Body parts Mouth Head Body Neck Arms Eyebrows Eyelashes Legs Elbows Knees Face Eyes Ears Teeth Wing Claw Tail Beak Fur Feather Fin Scales	Water Rock Rough smooth Bright / shiny Dull / dim Absorbent Waterproof Wing Claw Tail Beak Fur Feather Fin Scales	Hours Months Hot Cold
Computing Links				I pads – photos for class book









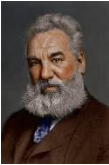
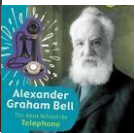

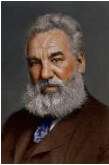
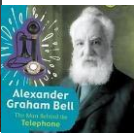



# Year 2

	Year 2				
Theme	Plants	Animals inc Humans	Living things and habitats	Materials	Sound (non-stat)

<p><b>National Curriculum</b></p>	<p>-Observe and describe how seeds and bulbs grow into mature plants</p> <p>-Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p>	<p>-Notice that animals, including humans, have offspring which grow into adults</p> <p>-Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>-Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	<p>-Explore and compare the differences between things that are living, dead, and things that have never been alive -Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other</p> <p>-Identify and name a variety of plants and animals in their habitats, including microhabitats</p> <p>-Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.</p>	<p>-Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</p> <p>-Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>	<p>-Identify sources of sound</p> <p>-Identify louder and softer sounds.</p>
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<p><b>Specific content</b> <b>Substantive knowledge</b></p>	<p>Living and non-living things What plants need to grow Growing from seed and bulbs</p>	<p>Can they describe what animals needs to survive? Can they explain that animals grow and reproduce?</p> <p>Can they describe the life cycle of some living things?</p> <p>Can they explain the basic needs of animals, including humans?</p> <p>Can they describe why exercise and a balance diet are important to humans?</p>	<p>Habitats including micro habitats.</p> <p>Early food chains</p> <p>Can they match certain living things to their habitats?</p> <p>Can they explain the difference between living and non living things?</p> <p>Can the describe how a habitat provides the needs for a living thing?</p> <p>Can they describe how plants and animals are suited to their habitats?</p>	<p>Can the distinguish between the object and the material from which it is made?</p> <p>Can the identify and name a range of materials?</p> <p>Can they describe the simple properties of the materials?</p> <p>Can they compare and classify materials based on their properties?</p> <p>Can they explore how shapes of solid objects can be changed (squashing, bending, twisting, stretching)?</p> <p>Can they identify and compare the uses of materials?</p>	<p>Can they describe different ways of making sounds? (Hitting, plucking, blowing)</p> <p>Do they recognise a sound is louder when they are nearer to the source?</p> <p>(Link to drumming short study)</p>
<p><b>Enquiries and main focus skills</b> (Though all need to be taught).</p>	<p>Growing cress with different variables e.g. water, light, heat</p> <p>Ask simple <i>questions</i> and recognise can be answered in different ways.</p> <p>Perform simple <i>fair tests</i>. Gather and <i>record data</i>.</p>	<p>Through WFL weekly sessions- butterfly farm or an ant farm.</p> <p><i>Observe closely.</i> <i>Gather and record data to help answer questions.</i></p>	<p>Going on a bug hunt Make a habitat or bug hotel Make a habitat for a tortoise Compare offspring from different animals.</p> <p><i>Identify and classify.</i> <i>Using observations and ideas to suggest answers to questions.</i></p>	<p>Sort and group materials according to different properties. Testing materials to whether they are hard or soft. Trying dent or scratch materials with hammer and nails or potato mashers.</p> <p><i>Fair testing.</i> <i>Ask simple questions.</i></p>	<p>Explore musical instruments Investigate ways to stop sound entering ears. Explore and research sounds of nocturnal animals.</p> <p><i>Identify and classify.</i> <i>Problem solving.</i> <i>Research.</i></p>

<p><b>Scientists</b></p> <p>Red – women in science</p> <p>Blue – Woman from diverse background</p> <p>Green – Men from diverse backgrounds</p>	<p>Captain Cook- Botanists</p> <p><b>Agnes Arber Botanist</b></p>  <p>Alan Titchmarsh- Botanist &amp; Gardener</p> 	<p><b>Florence Nightingale Pioneer of modern nursing in GB</b></p> <p><b>Elizabeth Garrett Anderson - First British female physician and surgeon</b></p>  <p><b>Steve Irwin</b></p>  <p>Wildlife expert</p> <p><b>Robert Winston Human Scientist</b></p>	<p><b>Charles Macintosh - Waterproof material</b></p> <p><b>John MacAdam-Tarmac</b></p>  <p><b>Rachel Carson- Marine Pollution</b></p>  <p><b>Liz Bonnin Conservationist</b></p>  <p><b>Eugenie Clark- marine biologist</b></p> 	<p>Alexander Graham Bell</p> <p>-</p> <p>Invented the telephone</p>   <p><a href="#">The invention of mobile phones   Science Museum</a></p> 	<p>Alexander Graham Bell</p> <p>-</p> <p>Invented the telephone</p>   <p><a href="#">The invention of mobile phones   Science Museum</a></p> 
<p><b>Sequencing knowledge</b></p>	<p><b>Prior – Year 1 plants</b></p> <p>-Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</p> <p>-Identify and describe the basic structure of a variety of common flowering plants, including trees.</p>	<p><b>Prior – Year 1 Animals inc humans</b></p> <p>-Identify and name a variety of common animals</p> <p>-Identify and name carnivores, herbivores and omnivores. - Describe and compare the structure of a variety of common animals.</p>	<p><b>Prior – Year 1 Animals inc humans.</b></p> <p>-Identify and name a variety of common animals</p> <p>-Identify and name carnivores, herbivores and omnivores. - Describe and compare the structure of a variety of common animals.</p>	<p><b>Prior – Year 1 materials -</b></p> <p>Distinguish between an object and the material from which it is made. I</p> <p>-Identify and name a variety of everyday materials.</p> <p>-Describe the simple physical properties of a variety of everyday materials.</p>	<p><b>Prior – Year 1 Animals inc humans</b></p> <p>- identify parts of body and link with senses.</p>

