

Springcroft Primary School

Year 4

Science Programme of Study

Inc. Core-Standard Coverage of Enquiry Types and 'Working Scientifically' Skills:

Enquiry Types	
Research Using Secondary Sources	✓✓
Observing Over Time	✓✓✓
Pattern Seeking	✓✓✓✓
Identifying, Classifying and Grouping	✓✓✓
Comparative and Fair Testing	✓✓✓✓✓

Working Scientifically	
Conducting Secondary Research	✓✓✓
Asking Questions	✓
Making Predictions and Hypothesising	✓✓
Setting up Investigations	✓✓
Observing and Measuring	✓✓
Recording Data	✓✓
Interpreting and Communicating Results	✓✓
Evaluating and Questioning Further	✓✓✓

Aims

‘The National Curriculum for Science’ aims to ensure that all pupils:

- develop **scientific knowledge and conceptual understanding** through the specific disciplines of biology, chemistry and physics
- develop understanding of the **nature, processes and methods of science** through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the **uses and implications** of science, today and for the future.

Scientific Knowledge and Conceptual Understanding:

The programmes of study describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. Insecure, superficial understanding will not allow genuine progression: pupils may struggle at key points of transition (such as between primary and secondary school), build up serious misconceptions, and/or have significant difficulties in understanding higher-order content.

Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. The social and economic implications of science are important but, generally, they are taught most appropriately within the wider school curriculum: teachers will wish to use different contexts to maximise their pupils’ engagement with and motivation to study science.

The Nature, Processes and Methods of Science:

‘Working Scientifically’ specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand. The notes and guidance give examples of how ‘working scientifically’ might be embedded within the content of biology, chemistry and physics, focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should seek answers to questions through collecting, analysing and presenting data. ‘Working Scientifically’ will be developed further at key stages 3 and 4, once pupils have built up sufficient understanding of science to engage meaningfully in more sophisticated discussion of experimental design and control.

Year 4 – Science Programme of Study - *Timelines of Learning (The Bigger Picture)*

Unit	Prior Learning...	What I will learn now...	What I don't need to learn yet...
<p>Animals inc. Humans</p>	<p>Pupils should have been taught to:</p> <ul style="list-style-type: none"> Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. <i>(1-Animals including Humans)</i> Identify and name a variety of common animals that are carnivores, herbivores and omnivores. <i>(1-Animals including Humans)</i> Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). <i>(1-Animals including Humans)</i> Notice that animals, including humans, have offspring which grow into adults. <i>(2-Animals including Humans)</i> Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). <i>(2-Animals including Humans)</i> Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. <i>(2-Animals including Humans)</i> 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. <i>(3-Animals including Humans)</i> Identify that humans and some other animals have skeletons and muscles for support, protection and movement. <i>(3-Animals including Humans)</i> 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions. <i>(4-Animals including Humans)</i> Construct and interpret a variety of food chains, identifying producers, predators and prey. <i>(4-Animals including Humans)</i> 	<p>Pupils in Year 5 will be taught to:</p> <ul style="list-style-type: none"> Describe the changes as humans develop from birth to old age. <i>(5-Animals including Humans)</i> <p>Pupils in Year 6 will be taught to:</p> <ul style="list-style-type: none"> Identify and name the main parts of the human circulatory system, and explain the functions of the heart, blood vessels and blood. <i>(6-Animals including Humans)</i>
<p>Electricity</p>		<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Identify common appliances that run on electricity. <i>(4-Electricity)</i> Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. <i>(4-Electricity)</i> 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. <i>(4-Electricity)</i> Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. <i>(4-Electricity)</i> Recognise some common conductors and insulators, and associate metals with being good conductors. <i>(4-Electricity)</i> 	<p>Pupils in Year 6 will be taught to:</p> <ul style="list-style-type: none"> Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. <i>(6-Electricity)</i> 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. <i>(6-Electricity)</i> Use recognised symbols when representing a simple circuit in a diagram. <i>(6-Electricity)</i>
<p>Living Things and their Habitats</p>	<p>Pupils should have been taught to:</p> <ul style="list-style-type: none"> Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. <i>(1-Plants)</i> Identify and describe the basic structure of a variety of common flowering plants, including trees. <i>(1-Plants)</i> Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. <i>(1-Animals, including Humans)</i> Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). <i>(1-Animals, including Humans)</i> Identify and name a variety of plants and animals in their habitats, including micro-habitats. <i>(2-Living things and their Habitats)</i> Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. <i>(3-Plants)</i> 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Recognise that living things can be grouped in a variety of ways. <i>(4-Living things and their Habitats)</i> Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. <i>(4-Living things and their Habitats)</i> Recognise that environments can change and that this can sometimes pose dangers to living things. <i>(4-Living things and their Habitats)</i> 	<p>Pupils in Year 5 will be taught to:</p> <ul style="list-style-type: none"> Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. <i>(5-Living things and their Habitats)</i> Describe the life process of reproduction in some plants and animals. <i>(5-Living things and their Habitats)</i> <p>Pupils in Year 6 will be taught to:</p> <ul style="list-style-type: none"> Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. <i>(6-Living things and their Habitats)</i> Give reasons for classifying plants and animals based on specific characteristics. <i>(6-Living things and their Habitats)</i>

Year 4 – Science Programme of Study Continued - *Timelines of Learning (The Bigger Picture)*

