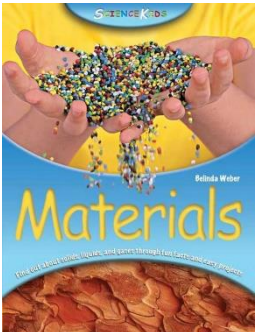
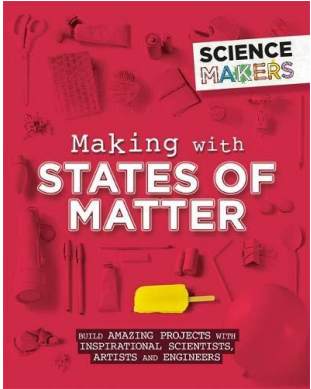



Term 1

States of Matter

**PRIOR LEARNING/STARTING POINT:** This unit links directly to the working scientifically objectives from KS1 Everyday Materials and Year 3.

INTENT	IMPLEMENTATION	IMPACT
<p><b>KNOWLEDGE</b></p> <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> </ul>	<p><b>ACTIVITIES</b></p> <p><b>Lesson 1</b> – Solid liquid or gas – categorise items into solids, liquids and gases.</p> <p><b>Lesson 2</b> - Investigating gases – investigate gases and explain their properties.</p> <p><b>Lesson 3</b> – heating and cooling – investigation into melting chocolate.</p> <p><b>Lesson 4</b> – wonderful water – Ice cube investigation</p> <p><b>Lesson 5</b> – evaporation investigation – Investigation into whether temperature changes with salt how fast towels dry.</p> <p><b>Lesson 6</b> – investigate how water evaporates</p> <p><b>Lesson 7</b> – The water cycle – identify and describe the different stages of the water cycle</p> <p><b>Lesson 8</b> – children to plan their own investigation into states of matter.</p> <p><b>Lesson 9</b> – Carry out their investigation</p> <p><b>Lesson 10</b> – Conclude their investigation</p>	<p><b>OUTCOMES</b></p> <p>I can sort and describe materials.</p> <p>I can investigate gases and explain their properties.</p> <p>I can investigate materials as they change state.</p> <p>I can explore how water changes state.</p> <p>I can investigate how water evaporates.</p>
<p><b>VOCABULARY</b></p> <p>Evaporation, condensation, precipitation, collection, clouds, rain, sleet, hail, snow, Solid, liquid, gas, particles, changing state, material, properties, freeze, melt, matter, capacity, states of matter</p> <p><b>Higher level vocabulary</b></p> <p>Kinetic energy, atom, mass, nucleus, molecule, element, chemical change, accumulation, particle theory</p>	<p><b>READING OPPORTUNITIES</b></p> <div style="display: flex; justify-content: space-around;">   </div>	<p><b>NEXT STEPS IN LEARNING</b></p> <p><u>Year 5</u></p> <p><b>Links with properties of materials:</b></p> <ul style="list-style-type: none"> <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> </ul> <p><b>Key stage 3</b></p> <p><u>The particulate nature of matter</u></p> <ul style="list-style-type: none"> <li>the properties of the different states of matter (solid, liquid and gas) in terms of the particle model, including gas pressure</li> <li>changes of state in terms of the particle model.</li> </ul> <p><u>Physical changes</u></p> <ul style="list-style-type: none"> <li>conservation of material and of mass, and reversibility, in melting, freezing, evaporation, sublimation, condensation, dissolving</li> <li>similarities and differences, including density differences, between solids, liquids and gases</li> </ul> <p><b>Key stage 4</b></p> <ul style="list-style-type: none"> <li>changes of state of matter in terms of particle kinetics, energy transfers and the relative strength of chemical bonds and intermolecular forces</li> </ul>

<p><b>SKILLS</b></p> <ul style="list-style-type: none"> <li>asking relevant questions and using different types of scientific enquiries to answer them</li> <li>setting up simple practical enquiries, comparative and fair tests</li> <li>making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</li> <li>recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>identifying differences, similarities or changes related to simple scientific ideas and processes</li> <li>using straightforward scientific evidence to answer questions or to support their findings</li> </ul>	<p><b>SMSC</b></p> <p><b>Spiritual</b> – learning about the world around them and reflecting on experiences.  <b>Social</b> – cooperating and working together  <b>Moral</b> – opportunities for voting.  <b>Cultural</b> - Studying different scientists and their contributions.</p> <p><b>PREPARATION FOR ADULTHOOD</b></p> <p>Promote independence.  Opportunities for leadership.  Exposure to aspiring jobs in STEM field.</p> <p><b>Values</b></p> <p>Responsibility (equipment), excellence, quality, cooperation, determination</p>	<p><b>Key Questions</b></p> <p><b>What are the states of matter?</b></p> <p><b>Can an object change state?</b></p> <p><b>If an object changes state, can it change back again?</b></p> <p><b>Are there only four states of matter?</b></p> <p><b>Why do some solids behave like liquids/liquids behave like solids?</b></p>
<p><b>LINKS</b></p> <p><b>Geography – The Water Cycle</b></p> <p><b>Maths – Measurement and estimation</b></p>		