	<p><b><u>Future</u></b> – Year 3 <b><u>plants.</u></b></p>	<p>-Identify, name, draw and label the basic parts of the human body link senses.</p> <p><b><u>Future</u></b> – Year 3 <b><u>animals including humans.</u></b></p>	<p>-Identify, name, draw and label the basic parts of the human body link senses</p> <p><b><u>Future</u></b> – Year 3 <b><u>Animals inc humans and Plants.</u></b></p>	<p>-Compare and group together a variety of materials.</p> <p>.</p> <p><b><u>Future</u></b> – Year 3 <b><u>Rocks</u></b></p>	<p><b><u>Future</u></b> - Year 4 <b><u>sound</u></b></p>

<p><b>Tier 2 and Tier 3 vocabulary</b></p>	<p><b>As Yr 1 plus:</b>  Seedling  Shoot  Fully grown  Growth  Healthy  Wither  Soil  Earth Water  Light  Hot/cold  Nutrients</p>	<p><b>As Yr 1 plus:</b>  Adult  Young  Baby  Toddler  Child  Teenager  Grow  Offspring  Survival  Basic needs – water, food, air  Food types – name common eggs  Hygiene  Infection  Exercise  Unhealthy</p>	<p>Living  Alive  Non-living  Dead  Move  Grow  Feed  Breathe  Have young  Needs  Shelter  Heat  Habitats  Conditions  Characteristics  Adaptation  Food chain  Name micro-habitats – log, bush  Describes conditions – damp, dark etc  Food chain  Carnivore  Herbivore  Omnivore  Name local habitats – pond, woodland</p>	<p><b>As Yr 1 plus:</b>  Man-made  Natural  Describe features of change – pushing / pulling  Suitable  Use / useful  Characteristics  Properties  Rigid  Flexible  Strong  Weak  Reflective  Non-reflective  Transparent  Opaque  Translucent  Shape  Changes  Brittle</p>	<p>Loud  Quiet  Near  Far  Hit  Pluck  Blow</p>
<p><b>Computing Links</b></p>	<p>i-pads – photos of seeds growing over time, timelaps.</p>			<p>Pages app – present learning.</p>	<p>I pads – mini video of performance/experiment. I pads measure sound (in health app)</p>

# Year 3

	Year 3				
Theme	Plants	Animals inc Humans	Light and Dark	Forces and Magnetism	Rocks
<b>National Curriculum</b>	<p>-identify and describe the functions of different parts of flowering plants</p> <p>- explore the requirements of plants for life and growth (recap air, light, water, nutrients from soil, and room to grow from year 2) and how they vary from plant to plant.</p> <p>-Can they investigate the way in which water is transported within plants?</p> <p>- explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>	<p>-Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat</p> <p>-Identify that humans and some other animals have skeletons and muscles for support, protection and movement</p>	<p>-Recognise that they need light in order to see things and that dark is the absence of light</p> <p>-Notice that light is reflected from surfaces</p> <p>-Recognise that light from the sun can be dangerous and that there are ways to protect their eyes</p> <p>-Recognise that shadows are formed when the light from a light source is blocked by an opaque object</p> <p>-Find patterns in the way that the size of shadows change.</p>	<p>-Compare how things move on different surfaces</p> <p>-Notice that some forces need contact between two objects, but magnetic forces can act at a distance</p> <p>-Observe how magnets attract or repel each other and attract some materials and not others</p> <p>-Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials</p> <p>-Describe magnets as having two poles</p> <p>-Predict whether two magnets will attract or repel each other, depending on which poles are facing.</p>	<p>-Compare and group together different rocks based on their simple physical properties.</p> <p>-Understand the use of some rocks.</p> <p>-Recognise that there are different types of rocks and that they are formed in different ways.</p> <p>-Know how fossils are formed within sedimentary rock.</p>

<p><b>Specific content</b> <b>Substantive knowledge</b></p>	<p>Can they describe the functions of the different parts of plants? Roots to collect water, stem/trunk to transport water around the plant and to support/ hold the plant up, leaves to catch sunlight to produce their food (photosynthesis) and flowers to attract insects for pollination and plant reproduction.</p>	<p>Can they explain the importance of balanced nutritious diet? What benefits does the body gain from the main food groups – Carbs, protein, vits and mins, dairy, fats.</p> <p>Can they describe how nutrients, water and oxygen are transported within animals and humans? The main organs of the digestive system.</p> <p>Can the describe the skeletal system of a human?</p>	<p>Can they explain the difference between transparent, translucent and opaque?</p> <p>Do they recognise how light is reflected from surfaces?</p> <p>Can they compare the brightness and colour of lights?</p> <p>Can they explain how bulbs work in an electrical circuit?</p> <p>Can they explain what dark is? Using words like shadow.</p>	<p>Can they describe the speed and direction of moving objects?</p> <p>Can they explain why an object will move faster if it is moving down a hill or a slope?</p> <p>Can they observe that magnetic forces can be transmitted without contact?</p> <p>Can they talk about some magnets attract or repel each other?</p>	<p>Can children compare and group rocks based on their characteristics? Match rocks to their definition depending on their characteristics. Research how the rocks are formed.</p> <p>Link a study of soils and rocks. Year 3 short geography study is locational weather/ water cycle and suggests a field trip to hound tor or</p>
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	<p>Can they identify what plants needs for life and growth?</p> <p>Can they explain how the needs and functions of plant parts vary from plant to plant? E.g. insect and wind pollinated plants.</p> <p>- investigate the way in which water is transported within plants – (Experiment with celery or chrysanthemums and food colouring in water.)</p>	<p>Can describe the muscular system a human? Muscles work in pairs.</p>	<p>Can they explain why their shadow changes when the light source is moved closer or further from the object?</p>	<p>Can they predict if the magnets will attract or repel depending on which poles are facing each other?</p> <p>Can they classify which materials are attracted to magnets? Not just metal – iron (and so steel), cobalt and nickel.</p>	<p>Hallsands (the village that fell into the sea.</p> <p>Comparison of soils from Devon (e.g. sandy/ red/ clay) or soils from a garden centre.</p> <p>What causes soils to appear different?</p> <p>Research how fossils are made.</p>
<p><b>Enquiries and main focus skill</b> (Though all need to be taught).</p>	<p>Investigate the way in which water is transported within plants e.g. using coloured dye in split stem white carnations/ celery?</p>	<p>identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about what would happen if humans did</p>	<p>Play mirror games to see how light behaves, including how mirrors reverse the image.</p> <p>Look for and measure shadows as objects are moved towards/</p>	<p>Exploring friction by using the ramps and then measuring the distance of the travelled car by changing the gradient/surface covering.</p>	<p>Explore and group rocks according to physical properties/characteristics.</p> <p>Examine and observe surfaces of rocks and how</p>