Unit	Prior Learning...	What I will learn now...	What I don't need to learn yet...
<p>Sound</p>	<p>Pupils should have been taught to:</p> <ul style="list-style-type: none"> Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (1-Animals including Humans) 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Identify how sounds are made, associating some of them with something vibrating. (4-Sounds) Recognise that vibrations from sounds travel through a medium to the ear. (4-Sounds) Find patterns between the pitch of a sound and features of the object that produced it. (4-Sounds) Find patterns between the volume of a sound and the strength of the vibrations that produced it. (4-Sounds) Recognise that sounds get fainter as the distance from the sound source increases. (4-Sounds) 	<p>In Key Stage 3 pupils will be taught about:</p> <ul style="list-style-type: none"> Frequencies of sound waves, measured in hertz (Hz); echoes, reflection and absorption of sound. Sound needs a medium to travel, the speed of sound in air, in water, in solids. Sound produced by vibrations of objects, in loud speakers, detected by their effects on microphone diaphragm and the ear drum; sound waves are longitudinal. Auditory range of humans and animals.
<p>States of Matter</p>	<p>Pupils should have been taught to:</p> <ul style="list-style-type: none"> Distinguish between an object and the material from which it is made (1-Everyday materials) Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (1-Everyday materials) Describe the simple physical properties of a variety of everyday materials. (1-Everyday materials) Compare and group together a variety of everyday materials on the basis of their simple physical properties. (1-Everyday materials) Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (2-Everyday materials) Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (2-Everyday materials) 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> Compare and group materials together, according to whether they are solids, liquids or gases. (4-States of Matter) 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) (4-States of Matter) Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. (4-States of Matter) 	<p>Pupils in Year 5 will be taught to:</p> <ul style="list-style-type: none"> Compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. (5-Properties and changes of materials) Understand that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. (5-Properties and changes of materials) Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. (5-Properties and changes of materials) Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. (5-Properties and changes of materials) Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda. (5-Properties and changes of materials)

Year 4 – Science Programme of Study - *Timelines of Learning (Working Scientifically)*















	Plan		Do			Review		
Stages	Recognise the best type of enquiry to answer a question	Choose equipment, select tests, use secondary sources to decide how to obtain accurate observations and measurements	Obtain observations and measurements using equipment and/or secondary sources	Record observations and measurements	Present observations and measurements	Draw conclusions and make explanations	Evaluate the data collected	Evaluate the process used (including next steps)
<p>Prior learning...</p> <p>End of Year 3</p>	I can ask questions and I recognise that there are different types of enquiry.	<p>I can set up a simple practical enquiry and I am beginning to understand how to make a test fair.</p> <p>I make suggestions about what observations and measurements to make and what equipment I need.</p>	<p>I am beginning to make systematic and careful observations.</p> <p>I sometimes use standard units.</p> <p>With help, I can use information sources provided to find things out.</p>	<p>I gather data and using a pre-prepared table, I can record data.</p> <p>I record my findings using a drawing and/or words.</p>	With help, I can present my data.	I can use my results when I talk about what happened.		<p>I can talk about what went wrong.</p> <p>I have ideas about what else I would like to find out.</p>
<p>What I will learn now...</p> <p>End of Year 4</p>	I ask relevant questions and use different types of scientific enquiries to answer them.	<p>I can set up simple practical enquiries, comparative or fair tests.</p> <p>I decide what observations and measurements to make and what equipment to use.</p>	<p>I use a range of equipment (including thermometers and data-loggers).</p> <p>I make systematic and careful observations and take accurate measurements using standard units.</p> <p>I use information sources provided to find things out.</p>	<p>I gather, record and classify data in a variety of ways to help me answer my questions.</p> <p>I record my findings using simple scientific language, tables, drawings and labelled diagrams.</p>	I present my data in a variety of ways using e.g., Venn diagrams , bar charts, simple scatter graphs and keys.	<p>I use my results to draw simple conclusions and I make predictions for new values.</p> <p>I communicate what I have found out using straightforward scientific ideas and I report my findings using oral and written explanations and displays.</p>		<p>I suggest improvements to the way I carried out the enquiry.</p> <p>I suggest further questions to investigate.</p>
<p>What I don't need to learn yet...</p> <p>End of Year 5</p>	I ask relevant questions (containing scientific knowledge and understanding) and with help I recognise which type of enquiry is best to answer a question.	I decide what observations and measurements to make (controlling variables with help where necessary) and what equipment to use to make my measurements and observations.	<p>I use a range of equipment independently.</p> <p>The series of observations and measurements I take are adequate for the task.</p> <p>I use information sources provided to find things out.</p> <p>I identify possible risks to myself and others.</p>	I gather and record non-complex results (data and observations) using e.g., tables and scientific diagrams.	I present the results (data and observations) in a range of formats e.g., bar and line graphs, simple scatter graphs, keys and frequency charts.	<p>I draw conclusions from my data and observations.</p> <p>I begin to use basic scientific evidence to support or refute the ideas or arguments for my conclusion.</p>	I look at my results and decide if any observations or measurements are unsuitable.	<p>I use what I have found out to suggest improvements to my work, giving reasons for these suggestions.</p> <p>I can set up further questions to investigate.</p>

KEY: **NAVY BLUE** – EYFS Framework (pre-2021) or National Curriculum - **statutory**
RED – Non-statutory to support progression

Year 4 – Science Programme of Study – Yearly Overview (*Knowledge and Understanding*)

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 4	Sound	States of Matter	Living Things and their Habitats	Electricity		Animals inc. Humans
	<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>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.</p> <p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p> <p style="color: red;">Cross Curricular Links:</p> <p><i>Maths - Create simple tables and graphs to record findings.</i></p> <p><i>Maths - Measure and compare the weight of water as solid and liquid.</i></p> <p><i>Maths - Measure the change in temperature across a month and plot the results on a line graph.</i></p> <p><i>Geography – Trace the journey of a water droplet around the water cycle, learning about the rivers, lakes, oceans and seas that it may pass through.</i></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 style="color: red;">Cross Curricular Links:</p> <p><i>Maths / Computing / History - Children to research endangered animal and find the difference between populations at two points in time.</i></p> <p><i>English – Write an information text about changes that have taken place in a particular environment and the impact on living things – e.g. deforestation.</i></p>	<p>Identify common appliances that run on electricity.</p> <p>Construct a simple 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 style="color: red;">Cross Curricular Links:</p> <p><i>Maths - Electricity bills provide a wealth of opportunities to practise arithmetical skills. E.g. finding the difference between meter readings to calculate consumption over a period of time, calculating cost of consumption, comparing consumption at different times of the year, looking at graphs that provide information about year on year consumption.</i></p> <p><i>PSHE – Discuss the dangers that electricity may pose to us in the home and the things that we can do in order to keep ourselves safe.</i></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 style="color: red;">Cross Curricular Links:</p> <p><i>PSHE – Discuss the importance of good oral hygiene and the consequences of not brushing our teeth.</i></p>	