<p><b>Curriculum Coherence – Year 4 Science</b></p> 		
<p>Term 2</p>	<p><b>ELECTRICITY / SOUND</b></p>	
<p><b>PRIOR LEARNING/STARTING POINT:</b> This unit links directly to the working scientifically objectives from KS1 and year 3. Links to insulators and conductors within year 2 materials unit.</p>		
<ul style="list-style-type: none"> <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>		
<p><b>INTENT</b></p>	<p><b>IMPLEMENTATION</b></p>	<p><b>IMPACT</b></p>
<p><b>KNOWLEDGE</b>  <b>ELECTRICITY</b></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><b>ACTIVITIES</b></p> <p><b>ELECTRICTY</b></p> <p><b>Lesson 1</b> – Explore the differences between mains and battery power and the everyday appliances which use them. Classify different appliances and how they are powered.</p> <p><b>Lesson 2</b> – Construct simple circuits to explore the difference between COMPLETE and INCOMPLETE circuits and how the circuits work. Draw scientific diagrams to represent their circuits.</p>	<p><b>OUTCOMES</b></p> <p><b>ELECTRICTY</b></p> <p>I can identify common appliances that run on mains and battery electricity.</p> <p>I can construct a simple electrical circuit naming the parts inc; cell, battery, bulb, wire, buzzer, switch.</p> <p>I can identify whether different components will work within a circuit.</p>

<p>recognise some common conductors and insulators, and associate metals with being good conductors</p> <p><b>SOUND</b></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>Lesson 3 – INVESTIGATION</b> – Children investigate the difference between conductors and insulators and test which materials will allow electricity to travel through.</p> <p><b>Lesson 4</b> – Children explore how switches work within their circuits. Create their own effective switches using their previous knowledge of conductors and insulators.</p> <p><b>Lesson 5</b> – Children investigate variables in their circuits and how they can affect their circuits and what happens to them.</p> <p><b>SOUND</b></p> <p><b>Lesson 1</b> – Children explore how sounds are made through vibration and recognise different sounds in different environments.</p> <p><b>Lesson 2</b> – Children recognise how sounds are heard and learn the functions of and roles of different parts of the ear.</p> <p><b>Lesson 3</b> – Children investigate patterns and links between pitch, volume and tone and how they can change.</p> <p><b>Lesson 4 – INVESTIGATION</b> Children investigate how sounds can become fainter by investigating <b>Which is the best soundproofing material?</b></p>	<p>I can recognise that a switch opening or closing can effect whether a circuit will work.</p> <p>I can recognise common conductors and insulators.</p> <p><b>SOUND</b></p> <p>I can recognise that sounds are made through vibrations.</p> <p>I can recognise that sound travels through vibrations from a source to the ear.</p> <p>I can recognise how to change the pitch and volume of a sound.</p> <p>I can recognise that sounds can become stronger and fainter and how to change them.</p>
<p><b>VOCABULARY</b></p> <p>Appliance, circuit, conductor, insulator, mains, battery, cell, bulb, switch (open and closed), buzzer, motor, voltage, current, vibrate, sound, volume, pitch</p> <p><b>Higher level vocabulary</b></p> <p>Watts, complete, closed, hertz</p>	<p><b>READING OPPORTUNITIES</b></p> <div data-bbox="570 894 1060 1304" data-label="Image"> </div>	<p><b>NEXT STEPS IN LEARNING</b></p> <p><b>Year 6 – Electricity</b></p> <ul style="list-style-type: none"> <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>
<p><b>SMSC</b></p> <p><b>Spiritual</b> – learning about the world around them and reflecting on experiences.</p> <p><b>Social</b> – cooperating and working together</p>	<p><b>PREPARATION FOR ADULTHOOD</b></p> <p>Promote independence.</p> <p>Opportunities for leadership.</p> <p>Exposure to aspiring jobs in STEM field.</p>	<p><b>Key Stage 3 – Physics – Soundwaves/Electricity and Electromagnetism</b></p> <ul style="list-style-type: none"> <li>• comparing power ratings of appliances in watts (W, kW)</li> </ul>