EXPERIMENT – do plants need soil? Does fertilizer make a difference.  
[Do plants need soil to grow?](#)  
 | STEM

*Further understand fair testing.*

*Make systematic observations using simple equipment.*

not have skeletons.

Compare/ contrast diets (e.g. their own diet and that of a pet).

Does size of muscle matter? Children of varying sizes hold a (n<sup>ot</sup> too heavy) weight with arms outstretched. Who can hold the longest? Is this always the case? Repeat – **discussing fair tests**. Measure and record timings. Disc<sup>uss</sup> findings using 'conclusion' vocab.

*Set up simple and practical enquiries.*

*Make systematic observations using simple equipment.*

*With prompting suggest conclusions that can be drawn from data. Pattern seeking.*

away from a light source. This information can be plotted on a simple graph and would allow for prediction.

*Make systematic observations.*

*Gather and record data about similarities, differences and changes. Pattern seeking.*

Explore how magnets react to each other. Test materials around the classroom. Observe that contact is not needed for a magnetic force to occur (unlike most forces).

Find a fair way to compare the strength of a magnet. "Are bigger magnets stronger than small magnets?" "Can you make a magnet stronger by adding another magnet?"

*Record findings in various ways including tables, charts and graphs.*

*Use standard units when taking measurements. Problem solving.*



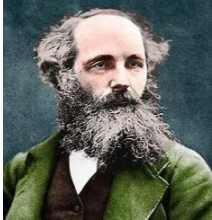


they appear. INVESTIGATE rock surfaces with scratch tests to explore hardness.

Look for signs of rock erosion (e.g. headstones, stone walls). What happens when rocks are rubbed together/ submerged?

Compare a series of types of soil/ magnifying glasses and describe structure/particle size, colour, absorbency and permeability.

*Ask relevant questions when prompted. Set up simple and practical enquiries.*

					<p><i>Make systematic observations using simple equipment. Set up and carry out comparative tests.</i></p> <p><i>Make systematic observations using simple equipment.</i></p>
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<p><b>Scientists</b></p> <p>Red – women in science</p> <p>Blue – Woman from diverse background</p> <p>Green – Men from diverse backgrounds</p>	<p>Joseph Banks- Botanist</p>  <p>Ahmed Mumin Warfa - Botanist</p>  <p>Marianne North- Botanist</p> 	<p>Marie Curie- Radiation</p>  <p>Wilhelm Rontgen - X rays</p>  <p>Adelle Davis - Nutritionist</p> 	<p>Justus Von Liebig Mirrors</p>  <p>James Clerk Maxwell (Visible and Invisible Waves of Light)</p> 	<p>Andre Marie Ampere- Electro- magnetism</p>  <p>The Wright Brothers Airplanes</p>  <p>Henry Ford- Cars</p> 	<p>Mary Anning- Fossil hunter</p>  <p>Dr Anjana Khatwa</p>  <p>Geologist</p> <p>Ursula Marvin- Geologist Inge Lehrmasn -Earth's Mantle Katia Krafft - Geologist and Volcanologist</p>
<p><b>Sequencing knowledge</b></p>	<p><b>Prior</b> – Year2 <u>plants</u> - Observe and describe how seeds and bulbs grow into mature plants. -Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. (Y2 - Living things and their habitats) -Identify and name a variety of plants and animals in their</p>	<p><b>Prior</b> – Year 2 <u>Animals including humans</u> -Notice that animals, including humans, have offspring which grow into adults. -Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). -Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	<p><b>Prior</b> – Year . Light and Dark - What sources of light are?  Features of day and night, including temperature.  Electricity as a source of light.  Shadows (observe and describe)  <b>Future</b> – Year <u>6 light</u></p>	<p><b>Prior</b> – Year 2 <u>materials</u> - Identify and compare the suitability of a variety of everyday materials for particular uses  -Find out how the shapes of solid objects made from some materials can be changed.  <b>Future</b> – Year 4 <u>States of matter</u></p>	<p><b>Prior</b> – Year 2 <u>materials</u> -Identify and compare the suitability of a variety of everyday materials for particular uses.  <b>Future</b> – Year 5 <u>Earth in Space</u></p>