Exemplification of 'Scientific Enquiry Types' and 'Working Scientifically'

5 Enquiry Types		Working Scientifically – Processes of Science	
	<p>Research Using Secondary Sources Where the answer is found or developed using secondary sources. This is usually where it is impossible or unsafe for pupils to fully answer with first-hand enquiries, or where confirmation of the conclusions drawn during first-hand enquires is sought. This enquiry skill helps pupils to evaluate sources, distinguish between fact and opinion and recognise conflicting evidence and bias.</p>		
	<p>Observing Over Time Pupils identify and measure events and changes in living things, materials and physical process or events. These observations may take place over time spans of minutes or hours (e.g., puddles evaporating) up to several weeks or months (e.g., rearing young chicks).</p>		<p>Asking Questions Asking questions that can be answered using a scientific enquiry. E.g., how does the road surface affect the speed at which a car travels?</p>
	<p>Pattern Seeking Pupils observe, measure and record events and systems when carrying out pattern seeking enquires. They also collect and interpret data from secondary sources. They make observations and conduct surveys where the variables can't easily be controlled for practical or ethical reasons.</p>		<p>Making Predictions and Hypothesising Using prior knowledge (inc. that developed through secondary research) to suggest what will happen in a scientific enquiry. E.g., I think that a smoother road surface will allow a car to travel faster.</p>
	<p>Identifying, Classifying and Grouping Pupils make sense of how the world is organised. Identification is the process of using differences to name something and classification is organising things into groups. Opportunities to identify arise when pupils recognise not all birds are the same for example and can identify and name them. They can then use observable and behavioural similarities to group them and add new things.</p>		<p>Setting up an Investigation Deciding on the method and equipment to use to carry out an enquiry. E.g., children may use a timing ramp, different surface coverings and a data logger to test how the road surface affects the speed at which a car travels.</p>
	<p>Comparative and Fair Testing Helps pupils explore relationship between variables. Comparative tests children compare one event with another. E.g., does the red car go faster than the green car? A fair test identifies the causal relationship between two variable. E.g., does the height of the ramp affect how quickly the toy car rolls down the ramp and everything else remains the same?</p>		<p>Observing and Measuring Using measuring equipment and the senses to make observations or take measurements relating to the enquiry. E.g., the car took 1.5 seconds to travel between point A and point B on a smooth surface.</p>
<p><i>Definitions adapted from 'It's not fair - or is it?' (Turner, Keogh, Lawrence & Naylor, 2011) Enquiry Symbols - © University of Manchester Working Scientifically Symbols - © - Primary Science Teaching Trust</i></p>			<p>Recording Data Using tables, drawing and other means to note observations and measurements. E.g., children record the results of their investigation using a two-way table.</p>
<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>The Working Scientifically Wheel may be used in lessons to draw attention to the focused 'working scientifically' skill being covered.</p> <p>Colouring or dating a section for each focused skill provides an opportunity to check that all of the skills are covered across the year, and also track children's progress in relation to the identified skills.</p> </div> </div>			<p>Interpreting and Communicating Results Using information from the recorded data to say what you found out and presenting this in an appropriate form. E.g., children draw and explain a bar chart showing how the time taken for a car to travel between points A and B changes depending on the surface covering.</p>
			<p>Evaluating and Questioning Further Reflecting on the success of the enquiry approach and identifying further questions for enquiry. E.g., children may ask how the angle of the ramp may also affect the speed at which the car travels between points A and B.</p>

Year 4 – Core Investigations – Coverage of ‘Working Scientifically’ and ‘Scientific Enquiry’