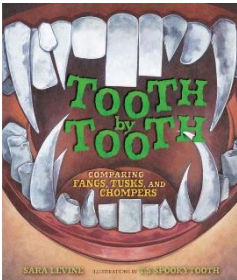
<p><b>Moral</b> – opportunities for voting.  <b>Cultural</b> - Studying different scientists and their contributions.</p>	<p><b>Values</b></p> <p><b>Responsibility (equipment), excellence, quality, cooperation, determination</b></p>		<ul style="list-style-type: none"> <li>• comparing amounts of energy transferred (J, kJ, kW hour)</li> <li>• electric current, measured in amperes, in circuits, series and parallel circuits, currents</li> <li>• add where branches meet and current as flow of charge</li> <li>• potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the ratio of potential difference (p.d.) to current</li> <li>• differences in resistance between conducting and insulating components (quantitative)</li> </ul> <ul style="list-style-type: none"> <li>• frequencies of sound waves, measured in hertz (Hz); echoes, reflection and absorption of sound</li> <li>• sound needs a medium to travel, the speed of sound in air, in water, in solids</li> <li>• sound produced by vibrations of objects, in loud speakers, detected by their effects on microphone diaphragm and the ear drum; sound waves are longitudinal</li> <li>• auditory range of humans and animals.</li> </ul> <p><b>Key Stage 4</b></p> <ul style="list-style-type: none"> <li>• measuring resistance using p.d. and current measurements</li> <li>• exploring current, resistance and voltage relationships for different circuit elements; including their graphical representations</li> <li>• quantity of charge flowing as the product of current and time</li> </ul> <p>Science – key stage 4 16</p> <ul style="list-style-type: none"> <li>• drawing circuit diagrams; exploring equivalent resistance for resistors in series</li> <li>• the domestic a.c. supply; live, neutral and earth mains wires, safety measures</li> <li>• power transfer related to p.d. and current, or current and resistance.</li> <li>• the use of models, as in the particle model of matter or the wave models of light and of sound</li> <li>• speed of sound, estimating speeds and accelerations in everyday contexts</li> </ul>
<p><b>SKILLS</b></p> <ul style="list-style-type: none"> <li>-Ask relevant questions and use different types of scientific enquiries to answer them</li> <li>-Set up simple practical enquiries, comparative and fair tests</li> <li>-Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>-Gather, record, classify and present data in a variety of ways to help in answering questions</li> <li>-Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> </ul>			<p><b>Key Questions</b></p> <p><b>How is electricity made?</b></p> <p><b>How do sound and electricity travel?</b></p> <p><b>How does sound travel?</b></p> <p><b>How does the ear work?</b></p> <p><b>What makes different sounds?</b></p>
<p><b>LINKS</b></p> <p>Life learning – Safety                      Forest School Learning – Sound Investigation  History – The Blitz (Blackout)              Music – Composing and Making Music</p>			

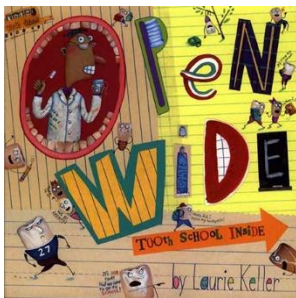


Term 3 **HUMAN BODY**

**PRIOR LEARNING/STARTING POINT:**

- Year 1
- identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense
- Year 2
- 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
- Year 3
- 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