				<u>Year 5 Forces</u>	
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	<p>habitats, including microhabitats.</p> <p><b><u>Future – year 4 Living things and their habitats.</u></b></p>	<p>Year 2 - Living things and their habitats.</p> <p>-Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.</p> <p><b><u>Future –Year 4 Animals including humans.</u></b></p>			
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Tier 2 and Tier 3 vocabulary	<b>As KS1 plus:</b> Part Role Temperature Absorb Soil Well-drained Fertiliser Nutrients Plant life cycle Transported Pollination Seed formation Seed dispersal	<b>As KS1 plus:</b> Nutrition Nutrients Dietary fibre Balanced diet Carbohydrate Protein Vitamins Minerals Fat Skeleton Muscles Support Protection Movement Brain Blood vessels Heart Skull Ribs Spine Backbone Joints Sockets Tendons	Light Light source Names of light sources, torch etc Dark / darkness Reflect Reflective Mirror Shadow Block / absorb Direction of light Transparent Opaque Translucent Bright Dim Light beam sunlight	Force gravity Push / pull Direction of force Air resistance streamlined Float / sink Friction Force-meter Magnet Magnetic force Strength Attract Repel Poles North pole South pole Bar magnet Ring magnet Button magnet Horse-shoe Magnet Name common magnetic and non-magnetic materials	Rock Sedimentary Igneous Metamorphic Soil Clay Some rock names e.g. flint, sandstone, limestone, granite. Fossils.
Computing Links	Google expeditions- plant pollination	Green screen digestive system. <a href="https://www.curiscope.co.uk/pro ducts/virtuali-tee">https://www.curiscope.co.uk/pro ducts/virtuali-tee</a>		Google expedition-magnetism  Science Museum	Google expeditions-fossils  The Natural History museum virtual tour

<h1>Year 4</h1>					
Theme	Animals inc Humans	Living things and their habitats	Electricity	States of Matter	Sound


<p><b>National Curriculum</b></p>	<p>describe the simple functions of the basic parts of the digestive system in humans</p> <p>identify the different types of teeth in humans and their simple functions</p> <p>construct and interpret a variety of food chains, identifying producers, predators and prey</p>	<p>recognise that living things can be grouped in a variety of ways</p> <p>explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p> <p>recognise that environments can change and that this can sometimes pose dangers to living things</p>	<p>identify common appliances that run on electricity</p> <p>construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery</p> <p>recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</p> <p>recognise some common conductors and insulators, and associate metals with being good conductors</p>	<p>compare and group materials together, according to whether they are solids, liquids or gases</p> <p>observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)</p> <p>identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p>	<p>identify how sounds are made, associating some of them with something vibrating</p> <p>recognise that vibrations from sounds travel through a medium to the ear</p> <p>find patterns between the pitch of a sound and features of the object that produced it</p> <p>find patterns between the volume of a sound and the strength of the vibrations that produced it</p> <p>recognise that sounds get fainter as the distance from the sound source increases</p>
<p><b>Specific content Substantive knowledge</b></p>	<p>Draw and label the main body parts associated with digestive system. (mouth, teeth, tongue, stomach etc.)</p> <p>Describe the main function of the organs in the digestive system.</p> <p>Can they identify the functions of the different human teeth?</p>	<p>Use the local environment throughout the year (e.g. across the seasons) to identify common plants and animals and identify their habitats.</p> <p>Group wide selections of animals and plants Using classification keys. Ensure using formal groups such as reptiles, mammal, fish, birds and amphibians that have been introduced before.</p>	<p>Explain how electricity is useful to us. Research how to use it safely.</p> <p>Construct simple circuits and label parts. Convert the construction into a basic circuit diagram with labels. This may remain pictorial at this time.</p> <p>Test whether materials are conductors or insulators.</p>	<p>Pupils should explore a variety of everyday materials and develop simple descriptions of the states of matter (solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container).</p> <p>Pupils should observe water as a solid, a liquid and a gas and should note the changes to water when it is heated or cooled.</p>	<p>Can they see and explain how sound is created (using drums/ rice, observing guitar strings making rubber band guitar.)</p> <p>Can they identify patterns in how sound is produced (volume and pitch) for instance by vibrating rulers on the desk.</p> <p>Can they see how sound is fainter from a distance and also how long sound takes to travel (e.g. a child hits a drum</p>