Sound	States of Matter	Living Things and their Habitats	Electricity	Animals inc. Humans
<p>NC OBJ - Identify how sounds are made, associating some of them with something vibrating.</p> <p>Enquiry Type: <i>Comparative and Fair Testing</i></p> <p>Working Scientifically Skill: <i>Interp. & Com. Results</i></p> <p>(1) Investigation Overview: <i>TAPS Focussed Assessment – String Telephones</i></p> <p>Children investigate what materials makes the best string telephone.</p>	<p>NC OBJ - Compare and group materials together, according to whether they are solids, liquids or gas.</p> <p>Enquiry Type: <i>Identify, Classify and Group</i></p> <p>Working Scientifically Skill: <i>Evaluate / Q. Further</i></p> <p>(1) Investigation Overview: <i>Ogden Trust – Solids, Liquids and Gases</i></p> <p>Children group together a range of materials based on if they are solids, liquids or gases. Children may question further if these classifications may change.</p>	<p>NC OBJ - Recognise that living things can be grouped in a variety of ways.</p> <p>Enquiry Type: <i>Identify, Classify and Group</i></p> <p>Working Scientifically Skill: <i>Recording Data</i></p> <p>(1) Investigation Overview: <i>TAPS Focussed Assessment – Environmental Survey</i></p> <p>Classify a range of living things in the local environment and record this using an accurate system.</p>	<p>NC OBJ - Construct a simple electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</p> <p>Enquiry Type: <i>Research Using Sec. Sources</i></p> <p>Working Scientifically Skill: <i>Conduct Sec. Research</i></p> <p>(1) Investigation Overview: <i>Ogden Trust – Circuits and How They Work</i></p> <p>Construct a simple circuit before conducting research into how each of its parts work.</p>	<p>NC OBJ - Identify the different types of teeth in humans and their simple functions.</p> <p>Enquiry Type: <i>Observing Over Time</i></p> <p>Working Scientifically Skill: <i>Interp. & Com. Results</i></p> <p>(2) Investigation Overview: <i>TAPS Focussed Assessment – Tooth Decay</i></p> <p>Children use hard boiled eggs to investigate tooth decay in different liquids. They record observations over time before presenting and interpreting these results.</p>
<p>NC OBJ - Recognise that sounds get fainter as the distance from the sound source increases.</p> <p>Enquiry Type: <i>Comparative / Fair Testing</i></p> <p>Working Scientifically Skill: <i>Observe and Measure</i></p> <p>(2) Investigation Overview: <i>Ogden Trust – Volume of a Drum</i></p> <p>Compare the sound of a single drum as you move closer to / further away from it. Does it change? Does it get louder or quieter, etc.?</p>	<p>NC OBJ - Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which... <i>[see more].</i></p> <p>Enquiry Type: <i>Comparative / Fair Testing</i></p> <p>Working Scientifically Skill: <i>Observe and Measure</i></p> <p>(2) Investigation Overview: <i>TAPS Focussed Assessment – Measuring Temperature</i></p> <p>Children investigate diff. ways to measure temp., such as using your hand, a thermometer, etc.</p>	<p>NC OBJ - Recognise that environments can change and that this can sometimes pose dangers to living things.</p> <p>Enquiry Type: <i>Research Using Sec. Sources</i></p> <p>Working Scientifically Skill: <i>Conduct Sec. Research</i></p> <p>(2) Investigation Overview: <i>Ogden Trust – Rainforest Habitats</i></p> <p>Children conduct secondary research around deforestation and the effect that this has on animals' habitats.</p>	<p>NC OBJ - Recognise some common conductors and insulators, and associate metals with being good conductors.</p> <p>Enquiry Type: <i>Comparative / Fair Testing</i></p> <p>Working Scientifically Skill: <i>Recording Data</i></p> <p>(2) Investigation Overview: <i>OWN Planning - Conductor or insulators</i></p> <p>Children test a range of materials to see which are conductors of electricity and which are insulators.</p>	<p>NC OBJ - Describe the simple functions of the basic parts of the digestive system in humans.</p> <p>Enquiry Type: <i>Pattern Seeking</i></p> <p>Working Scientifically Skill: <i>Evaluate / Q. Further</i></p> <p>(2) Investigation Overview: <i>Ogden Trust – High in Energy or High in Sugar?</i></p> <p>Use a range of food packaging to investigate if food that are high in energy are always high in sugar.</p>
<p>NC OBJ - Find patterns between the volume of a sound and the strength of the vibrations that produced it.</p> <p>Enquiry Type: <i>Comparative and Fair Testing</i></p> <p>Working Scientifically Skill: <i>Evaluate / Q. Further</i></p> <p>(4) Investigation Overview: <i>Collins Science – Good Vibrations</i></p> <p>Children investigate how changing the contents of a shaker (and therefore the vibrations made) affects the volume produced by the shaker.</p>	<p>NC OBJ - Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which... <i>[see more].</i></p> <p>Enquiry Type: <i>Pattern Seeking</i></p> <p>Working Scientifically Skill: <i>Asking Questions</i></p> <p>(3) Investigation Overview: <i>Ogden Trust – Lollipop Lollipop</i></p> <p>Investigate if there is a pattern between how long it takes for different sized lollipops to melt.</p>	<p>NC OBJ - Recognise that environments can change and that this can sometimes pose dangers to living things.</p> <p>Enquiry Type: <i>Observing Over Time</i></p> <p>Working Scientifically Skill: <i>Predict & Hypothesise</i></p> <p>(3) Investigation Overview: <i>Ogden Trust – Local Area Invertebrates</i></p> <p>Observe how the variety of invertebrates on the school field and predict how this may change over the year.</p>	<p>NC OBJ - 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>Enquiry Type: <i>Comparative / Fair Testing</i></p> <p>Working Scientifically Skill: <i>Set up investigations.</i></p> <p>(3) Investigation Overview: <i>Ogden Trust – Comparing Conductors</i></p> <p>Compare different conductors in a circuit and see if changing the conducting material affects the brightness of a bulb.</p>	<p>NC OBJ - Describe the simple functions of the basic parts of the digestive system in humans.</p> <p>Enquiry Type: <i>Identify, Classify and Group</i></p> <p>Working Scientifically Skill: <i>Conduct Sec. Research</i></p> <p>(3) Investigation Overview: <i>A Creative approach to teaching page 32 Human Digestive System.</i></p> <p>Children identify and name the organs of the digestive system and their functions, before making a model of the system and its functions.</p>
<p>NC OBJ - Find patterns between the pitch of a sound and features of the object that produced it.</p> <p>Enquiry Type: <i>Pattern Seeking</i></p> <p>Working Scientifically Skill: <i>Set up Investigations</i></p> <p>(3) Investigation Overview: <i>TAPS Focussed Assessment – Investigating Pitch</i></p> <p>Explore how to play a range of instruments and consider how they make a sound before investigating different ways of altering pitch.</p>	<p>NC OBJ - Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p> <p>Enquiry Type: <i>Observing Over Time</i></p> <p>Working Scientifically Skill: <i>Predict & Hypothesise</i></p> <p>(4) Investigation Overview: <i>Ogden Trust – Where's My Drink Gone?</i></p> <p>Children investigate how the level of water in a glass changes when left on the windowsill.</p>			

Year 4

Year 4 – Science Knowledge Builder– *Small Steps and Suggested Lesson-Level Overview*

Small Steps Overview – Sound (Y4)

(1)	Identify how sounds are made, associating some of them with something vibrating.
(2)	Recognise that vibrations from sounds travel through a medium to the ear.
(3)	Find patterns between the pitch of a sound and features of the object that produced it.
(4)	Find patterns between the volume of a sound and the strength of the vibrations that produced it.
(5)	Recognise that sounds get fainter as the distance from the sound source increases.
(6)	Providing further depth and breadth of understanding

