

Year 4 Science		
By the end of Year 4 children will be able to...	NC PoS	Key Learning & Key Vocabulary
<p><b>Humans</b></p> <ul style="list-style-type: none"> <li>Talk about their teeth and how to care for them</li> <li>Describe the functions of the different types of teeth</li> <li>Explain how food/drinks can affect teeth</li> <li>Compare human teeth with those of other animals</li> <li>Identify and name the main parts of the digestive system</li> <li>Order the main parts of the digestive system</li> <li>Describe what happens in each part of the digestive system</li> <li>Explain how to keep their digestive system healthy</li> </ul>	<ul style="list-style-type: none"> <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> </ul>	<p><b>Key Learning</b></p> <p>Food enters the body through the mouth. Digestion starts when the teeth start to break the food down. Saliva is added and the tongue rolls the food into a ball. The food is swallowed and passes down the oesophagus to the stomach. Here the food is broken down further by being churned around and other chemicals are added. The food passes into the small intestine. Here nutrients are removed from the food and leave the digestive system to be used elsewhere in the body. The rest of the food then passes into the large intestine. Here the water is removed for use elsewhere in the body. What is left is then stored in the rectum until it leaves the body through the anus when you go to the toilet.</p> <p>Humans have four types of teeth - incisors for cutting, canines for tearing, molars and premolars for grinding (chewing).</p> <p><b>Key vocabulary</b></p> <p>Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars.</p>
<p><b>Scientific enquiries for humans</b></p> <ul style="list-style-type: none"> <li>Why do teeth fall out? Which drinks make teeth decay quickly? (comparative and fair testing)</li> <li>You eat a meal. And then a bit later...you do a poo! What happens in between? (research)</li> <li>How can I keep my digestive system healthy? (research)</li> </ul>		
<p><b>Key experiences</b></p> <ul style="list-style-type: none"> <li>Looking at our own teeth with mirrors</li> <li>Using disclosing tablets to see how much decay is on their teeth and brushing it off</li> <li>To look at the Human Body Interactive Simulation to explore the Respiratory System (Stem)</li> <li>Create a model of the digestive system (tights and banana)</li> </ul>		
<p><b>States of matter</b></p> <ul style="list-style-type: none"> <li>Talk about solids, liquids and gases</li> <li>Describe the properties of solids, liquids and gases</li> <li>Describe what happens when objects melt, freeze or solidify</li> <li>Give everyday examples of melting and freezing</li> <li>Describe what happens when liquids evaporate and condenses</li> <li>Give everyday examples of evaporation and condensation</li> <li>Describe the water cycle</li> <li>Talk about temperature being how hot or cold something is</li> <li>Talk about how we measure temperature</li> <li>Measure temperature using a variety of thermometers</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> </ul>	<p><b>Key Learning</b></p> <p>A solid keeps its shape and has a fixed volume. A liquid has a fixed volume but changes in shape to fit the container. A liquid can be poured and keeps a level, horizontal surface. A gas fills all available space; it has no fixed shape or volume. Granular and powdery solids like sand can be confused with liquids because they can be poured, but when poured they form a heap and they do not keep a level surface when tipped. Each individual grain demonstrates the properties of a solid.</p> <p>Melting is a state change from solid to liquid. Freezing is a state change from liquid to solid. The freezing point of water is 0°C. Boiling is a change of state from liquid to gas that happens when a liquid is heated to a specific temperature and bubbles of the gas can be seen in the liquid. Water boils when it is heated to 100°C. Evaporation is the same state change as boiling (liquid to gas) but it happens slowly at lower temperatures and only at the surface of the liquid. Evaporation happens more quickly if the temperature is higher, the liquid is spread out or it is windy. Condensation is the change back from a gas to a liquid caused by cooling. Water at the surface of seas, rivers etc. evaporates into water vapour (a gas). This rises, cools and condenses back into a liquid forming clouds. When too much water has condensed the water droplets in the cloud get too heavy and fall back down as rain, snow, sleet etc. and drain back into rivers etc. This is known as precipitation. This is the water cycle.</p> <p><b>Key vocabulary</b></p> <p>Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle</p>
<p><b>Scientific enquiries for states of matter</b></p> <ul style="list-style-type: none"> <li>What would happen if the climate around the world shifted? (observing over time; comparative and fair testing)</li> <li>What things will make water evaporate more quickly? (comparative and fair testing)</li> <li>The amount of water on Earth never changes! How is this possible? (water cycle – research)</li> </ul>		
<p><b>Key experiences</b></p> <ul style="list-style-type: none"> <li>Exploring different types of solids, liquids and gases and observing the differences</li> <li>Watching a short clip to understand the reversible change which occurs in the process of chocolate making (Stem.org.uk)</li> </ul>		