	<p>Explain the difference between the teeth of herbivores and omnivores.</p> <p>Explain simple food chains.</p>	<p>Discuss invertebrates and vertebrates.</p> <p>Can they compare the classification of common plants and animals to living things found in other places? (under the sea, prehistoric)</p> <p>Can the name and group a variety of living things based of feeding patterns? (Producer, consumer, predator, prey, herbivore, carnivore, omnivore (vocab introduced lightly in year 1).</p> <p>Do they recognise that environments can change and this can sometimes pose a danger to living things?</p>	<p>Read circuit diagrams to predict and then test to identify if they will work.</p> <p>Identify changes to the circuit and how this will impact e.g. increasing the number of cells.</p> <p>Explain an open and closed circuit.</p>	<p>Can they explain what happens to materials when they are heated or cooled?</p> <p>Can they measure the temperature that different materials change state? E.g. chocolate.</p> <p>Can they explain the part that evaporation and condensation play in the water cycle.</p>	<p>across the playground and they see the action before hearing the sound)</p> <p>Can they explain how to change a sound, louder or softer?</p> <p>Can they describe and explain how a sound travels from a source to our ears?</p>
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<p><b>Enquiries and main focus skill</b> (Though all need to be taught).</p>	<p>Compare types of teeth from different animals using images. (Paignton zoo have a collection if visiting their education centre).</p> <p>Investigate the function of teeth using variety of tools to represent teeth, e.g. knife to cut like incisors, old pencil/fork handle to pierce and tear as canines and cube/brick for molar (to mash).</p> <p>Investigate how teeth can be damaged (using egg shells and variety of liquids) and write about good dental health.</p> <p><i>Set up simple and practical enquiries</i></p>	<p>Explore the school grounds and use different classification keys to identify plants.</p> <p>Make a simple guide to classification.</p> <p>Create simple guides to preferred animals and their habitats, or a guide to a habitat (e.g. Antarctic)</p> <p>Observe animals closely in their habitat and investigate preferred habitats e.g. Do woodlice choose a dark or light place in a tank?</p> <p><i>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</i></p>	<p>Investigate circuits with switches. How does a switch work?</p> <p>Investigate materials that will or will not conduct and common features of these.</p> <p>Test circuits built from diagrams – predicting if they will work, then explain findings.</p> <p><i>Asking relevant questions and using different types of scientific enquiries to answer them, making some decisions about the enquiry.</i></p> <p><i>Record findings using simple scientific language,</i></p>	<p>Grouping and classifying different materials according to state of matter.</p> <p>Investigate different boiling/ melting points. (e.g. chocolate/ butter): making rice crispy cakes and explaining the state changes.</p> <p>Making oobleck.</p> <p>Observe and record the speed of evaporating (e.g. in a petri dish or in a playground) and discuss how this process would be slowed down or sped up. Optional – condensation.</p> <p>Cloud in a bottle to show water cycle.</p> <p><i>Perform simple tests using simple equipment.</i></p>	<p>Explore musical instruments observing how they make a sound.</p> <p>Investigate how the sound changes in a series of similar objects (e.g. bottles of water, thick elastic bands) and explain why the changes occur.</p> <p>Design the best ear defenders/ make ear muffs: test what materials are best suited to dampening sound.</p> <p><i>Use observations to answer questions.</i></p> <p><i>Use evidence to support their findings. Researching.</i></p> <p><i>Setting up simple practical enquiries, comparative and fair tests</i></p>
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	<p><i>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables, displays or presentations.</i></p>	<p><i>Identifying differences, similarities or changes related to simple scientific ideas and processes</i></p> <p><i>Report findings from enquiries, including oral and written explanations of results and conclusions.</i></p>	<p><i>drawings, diagrams, keys, bar charts and tables.</i></p> <p><i>Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</i></p>	<p><i>Sort and group materials according to different properties.</i></p> <p><i>Take accurate measurements using standard units, where appropriate</i></p> <p><i>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</i></p>	<p><i>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</i></p>
<p><b>Scientists</b></p> <p><b>Red – women in science</b></p> <p><b>Green – Men from diverse backgrounds</b></p>	<p>Joseph Lister-Antiseptic</p> <p>Ivan Pavlov- Digestive System Mechanisms</p>  <p>Dr Washington Sheffield- Toothpaste in a tube</p> 	<p>Jacques Cousteau -Marine Biology</p>  <p>Cindy Looy-Environmental Change and Extinction</p>  <p>Joan Beauchamp Procter Zoologist</p> 	<p>Michael Faraday- Discovered relationship between magnets and electricity</p>  <p>Thomas Edison- Lightbulb</p>  <p>Joseph Swan- Incandescent Light Bulb</p> 	<p>Joseph Priestly – Discovered oxygen</p>  <p>Lord Kelvin -Absolute zero (temperature)</p> <p>Anders Celsius -Temperature Scale</p>  <p>Daniel Fahrenheit-</p>	<p>Alexander Graham Bell - Invented the telephone</p>  <p>Aristotle - Sound Waves</p> <p>Gailileo Galilei - Frequency and Pitch of Sound Waves</p> 



				<p>Temperature Scale / Invention of the Thermometer</p> 	
<p>Sequencing knowledge</p>	<p><u>Prior</u> – Year 2,3 <u>Animals inc humans</u> <u>Yr2</u></p>	<p><u>Prior</u> – Year 2, <u>Living things in their habitats</u></p>	<p><u>Prior</u> – <u>Nursery</u> – explore how things work.</p>	<p><u>Prior</u> – <u>Year 1 and 2 materials</u> <u>YR1</u></p>	<p><u>Prior</u> – <u>Year 2 Sound</u> (as a nonstatutory unit) -Identify sources of sound</p>

	<p>-Notice that animals, including humans, have offspring which grow into adults.          -Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).          -Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.  <u>Yr3</u>          -Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. - Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p><u>Future – Year 5 animals including humans.</u></p>	<p>-Explore and compare the differences between things that are living, dead, and things that have never been alive -Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other</p> <p>-Identify and name a variety of plants and animals in their habitats, including microhabitats</p> <p>-Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.</p> <p><u>Future – Year 5 Living things and their habitats.</u></p>	<p><u>Future – Year 6 Electricity.</u></p>	<p>-Distinguish between an object and the material from which it is made. I          -Identify and name a variety of everyday materials.          -Describe the simple physical properties of a variety of everyday materials.          -Compare and group together a variety of materials.  <u>YR2</u>          -Identify and compare the suitability of a variety of everyday materials for particular uses</p> <p>-Find out how the shapes of solid objects made from some materials can be changed.</p> <p><u>Year 3 Rocks</u>          -Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. - Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p> <p><u>Year 3 Forces and magnets</u> - Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.</p> <p><u>Future –Year 5 Properties and changes in materials.</u></p>	<p>-Identify louder and softer sounds.</p> <p><u>Future – Year 6 Light</u></p>
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<b>Tier 2 and Tier 3 vocabulary</b>	Digestive system digestion Saliva Oesophagus Stomach	<b>As KS 1 plus</b> Classification keys Environment Fish Reptiles	Electricity Electrical device / appliances Mains Plug Components	<b>As KS1 plus:</b> Air Oxygen Powder Grain / granular	Sound Sound source Noise Vibrate / vibration Travel
	Small intestine Large intestine Absorb into blood stream Swallowing Chewing Rectum Anus Faeces Consumer Predator Prey Producers Canines Incisors Pre-molars Molars Cavities Dentine Plaque Pulp-cavity Fluoride Tooth decay Gums Nerves Enamel	<b>As KS 1 plus</b> Amphibians Mammals Birds Vertebrates Invertebrates Human impact Plant groups (trees, grasses, flowering and non-flowering plants) Shelter Heat Habitats Conditions Characteristics Adaptation Food chain Name micro-habitats – log, bush Describes conditions – damp, dark etc Food chain Carnivore Herbivore Omnivore Name local habitats – pond, woodland reptiles, mammal, fish, birds and amphibians. invertebrates and vertebrates. Flowering and non-flowering. Grasses Pollution/ deforestation	Conductor Insulator Circuit symbol Cell Battery Wire Bulb Switch Buzzer Motor Connection Electrical / simple circuit Complete circuit Closed circuit Open circuit Positive Negative Crocodile clip	Changes state Gaseous Particles Water vapour Water cycle Heating /cooling Degree Celsius Melt Freeze Boil Evaporation Condensation Energy transfer  Describe features of change – pushing / pulling Suitable Use / useful Characteristics Properties Solid, liquid, gas Heating and cooling Melting, burning evapourating and freezing.	Sound wave Pitch Volume Loud / quiet Tune High / low Echo Tuning fork Insulation Instrument Percussion String Brass Woodwind Tunes instrument Near Far Hit Pluck Blow