NOTE – SOME STEPS WILL TAKE MORE THAN 60 MINUTES

Pupils will know...	Key Vocab (MUST be introduced) *		
All knowledge (inc. key vocab) linked to prior learning (see page 3 for linked objectives)			
that sounds are made when objects or materials vibrate, causing the particles in the air to vibrate. (1)	Step 1	vibration, ear, hearing, sound, vacuum	← Core Investigation 1
that sounds cannot travel in a vacuum because there are no particles to vibrate. (2)			
that vibrations may be as a result of: talking, whistling or clapping. (4)			
that we can hear sounds using our ears. (2)			
that when a sound wave reaches our ear, the ‘outer ear’ funnels the sound into the head down the ear canal. (6)	Step 2	sound wave, outer ear, ear canal, eardrum, middle ear, hammer, anvil, stirrup, inner ear, cochlea, electrical signal, brain, auditory nerve	
that at the end of the ear canal is the eardrum, which is waterproof and airtight. (6)			
that beyond the ear canal is the middle ear. (6)			
that inside the middle ear is the hammer, anvil and stirrup (three smallest bones in the body). (6)			
that the hammer, anvil and stirrup vibrate and pass sound waves to the inner ear, which contains the cochlea. (6)			
that the cochlea turns the vibrations into electrical signals. (6)			
that these signals travel down the auditory nerve to the brain, which experiences the signal as a sound. (6)	Step 3	sense	
that our sense of hearing is used for a range of purposes inc. communicating, and recognising hazards. (6)			
that vibrations from sound sources travel through different materials to the ear (inc. solids, liquids and gases). (2)	Step 4	insulator, soundproof	
that some materials are more effective than others in preventing vibrations from sound sources reaching the ear. (2)			
that some sounds are so loud that ear protection needs to be worn when in close proximity to them. (5)			
that there are many different ways of describing sounds. (3 and 4)	Step 5	pitch, volume, high, low, loud, quiet (faint), amplitude, decibel, frequency, amplitude	
that the term ‘pitch’ describes how high or low a sound is. (3)			
that the term ‘volume’ describes how loud or quiet a sound is. (4)			
that louder sounds have a larger amplitude, and quieter sounds have a smaller amplitude. (4)			
that high- or low-pitched sounds can be loud or quiet and loud or quiet sounds can be high- or low-pitched. (3)	Step 6	Consolidate vocabulary (re)introduced at Step 5	← Core Investigation 2
that some sounds can be heard from a long distance. (5)	Step 7	Consolidate vocabulary (re)introduced at Step 5	
that sounds seem louder the nearer to the source you are. (5)			
that sounds seem quieter (fainter) the further away from the source you are. (5)			
that the pitch of a drum depends on its size and the tightness of the skin. (3)	Step 8	instrument, tension, length, strings, skin, plucked, struck	← Core Investigation 4
that the volume of the sound produced by a drum depends on how hard the drum was struck. (4)			← Core Investigation 3
that the pitch of a stringed instrument depends on the length or tension of the strings. (3)			
that the volume of the sound produced by a stringed instrument depends on how hard the strings are plucked. (4)			

***Vocabulary may already have been introduced but must be covered in the given context**

Sound (Y4)

To identify how sounds are made.
To explain how sounds travel through a medium to the ear
1. To interpret our findings. (TAPS – string telephones)
2. To recognise that sounds get fainter as the distance from the sound source increases. (Volume of a drum).
3. To find patterns between the volume of a sound and the strength of the vibrations that produced it.
To find patterns between the pitch of a sound and features of the object that produced it.
4. Set up an investigation to investigate different ways of altering pitch. (TAPS – pitch)
Assessment – To make predictions and hypothesise. (Which material would make the best ear defenders and why? Which material provides the best insulation against sound?)

Black - Learning objective Red – Suggested Activities or useful information. Purple – Core investigations

Year 4 – Science Knowledge Builder– *Small Steps and Suggested Lesson-Level Overview*

Small Steps Overview – States of Matter (Y4)

(1)	Compare and group materials together, according to whether they are solids, liquids or gases.
(2)	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.
(3)	Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.
(4)	Providing further depth and breadth of understanding

NOTE – SOME STEPS WILL TAKE MORE THAN 60 MINUTES

Pupils will know...

Key Vocab (MUST be introduced)