<b>INTENT</b>	<b>IMPLEMENTATION</b>	<b>IMPACT</b>
<p><b>KNOWLEDGE</b></p> <ul style="list-style-type: none"> <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>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>	<p><b>ACTIVITIES</b></p> <p><b>Human body</b></p> <p><b>Lesson 1</b> – naming parts of the digestive system activity - diagram</p> <p><b>Lesson 2</b> – Functions of the human digestive system activity -</p> <p><b>Lesson 3</b> – Types and functions of teeth activity – investigation and observation of teeth and food.</p> <p><b>Lesson 4</b> – Tooth decay enquiry – questioning and discussions – investigation using eggs in different liquids.</p> <p><b>Lesson 5</b> – complete results and conclusions.</p> <p><b>Animals and habitats</b></p> <p><b>Lesson 1</b> – characteristics of an organism – living, died, never alive comparison – MRS GREN</p> <p><b>Lesson 2</b> – features of habitats – identifying potential problems for animals in their changing habitats.</p> <p><b>Lesson 3</b> – trip to the local area to find organisms – using cameras/ipads to take pictures.</p> <p><b>Lesson 4</b> – children to create their own branching database – categorising.</p> <p><b>Lesson 5</b> – design an investigation into different habitats and which a worm or snail will prefer.</p> <p><b>Lesson 6</b> – exploring the feeding relationships between animals and plants</p>	<p><b>OUTCOMES</b></p> <p>I can identify and name parts of the human digestive system.</p> <p>I can explain the functions of the digestive system.</p> <p>I can use scientific evidence to answer questions.</p> <p>I can identify the functions of teeth.</p> <p>I can identify similarities and differences related to scientific ideas.</p> <p>I can ask scientific questions and choose a scientific enquiry to answer them.</p> <p>I can say what a habitat is and give examples and suggest what different habitats are in my local environment.</p> <p>I can suggest ways that a changing environment affects the organisms living in it.</p> <p>I can suggest reasons why the different animals live in different parts of the wild area. (Link to food chains, protection and survival)</p>
<p><b>VOCABULARY</b></p> <p>Organism, sort, group, criteria, Venn diagram, Teeth, Canine, Incisor, Molar, Carroll diagram, Variation, classification, vertebrates, invertebrates, habitat, environment, wildlife, change, danger, endangered, extinct, conservation.</p> <p><b>Higher level vocabulary</b></p> <p>Scientific words for the different parts of the digestive system - <a href="#">Link</a>, enzymes function</p>	<p><b>READING OPPORTUNITIES</b></p> <div style="text-align: center;">  </div>	<p><b>NEXT STEPS IN LEARNING</b></p> <p><u>Year 5</u></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.</li> </ul> <p><u>Year 6</u></p> <ul style="list-style-type: none"> <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 bodies function</li> <li>describe the ways in which nutrients and water are transported within animals, including humans.</li> </ul>
<p><b>SMSC</b></p> <p><b>Spiritual</b> – learning about the world around them and reflecting on experiences.</p> <p><b>Social</b> – cooperating and working together</p>	<p><b>PREPARATION FOR ADULTHOOD</b></p> <p>Promote independence.</p> <p>Opportunities for leadership.</p> <p>Exposure to aspiring jobs in STEM field.</p>	<p><b>Key stage 3</b></p> <ul style="list-style-type: none"> <li>the structure and functions of the human skeleton, to include support, protection, movement and making blood cells</li> <li>content of a healthy human diet: carbohydrates, lipids (fats and oils), proteins,</li> </ul>



<p><b>Moral –</b> opportunities for voting. <b>Cultural -</b> Studying different scientists and their contributions.</p>	<p><b>Values</b> Responsibility (equipment), excellence, quality, cooperation, determination</p>		<p>vitamins, minerals, dietary fibre and water, and why each is needed</p> <ul style="list-style-type: none"> <li>• calculations of energy requirements in a healthy daily diet</li> <li>• the consequences of imbalances in the diet, including obesity, starvation and deficiency diseases</li> <li>• the tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food (enzymes simply as biological catalysts)</li> </ul> <p><b>Key stage 4</b></p> <ul style="list-style-type: none"> <li>• the relationship between the structure and functions of the human circulatory system.</li> <li>• bacteria, viruses and fungi as pathogens in animals and plants</li> <li>• body defences against pathogens and the role of the immune system against disease</li> <li>• the relationship between the structure and function of the human nervous system</li> </ul>
<p><b>SKILLS</b></p> <ul style="list-style-type: none"> <li>• asking relevant questions and using different types of scientific enquiries to answer them</li> <li>• setting up simple practical enquiries, comparative and fair tests</li> <li>• making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>• gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</li> <li>• recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>• using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>• identifying differences, similarities or changes related to simple scientific ideas and processes</li> <li>• using straightforward scientific evidence to answer questions or to support their findings</li> </ul>			<p><b>Key Questions</b></p> <p><b>How do we digest our food and what happens once it is digested?</b></p> <p><b>Why do we have so many different teeth? What different jobs do they do?</b></p> <p><b>How do our teeth decay?</b></p> <p><b>How do all living things survive?</b></p>
<p><b>LINKS</b> Forest School – Creating dens and habitats Geography – Human and physical Geography P.E - Athletics</p>			