Computing Links				Pages app – present learning.	I pads – mini video of performance/experiment. I pads measure sound (in health app)
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	<h1>Year 5</h1>				
Theme	Forces	Animals inc Humans	Living things and their habitats	Properties and changes of materials	Earth and Space

<p><b>National Curriculum</b></p>	<p>explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</p>	<p>describe the changes as humans develop to old age (including puberty).</p>	<p>describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>describe the life process of reproduction in some plants and animals</p>	<p>compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</p> <p>know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda</p>	<p>describe the movement of the Earth and other planets relative to the sun in the solar system</p> <p>describe the movement of the moon relative to the Earth</p> <p>describe the sun, Earth and moon as approximately spherical bodies</p> <p>use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</p>
<p><b>Specific content Substantive knowledge</b></p>	<p>Explore falling objects/ and look how air resistance impacts on this.</p> <p>Experience with forces that slow objects down or speed them up (water resistance, friction)</p>	<p>Pupils should draw a timeline to indicate stages in the growth and development of humans.</p> <p>They should learn about the changes experienced in puberty.</p>	<p>Use the outside space/ garden of the class to observe changes across time.</p> <p>Find out about different types of reproduction. Examine the reproduction on plants (should be revisited from Year 3)</p>	<p>systematic understanding of materials by exploring and comparing the properties of a broad range of materials, including relating these to what they learnt about magnetism in year 3 and about electricity in year 4.</p>	<p>Pupils should be introduced to a model of the sun and Earth that enables them to explain day and night. Pupils should learn that the sun is a star at the centre of our solar system and that it has 8 planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus</p>











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	<p>Observe the forces needed to stop an object (e.g. brakes on a bike)</p> <p>Possible DT link with forces/ levers (mechanisms and mechanical systems)</p>	<p>It may be possible to look at the seven ages of man speech by Jaques (As you like it). Is Shakespeare right? Would we have the same groups?</p>		<p>They should explore reversible changes, including evaporating, filtering, sieving, melting and dissolving, recognising that melting and dissolving are different processes.</p> <p>Can they explain the process of dissolving?</p> <p>Can they recover a substance from a solution?</p> <p>Can they decide how a mixture would best be separated?</p> <p>Pupils should explore changes that are difficult to reverse, for example, burning, rusting and other reactions, for example, vinegar with bicarbonate of soda.</p>	<p>and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006). They should understand that a moon is a celestial body that orbits a planet (Earth has 1 moon; Jupiter has 4 large moons and numerous smaller ones).</p> <p>Can they identify and explain the movement of the Earth relative to the Sun?</p> <p>Pupils should find out about the way that ideas about the solar system have developed, understanding how the geocentric model of the solar system gave way to the heliocentric model.</p>
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<p><b>Enquiries and main focus skill</b> (Though all need to be taught).</p>	<p>Explore falling paper cones or cupcake cases, and design and make a variety of parachutes. Carry out fair tests to determine which designs are the most effective. They might explore resistance in water by making and testing boats of different shapes. They might design and make products that use levers, pulleys, gears and/or springs and explore their effects on force and motion. (DT LINK)</p> <p><i>Planning different types of scientific enquiries to answer questions, including recognising and</i></p>	<p>Research gestation periods on animals and also how long young take to mature to adulthood, compared with humans.</p> <p><i>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.</i></p>	<p>Observing and <b>comparing</b> the life cycles of <b>plants</b> and <b>animals</b> in their local environment with other plants and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times), asking pertinent questions and suggesting reasons for similarities and differences.</p> <p>They might try to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs. The school may also have chickens to discuss reproduction.</p> <p>Explore the work of well-known naturalists such as</p>	<p>carrying out tests to answer questions, for example, 'Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?'</p> <p>Observe and compare the changes that take place, for example, when burning different materials or baking bread or cakes. Can they use the terms reversible and irreversible?</p> <p>They might research and discuss how chemical changes have an impact on our lives, for example, cooking, and discuss the creative use of new materials such as polymers,</p>	<p>comparing the time of day at different places on the Earth through internet links and direct communication;</p> <p>Make shadow clocks and sundials. Hold a debate using scientific evidence to prove why the Earth is spherical. creating simple models of the solar system; constructing simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day;</p> <p>finding out why some people think that structures such as Stonehenge might have been used as astronomical clocks.</p> <p><i>Researching.</i></p>
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	<p><i>controlling variables where necessary</i></p> <p>Take <i>precise measurements</i> using standard units.</p> <p>Record data and results.</p> <p><i>Identifying scientific evidence</i> that has been used to support or refute ideas – with prompting, identify not all results are trustworthy.</p>		<p>David Attenborough and Jane Goodall?</p> <p>Flower dissection. (lilies are best, daffodils ok)</p> <p><i>Researching. Recording data and results of increasing complexity</i> using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</p>	<p>super-sticky and super-thin materials.</p> <p>Investigate how to separate mixtures including solutions.</p> <p><i>give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</i></p> <p><i>Using test results to make predictions to set up further comparative and fair tests.</i></p> <p><i>Taking precise measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.</i></p>	
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<p><b>Scientists</b></p> <p>Red – women in science</p> <p>Green – Men from diverse backgrounds</p>	 <p>Isaac Newton- Gravity</p>  <p>Albert Einstein- The Theory Of relativity</p> <p>Galileo Galilei - Gravity and Acceleration</p> <p>Archimedes of Syracuse- Levers</p>	<p>Research scientists working in old age e.g. Alzheimer's or early life such as premature babies.</p>  <p>Louis Pasteur- Vaccination</p> <p>Alexander Fleming- Penicillin Eva Crane -Reproduction in Bees</p> 	<p>David Attenborough</p>  <p>Jane Goodall.</p> <p>Mangala Mani - Antarctic scientist</p> 	<p>how chemists create new materials, for example, Spencer Silver and Arthur Fry, who invented the glue for sticky notes</p>  <p>Jamie Garcia (BP website)- Invention of a new plastic</p> <p>Ruth Benerito, who invented wrinkle-free cotton.</p>	<p>considering the work of scientists such as Ptolemy, Alhazen and Copernicus Heliocentric vs Geocentric Universe.</p> <p>Margaret Hamilton- Computer scientist (Moon Landings)</p>  <p>Stephen Hawking- Black Holes</p>  <p>Mae Jemison – Astronaut</p> <p>Neil Armstrong- First man on the Moon</p>
					<p>Helen Sharman- GB astronaut</p>  <p>Caroline Herschel- First to find a comet</p>