All knowledge (inc. key vocab) linked to prior learning (see page 3 for linked objectives)			
that there are many substances and each of these can be classified as: solid, liquid or gas (states of matter). (1)	Step 1	substance, states of matter, solid, liquid, gas, properties, water, paint, milk, oil, mayonnaise, helium, carbon dioxide, oxygen, propane	← Core Investigation 1
that there are differences in the properties of solids, liquids and gases. (1)			
- Reintroduce the solids taught in Year 2 (Uses of Everyday Materials) in addition to: <ul style="list-style-type: none"> ○ Liquids: water; paint; milk; oil; mayonnaise ○ Gases: helium; carbon dioxide; oxygen; propane (1) 			
that solids retain their own shape and that liquids flow and take the shape of their container (viscosity). (1)	Step 2	flow, shape, volume, viscosity, particles	
that liquids do not change in volume when poured into a different container. (1)			
that gases are different to solids and liquids in terms of how they do not maintain their shape or volume. (1)	Step 3	Consolidate vocabulary (re)introduced at Step 2	
that gases flow more easily than liquids and, in all directions. (1)			
that solids consisting of very small pieces (powders) that behave in the same way as liquids. (1)	Step 4	powder, sponge, particle	
that powders and sponges are solid materials with air 'gaps' in between particles. (1)			
that the same material can often exist as both a solid and a liquid (use examples below).	Step 5	plastic, metal, rock	
○ plastic; metal; rock (2)			
that using your hand is an inaccurate measure of temperature when compared to the use of a thermometer. (4)	Step 6	temperature, thermometer, cooling, freezing, melting, melting point, reversible, irreversible	← Core Investigation 2
that a liquid can be changed to a solid by cooling – this process may be called cooling or freezing. (2)			← Core Investigation 3
that a solid can be changed to a liquid by heating – this process is called melting. (2)			
that different solids melt and cool at different temperatures. (2)			
that melting and freezing are changes that can be reversed. (2)			
that a liquid can be changed to a gas by heating – this process is called evaporation. (2)	Step 7	evaporation, heating, perfume, iodine, rate of evaporation, boiling, boiling point	← Core Investigation 4
that liquids other than water evaporate (perfume, iodine). (4)			
that the boiling temperature of water is 100°C but water does not need to be at this temperature in order to evaporate. (2)			
that water evaporates faster (rate of evaporation) as the temperature increases. (4)			
that things 'drying out' relates to the process of evaporation. (2)			
that water in a gaseous state (water vapor / steam) can be changed to a liquid by cooling – this process is called condensation. (2)	Step 8	water vapour, steam, condensation	
that water condenses faster (rate of condensation) as the temperature decreases. (2)			
that evaporation and condensation are changes that can be reversed. (2)			
that air contains water vapour and this condenses when it cools / comes into contact with a cold surface. (2)	Step 9	transpiration, infiltration, runoff, absorption, atmosphere, cloud, rain, snow, sleet, hail, precipitation, steam, river, lake, ocean, water cycle	
that water evaporates from oceans, seas and lakes and turns into water vapour. (3)			
that some water, which is absorbed by soil, is turned into water vapour by plants and evaporates into the atmosphere via the leaves. (3)			
that water vapour rises into the atmosphere until it cools down and changes back into tiny drops of liquid water, forming clouds. (3)			
that when these clouds become heavy, the water within them falls back to the ground in the form of rain, snow, sleet or hail. (3)			
that when the water reaches the ground, it collects in streams and rivers before finding its way back to oceans, seas and lakes. (3)			
that when the water reaches oceans, seas and lakes, the process of the water cycle begins again. (3)			

**Vocabulary may already have been introduced but must be covered in the given context*

Year 4 – Science Lesson Objectives

States of matter (Y4)

To 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).
1. To compare and group materials. (according to whether they are solids, liquids or gases)
To investigate materials as they change state and measure the temperature at which this happens.
To describe how water changes state.
To identify and describe the different stages of the water cycle.
2. To take accurate measurements using a range of equipment. (TAPS- Measuring temp)
3. Investigate if there is a pattern between how long it takes for different sized lollipops to melt.
4. To make predictions and hypothesise. (Investigate how the level of water in a glass changes when left on the windowsill).
Assessment - Where is the best place to dry your washing? Which conditions are the best to dry materials by evaporation? Make a list of different places/conditions (e.g. temperature or draughtiness).

Black - Learning objective Red – Suggested Activities or useful information. Purple – Core investigations

Year 4 – Science Knowledge Builder– *Small Steps and Suggested Lesson-Level Overview*

Small Steps Overview – Living Things and their Habitats (Y4)

(1)	Recognise that living things can be grouped in a variety of ways.
(2)	Explore and use classification keys to help group, identify, and name a variety of living things in their local and wider environment.
(3)	Recognise that environments can change and that this can sometimes pose dangers to living things.
(4)	Providing further depth and breadth of understanding

NOTE – SOME STEPS WILL TAKE MORE THAN 60 MINUTES

Pupils will know...

Key Vocab (MUST be introduced)	
All knowledge (inc. key vocab) linked to prior learning (see page 3 for linked objectives)	
that plants can be grouped in many different ways including: (1) <ul style="list-style-type: none"> - flowering and non-flowering - seed bearing or spore bearing - vascular or non-vascular. 	Step 1
that some plants and animals in their habitats may be familiar to us, whereas others may not. (4)	Step 2
that classification keys can help us to identify plants and animals in their habitats (both local and wider). (2)	Step 3
that plants (see selection below) may be classified based on a variety of observable characteristics. (1) <ul style="list-style-type: none"> - thistle; daffodil; holly; iris; grass; cheese plant; rose 	Step 4
that animals (see selection below) may be classified based on a variety of observable characteristics. (1) <ul style="list-style-type: none"> - wasp; snail; worm; spider; millipede; butterfly - lion; snake; goldfish; pigeon; frog 	Step 5
that animals can be grouped in lots of ways based upon their characteristics, inc. vertebrates and invertebrates. (1)	Step 6
That animals can be classified as a carnivore, herbivore or omnivore, dependant on what they eat. (1)	Step 7
that vertebrates can be separated into five broad groups. (2) <ul style="list-style-type: none"> - mammals; fish; birds; reptiles; amphibians 	Step 8
that invertebrates can be separated into four broad groups. (2) <ul style="list-style-type: none"> - molluscs and annelids; insects; arachnids; myriapods and crustaceans 	Step 9
that environments can change naturally or as a result of the actions of humans (i.e., deforestation). (3)	Step 10
that environments may change in-line with the seasons. (3)	Step 11
that environments may change as a result of natural disasters including: tsunami / flooding; fires (inc. bushfires); earthquakes. (3)	Step 12
that environmental change can have positive as well as negative effects. (4)	Step 13
that environmental changes can sometimes pose dangers to living things. (3)	Step 14
that living things and the environment need protection or may become endangered or extinct. (4)	Step 15
that humans can have both a positive and negative impact on the environment: (4) <ul style="list-style-type: none"> - Positive – setting up a nature reserve; planting trees; creating a garden pond. - Negative – littering; deforestation; air pollution; plastic pollution. 	Step 16

← Core Investigation 1

← Core Investigation 2

← Core Investigation 3

***Vocabulary may already have been introduced but must be covered in the given context**

Year 4 – Science Lesson Objectives

Living Things and their Habitats (Y4)

To group living things in a range of ways. (plants and animals)
To identify vertebrates by observing their similarities and differences.
To generate questions to use in a classification key.
To use classification keys to help group and identify a variety of living things in the environment. (local and wider, plants and animals)
To describe environmental dangers to endangered species.
To recognise that environments can change and can pose dangers to living things. (fires, flooding, earthquakes etc).
To describe the positive and negative human impact on environments (positive effects of nature reserves, ecologically planned parks, or garden ponds, and the negative effects of population and development, litter or deforestation)
1. To record data to show the range of living things in the local environment. (TAPS – local survey)
2. To research the impact of deforestation on animals' habitats.
3. To use a classification key to identify invertebrates.
Assessment -

Black - Learning objective Red – Suggested Activities or useful information. Purple – Core investigations

Year 4 – Science Knowledge Builder– *Small Steps and Suggested Lesson-Level Overview*

Small Steps Overview – Electricity (Y4)

(1)	Identify common appliances that run on electricity.
(2)	Construct a simple electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.
(3)	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.
(4)	Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.
(5)	Recognise some common conductors and insulators, and associate metals with being good conductors.
(6)	Providing further depth and breadth of understanding

NOTE – SOME STEPS WILL TAKE MORE THAN 60 MINUTES

Pupils will know...

Pupils will know...		Key Vocab (MUST be introduced)	
All knowledge (inc. key vocab) linked to prior learning (see page 3 for linked objectives)			
that everyday appliances run on electricity. (1) – washing machine; television; iron; games console; kettle	Step 1	electricity, appliance, washing machine, television, iron, games console, kettle	
that electricity can occur naturally or be 'man-made'. (6) that the source of electricity may be 'renewable' or 'non-renewable'. (6)	Step 2	lightening, static electricity; power station; fossil fuel; solar; geo-thermal; wind; hydro; tidal; biomass; nuclear	
that all functioning electrical devices are part of a circuit. (3) that a circuit contains a battery (cell), wires and an appliance that requires electricity to work (such as a bulb, motor or buzzer). (2)	Step 3	circuit, battery, cell, motor, bulb, buzzer, wires	← Core Investigation 1
that circuits can be drawn using pictorial representations (do not introduce circuit symbol). (2) that electricity flows around a circuit from a power source to another component. (4) that a switch can be used to connect or break an electrical circuit. (4) that an electrical device will not work if there is no power source or a break in a circuit. (4)	Step 4		
	Step 5	current, switch	
that electricity may come from the mains or a battery. (6) that a battery has two terminals (shown as + [anode] or – [cathode]). (6) that everyday appliances are connected to the mains and must be used safely. (6)	Step 6	mains, voltage, plug, terminal	
that there are a number of common electrical hazards inc.: (6) – exposed wires; damaged wall sockets; overloading extension sockets; placing metal into electrical appliances or open sockets; electrical appliances near water	Step 7	hazard, risk	
that some household items (remote control, clock) are powered by a battery. (1) that items powered by a battery are safer to handle than those powered by the mains. (6)	Step 8	remote control, clock,	
that metals are good conductors of electricity and most other materials are not. (5) that some metals conduct electricity better than others and are therefore suited to particular uses. (5) – Good conductors: copper, silver; aluminium – Poor conductors: steel; lead	Step 9	insulators, conductor, copper, silver, aluminium, steel, lead, plastic, paper, wood	← Core Investigation 2 ← Core Investigation 3
that materials that do not conduct electricity well are called insulators. (5) – Good insulators: plastic, paper, wood that metals are used to make wires and plastics are used to cover wires and as covers for plugs as they are good insulators. (5)			

*Vocabulary may already have been introduced but must be covered in the given context

Electricity (Y4)

To identify common appliances that run on electricity.
To construct a simple series electrical circuit and identify its components.
To draw circuits using a pictorial representation.
1. Research how parts of a circuit work.
To know the function of a switch in a circuit.
To identify whether or not a lamp will light in a simple series circuit.
To investigate whether circuits are complete or incomplete
2. To investigate which materials are electrical conductors or insulators
3. To test different conductors in a circuit and the impact on the brightness of a bulb
Assessment- Explain which identify found in a soldier's backpack could be used to repair the GPS circuit. (TAPS- Electricity Conductors)

Black - Learning objective Red – Suggested Activities or useful information. Purple – Core investigations

Year 4 – Science Knowledge Builder– *Small Steps and Suggested Lesson-Level Overview*

Small Steps Overview – Animals inc. Humans (Y4)

(1)	Describe the simple functions of the basic parts of the digestive system in humans.
(2)	Identify the different types of teeth in humans and their simple functions.
(3)	Construct and interpret a variety of food chains, identifying producers, predators and prey.
(4)	Providing further depth and breadth of understanding

NOTE – SOME STEPS WILL TAKE MORE THAN 60 MINUTES

Pupils will know...

Key Vocab (MUST be introduced)