<p><b>Sequencing knowledge</b></p>	<p><b>Prior:</b> Year 3 <u>forces and magnetism</u></p> <p><b>Future:</b> Year 6 <u>Electricity</u></p> <p>POS KS3: Electricity and electromagnetism. POS KS3 Forces and Motion</p>	<p><b>Prior:</b> Year 4 <u>Living things and their habitats.</u> Year 4 <u>animals including humans</u> <b>Future:</b> Year 5 <u>Living things and their habitats.</u> Year 6 <u>Animals including humans</u> .</p>	<p><b>Prior:</b> Year 4 <u>Living things and their habitats.</u> also previous Y5 unit Animals, including humans</p> <p><b>Future:</b> Year 6 <u>Living things and their habitats</u></p>	<p><b>Prior:</b> Year 4 <u>States of Matter</u></p> <p><b>Future:</b> Chemistry is not part of Y6 POS. In KS3 changes of state are examined in terms of the particle model.</p>	<p><b>Prior:</b> previous earth science unit (rocks Y3, Seasons Y1) and also Light (Y3)</p> <p><b>Future:</b> Light Y6. Earth science in not part of Y6 POS, but Space Physics is part of KS3 studies.</p>
<p><b>Tier 2 and Tier 3 vocabulary</b></p>	<p>Mechanisms Air resistance Water resistance Levers Pulleys Gears Springs Drag forces Transference of force and motion</p>	<p>Human stages of life cycle. Language associated with puberty (RSE policy also)</p> <p>Reproduction Sexual Asexual Birth Fertilisation Menstrual cycle Puberty Eggs Live young Egg Cell Embryo Ovary Placenta Penis Testes Vagina Uterus</p>	<p>reproduction asexual reproduction in plants, and sexual reproduction in animals. Major vocabulary around sexual parts. Anther, stamen, stigma, petal. Sexual Asexual Germination Pollination/ pollen/ egg cell Fertilisation Menstrual cycle Puberty Seed dispersal Seed formation Stamen Stigma Anther Filament Style Sepal Carpel Insect</p>	<p>Evaporating filtering, melting reversible and irreversible changes. Solubility Electrical conductivity Thermal conductivity New material Buoyancy suspension Dissolve Solution Soluble Insoluble Solute Solvent Burning Rusting Gas given off Mixture Filtering Sieving</p>	<p>Planets Solar system Celestial body Sphere / spherical Rotation/ revolve Spin Phases of moon Axis / axes Mercury Mars Neptune Venus Jupiter Saturn Pluto Uranus Time zones Orbit Elliptical orbit Shadow clocks Sundials Asteroids/ Comets/ Meteors Galaxy Light years</p>
<p><b>Computing Links</b></p>	<p>Google expedition- forces</p>				<p>SkyView lite app – shows constellations</p>

## Year 6

Theme	Electricity	Animals inc Humans	Living things and habitats	Evolution and inheritance	Light
<b>National Curriculum</b>	<p>-Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</p> <p>-Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.</p> <p>-Use recognised symbols when representing a simple circuit in a diagram.</p>	<p>identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>describe the ways in which nutrients and water are transported within animals, including humans</p>	<p>describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals</p> <p>Give reasons for classifying plants and animals based on specific characteristics</p>	<p>recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</p>	<p>-Recognise that light appears to travel in straight lines.</p> <p>-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.</p> <p>-Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.</p> <p>-Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>
<b>Specific content Substantive knowledge</b>	<p>Can they identify and name the basic parts of a simple electric series circuit? (cells, wires, bulbs, switches, buzzers)</p> <p>Can they compare and give reasons for variation in how components function, including bulb brightness, buzzer volume and on/off position of switches?</p> <p>Can they explain how to make an electrical circuit?</p> <p>Can they explain the impact of changes in a circuit?</p>	<p>Can they identify and explain the function of the organs of the human circulatory system? (heart, blood vessels, blood, blood pressure, clotting).</p> <p>Can they identify and explain the functions of the human gaseous exchange system? Lungs, nose, throat, bronchi, bronchial tubes, diaphragm, ribs, breathing).</p> <p>Can they name the major human organs?</p> <p>Can they make a diagram that outlines the main parts of a body?</p>	<p>Build on learning from year 4 about classification using more detail. Inc micro-organisms, invertebrates and vertebrates.</p>	<p>Building on fossils from Yr3 rocks –</p> <p>Can they give reasons for why living things produce offspring of the same kind? Can they give reasons why offspring are not identical to each other or with their parents? Look at characteristics of breeds of dogs. What happens if poodles are bred with Labradors?</p> <p>Can they begin to appreciate that variation in offspring over time can make animals more or less able to survive in particular environments?</p>	<p>Can they explain how light travels?</p> <p>Can they explain how the human eye sees objects?</p> <p>Can they explain how different Colours of light can be created?</p> <p>Can they use and explain how simple optical instruments work? (periscope, telescope, binoculars, mirror, magnifying glass, Newton’s first reflecting telescope)</p> <p>Can they explain changes linked to light (and sound)?</p>