All knowledge (inc. key vocab) linked to prior learning (see page 3 for linked objectives)		
that humans have teeth which are part of the skeletal system – although they play a key part in digestion. (2)	Step 1	skeletal system, skeleton, digestion, teeth, milk teeth, adult teeth, wisdom teeth, incisors, canines, premolars, molars
that humans have two sets of teeth during their lifetime: 20 milk teeth and 32 adult teeth (inc. 4 wisdom teeth). (2)		
that most humans start losing milk teeth at the age of 5 and have lost them all by the age of 14. (2)		
that there are 4 different types of teeth: (1) incisors; (2) canines; (3) premolars; (4) molars. (2)		
that incisors are the 4 front teeth on the top and bottom jaw - used for cutting and chopping food. (2)	Step 2	jaw, tongue
that canines are sharp pointy teeth to the outside of your incisors – used to help tear food apart. (2)		
that premolars are the two teeth to the outside of each canine – used for crushing and grinding food. (2)		
that molars are the three teeth to the outside of each premolar (inc. 1 wisdom tooth) – used with the tongue to help swallow food, mashing it up until its ready to be swallowed safely. (2)		
that healthy teeth need healthy gums. (4)	Step 3	gum, digestive system, food
that some foods can be damaging to your teeth. (4)		
that humans have a digestive system that takes in food. (1)	Step 4	nutrients, mouth, oesophagus, stomach, small intestine, liver, pancreas, gallbladder, large intestine, colon, rectum
that the human digestive system breaks down food into the nutrients and energy that our bodies need. (1)		
that the major parts of the human digestive system are: (a) mouth and oesophagus; (b) stomach; (c) small intestine; (d) liver, pancreas and gallbladder; (e) large intestine [colon]; (f) rectum. (1)		
– This small step should be read alongside the corresponding steps show below		
that the mouth takes in food, breaks it into small pieces, and moistens it with saliva from the salivary gland. (1)	Step 5	saliva, salivary gland, stomach, stomach acid
that the oesophagus pushes the broken-down food into your stomach. (1)		
that the stomach churns the broken-down food and mixes it with stomach acid. (1)		
that as food begins to dissolve in the stomach, the body begins to absorb nutrients. (1)		
that food waste does not pass through the liver pancreas or gallbladder. (1)	Step 6	liver, bile, fats, toxins, vitamins, minerals, enzymes, proteins, carbohydrates
<ul style="list-style-type: none"> The liver digests food by producing bile to break down fats, removing toxins and breaking down and storing some vitamins and minerals. The pancreas produces enzymes to help break down proteins, fats and carbohydrates. The gall bladder stores the bile that is produced by the liver. When needed, bile passes into the small intestine, where it breaks down fat. 		
the small intestine is a winding, tightly folded tube that does most of the work of digesting food and absorbing nutrients. (See functions of liver, pancreas and gallbladder) (1)		
that the remaining food that is not absorbed moves to the large intestine. (1)		
that most of the food's water is absorbed in the large intestine. (1)	Step 7	Consolidate vocabulary (re)introduced from Step 4 – Step 7
that any remaining waste in the large intestine is stool (faeces) and this is pushed to the rectum. (1)		
that the rectum is a short tube at the end of the large intestine – it connects your colon to your anus. (1)		
that the anus pushes stool out of the human body. (1)		
that food chains can be used to represent feeding relationships in a habitat. (3)	Step 8	faeces, stool, anus
that food chains always begin with a plant (producer). (3)		
that food chains may also include: prey, predators (both consumers). (3)		
that food chains are often specific to different habitats. (3)		
that food chains can be used to represent feeding relationships in a habitat. (3)	Step 9	food chain, producer, consumer, predator, prey, herbivore, omnivore, carnivore
that food chains always begin with a plant (producer). (3)		
that food chains may also include: prey, predators (both consumers). (3)		
that food chains are often specific to different habitats. (3)		

← **Core Investigations 1 and 2**

← **Core Investigation 3**

***Vocabulary may already have been introduced but must be covered in the given context**

Year 4 – Science Lesson Objectives

Animals inc. Humans (Y4)

To identify the types and functions of teeth.
To compare the teeth of carnivores and herbivores and suggest reasons for differences.
To find out what damages teeth and how to look after them.
To identify and name parts of the human digestive system.
To explain the functions of the digestive system.
To construct and interpret food chains.
1.To identify and name the organs of the digestive system and their functions (Model of the digestive system).
2. Observe over time the impact of different liquids on tooth decay. (TAPS – tooth decay)
3. Investigate food packages to identify if there is a pattern between foods that are high in energy and high in sugar.
Assessment -

Black - Learning objective Red – Suggested Activities or useful information. Purple – Core investigations

Year 4 - Possible Misconceptions

Year 4	Living Things and their Habitats	Animals inc. Humans	States of Matter
	<p>Some children may think:</p> <ul style="list-style-type: none"> the death of one of the parts of a food chain or web has no or limited consequences on the rest of the chain there is always plenty of food for wild animals animals are only land-living creatures animals and plants can adapt to their habitats, however they change all changes to habitats are negative. 	<p>Some children may think:</p> <ul style="list-style-type: none"> arrows in a food chains mean 'eats' the death of one of the parts of a food chain or web has no, or limited, consequences on the rest of the chain there is always plenty of food for wild animals your stomach is where your belly button is food is digested only in the stomach when you have a meal, your food goes down one tube and your drink down another the food you eat becomes "poo" and the drink becomes "wee". 	<p>Some children may think:</p> <ul style="list-style-type: none"> 'solid' is another word for hard or opaque solids are hard and cannot break or change shape easily and are often in one piece substances made of very small particles like sugar or sand cannot be solids particles in liquids are further apart than in solids and they take up more space when air is pumped into balloons, they become lighter water in different forms – steam, water, ice – are all different substances all liquids boil at the same temperature as water (100 degrees) melting, as a change of state, is the same as dissolving steam is visible water vapour (only the condensing water droplets can be seen) clouds are made of water vapour or steam the substance on windows etc. is condensation rather than water the changing states of water (illustrated by the water cycle) are irreversible evaporating or boiling water makes it vanish evaporation is when the Sun sucks up the water, or when water is absorbed into a surface/material.
	Sound	Electricity	
	<p>Some children may think:</p> <ul style="list-style-type: none"> sound is only heard by the listener sound only travels in one direction from the source sound can't travel through solids and liquids high sounds are loud and low sounds are quiet. 	<p>Some children may think:</p> <ul style="list-style-type: none"> electricity flows to bulbs, not through them electricity flows out of both ends of a battery electricity works by simply coming out of one end of a battery into the component. 	

Useful Resources and Websites

Name	Link / Location
<ul style="list-style-type: none"> Primary Science Teaching Trust (website) 	https://pstt.org.uk
<ul style="list-style-type: none"> Teacher Assessment in Primary Science (TAPS) 	https://pstt.org.uk/resources/curriculum-materials/assessment
<ul style="list-style-type: none"> STEM 	https://www.stem.org.uk/primary-science
<ul style="list-style-type: none"> Explorify 	https://explorify.uk
<ul style="list-style-type: none"> ReachOut CPD 	https://www.reachoutcpd.com