	Can they explain the effect of changing the voltage of a battery?	Research and discuss the effects of drugs and substances on the human body.		Can they explain the process of evolution and describe the evidence for this?  Can they talk about the work and life of Charles Darwin?	
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<p><b>Enquiries and main focus skill</b> (Though all need to be taught).</p>	<p>Investigate brightness of bulb/loudness of a buzzer with different numbers of cells in the circuit.</p> <p>Investigate effect of thickness and length of wires on bulbs and buzzers.</p> <p><i>Plan different types of scientific enquiries to answer questions.</i></p> <p><i>Recognise and control variables where necessary.</i></p> <p><i>Report and present findings from enquiries in oral and written forms such as displays and other presentation.</i></p>	<p>Do some interval workouts and monitor each other's heart rate and breathing rate. Measure and record systematically. Discuss <b>fair testing</b>.</p> <p><i>Take measurements with increasing accuracy and precision.</i></p> <p><i>Take repeat readings when appropriate.</i></p> <p><i>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar charts.</i></p>	<p>Use classification systems and keys to identify <b>animals</b> and <b>plants</b> to build on learning from year 4. Should include both vertebrates and invertebrates. Should be able to explain why animals belong to one group and not another.</p> <p>Can they explore the work of Carl Linnaeus – Pioneer of classification? Explore helpful and harmful micro-organisms mould investigation with bread in plastic bags.</p> <p><i>Identify scientific evidence that has been used to support or refute ideas or arguments.</i></p> <p><i>Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</i></p>	<p>Research the work of Charles Darwin and Alfred Russel Wallace.</p> <p>Create a fact file of an animal or plant and identify how it has evolved and adapted.</p> <p><i>Researching.</i> <i>Identify scientific evidence that has been used to support or refute ideas or arguments.</i></p>	<p>Can you make a beam of light travel around a corner to hit a target? (mirrors)</p> <p>Design and build a periscope using the idea that light travels in a straight line.</p> <p>They could extend their experience of light by looking a range of phenomena including rainbows, light through prisms, colours on soap bubbles, objects looking bent in water and coloured filters (they do not need to explain why these phenomena occur)</p> <p><i>Identifying scientific evidence that has been used to support or refute ideas or arguments.</i></p> <p><i>Report and present findings from enquiries in oral and written forms such as displays and other presentation.</i></p>
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<p><b>Scientists</b></p> <p>Red – women in science</p> <p>Green – Men from diverse backgrounds</p>	<p>Nikola Tesla -AC electric system</p> <p>Alessandro Volta- Electrical Battery</p>  <p>Nicola Tesla- Alternating Currents</p>  <p>Edith Clarke -Electrical engineer</p> 	<p>Leonardo Da Vinci- anatomy</p> <p>Santorio Santorio-Anatomist</p> <p>Dr. Katherine Dibb – Expert in Cardiovascular Sciences</p>  <p>Justus von Liebig- Theories of Nutrition and Metabolism</p> <p>Sir Richard Doll- Linking Smoking and Health Problems</p> 	<p>Carl Linnaeus Classification</p>  <p>Libby Hyman Classification Invertebrates</p>	<p>Hippocrates -The Father of Medicine</p> <p>Charles Darwin- Evolution</p> <p>Alfred Russell Wallace – naturalist</p> <p>Rosalind Franklin – DNA</p>  <p>Nettie Stevens – Geneticist</p> <p>Professor Alice Roberts - Evolutionary biologist</p> 	<p>Thomas Edison -Invented electric light bulb</p> <p>Patricia Bath (BP website)- saving sight</p> <p>Thomas Young (Wave Theory of Light)</p> <p>Ibn al-Haytham -Light and our Eyes</p>  <p>Maria Telkes- Solar energy</p> 
<p><b>Sequencing knowledge</b></p>	<p>Prior: Electricity Y4. Future: POS KS3: Electricity and electromagnetism <b>DT LINK – moving models/toys</b></p>	<p>Prior: animals including humans Y5. Future POS KS3 biology</p>	<p>Prior: Living things and their habitats Y4 and Y5) Future POS KS3 relationships in an ecosystem</p>	<p>Prior: Rock Y3 (fossils) animals including humans Y5. Future POS KS3 Genetics and evolution</p>	<p>Prior: Light Year 3 Future : POS KS3 light waves</p>

<p><b>Tier 2 and Tier 3 vocabulary</b></p>	<p><b><u>As year 4 plus:</u></b>  Series circuit  Terminal  Voltage  Volume  Current  Resistance  Circuit diagrams</p>	<p>Circulatory system  Blood vessels  Capillaries  Arteries  Veins  Red blood cells  White blood cells  Oxygen  Carbon dioxide  Lungs  Air sacs  Ventricles</p>	<p><b><u>As Y4 and Y5 plus:</u></b>  Evolution  Adaptation  Genes  DNA  Chromosomes  Evolutionary change  Features  Inherit  Inheritance  Environmental conditions  Fossil records</p>	<p>Evolution  Adaptation  Genes  DNA  Chromosomes  Evolutionary change  Features  Inherit  Inheritance  Environmental conditions  Fossil records  Natural selection</p>	<p>Absorption  Transmission  Lenses  Optics  Prism  Rainbow Refraction spectrum</p>
		<p>Aorta  Wind pipe  Diaphragm  Bronchi  Pulmonary vein / artery  Lifestyle  Drugs  Diet  Heart rate  Clotting  Plasma</p>	<p>Natural selection  Variation  Reproduction  Competition  Environmental variations  Survival of the fittest</p>	<p>Variation  Reproduction  Competition  Environmental variations  Survival of the fittest</p>	
<p><b>Computing Links</b></p>				<p>Natural History Museum- virtual tour   Google expeditions- human cultural evolution  Evolution: Natural selection</p>	