<p><b>Sound</b></p> <ul style="list-style-type: none"> <li>Experience a variety of sounds around us, observe and describe them</li> <li>Order sounds in a variety of ways e.g. loudest to quietest, highest to lowest</li> <li>Compare sounds using words and decibels</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> </ul>	<p><b>Key Learning</b></p> <p>A sound source produces vibrations which travel through a medium from the source to our ears. Different mediums such as solids, liquids and gases can carry sound, but sound cannot travel through a vacuum (an area empty of matter). The vibrations</p>

<ul style="list-style-type: none"> <li>• Explain how we use sounds in everyday life</li> <li>• Consider how sounds help or hinder us</li> <li>• Be able to explain how sounds travel</li> <li>• Describe how volume and pitch are produced by a variety of simple instruments</li> <li>• Describe how sounds get fainter as the distance from the sound source increases</li> <li>• Explain how the ear works and how we can protect our hearing</li> </ul>	<ul style="list-style-type: none"> <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> </ul>	<p>cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound.</p> <p>The loudness (volume) of the sound depends on the strength (size) of vibrations which decreases as they travel through the medium. Therefore, sounds decrease in volume as you move away from the source. A sound insulator is a material which blocks sound effectively.</p> <p>Pitch is the highness or lowness of a sound and is affected by features of objects producing the sounds. For example, smaller objects usually produce higher pitched sounds.</p> <p><b>Key Vocabulary</b> Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation</p>
<p><b>Scientific enquiries for sound</b></p> <ul style="list-style-type: none"> <li>• Is there a link between the amount of noise in school and the time of the day? (pattern seeking)</li> <li>• How do we use some of the best scientific inventions (sound) in everyday life? (research)</li> <li>• What is it like to be hearing impaired? (research)</li> </ul>		
<p><b>Key experiences</b></p> <ul style="list-style-type: none"> <li>• Frequency testing</li> <li>• Listening to various instruments and deciding which they prefer and discuss higher and lower pitch</li> <li>• Making their own instruments thinking about the sounds they make and what affects the pitch and volume of sound</li> </ul>		
<p><b>Electricity</b></p> <ul style="list-style-type: none"> <li>• Talk about objects that use electricity</li> <li>• Talk about how electricity is used to produce heat, warmth, movement and light and give examples.</li> <li>• Make an electrical circuit and name the components</li> <li>• Control a circuit using a switch</li> <li>• Identify and classify conductors and insulators</li> <li>• Research how electricity is produced in a variety of ways</li> </ul>	<ul style="list-style-type: none"> <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> <li>• recognise some common conductors and insulators, and associate metals with being good conductors</li> <li>•</li> </ul>	<p><b>Key Learning</b></p> <p>Many household devices and appliances run on electricity. Some plug in to the mains and others run on batteries. An electrical circuit consists of a cell or battery connected to a component using wires. If there is a break in the circuit, a loose connection or a short circuit the component will not work. A switch can be added to the circuit to turn the component on and off.</p> <p>Metals are good conductors so they can be used as wires in a circuit. Non-metallic solids are insulators except for graphite (pencil lead). Water, if not completely pure, also conducts electricity</p> <p><b>Key Vocabulary</b> Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol</p> <p>N.B. Children in year 4 do not need to use standard symbols as this is taught in year 6</p>
<p><b>Scientific enquiries for electricity</b></p> <ul style="list-style-type: none"> <li>• Which materials conduct electricity? (identifying and classifying)</li> <li>• How has electricity changed our lives? (research, pattern seeking; fair testing)</li> <li>• How can I keep myself safe around electrical appliances? (research)</li> </ul>		
<p><b>Key experiences</b></p> <ul style="list-style-type: none"> <li>• Things that use electricity – watching a clip and spotting everything that requires electricity</li> <li>• Exploring the different components to make a circuit.</li> <li>• The Apprentice Electrician – children have to perform a variety of timed tasks in order to receive their certificate</li> <li>• Role playing electrons in a circuit</li> </ul>		
<p><b>Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>• Talk about and describe range of habitats and their plants &amp; animals (building on from Y2 work)</li> <li>• Compare animals and plants</li> <li>• Ask and answer yes/no questions</li> <li>• Identify plants and animals using a classification key</li> <li>• Group animals &amp; plants in a variety of ways and give reasons</li> <li>• Construct classification keys to help others to identify animals &amp; plants</li> <li>• construct and interpret a variety of food chains, identifying producers, predators and prey</li> <li>• Give examples of how an environment has changed due to human impact or natural phenomena</li> <li>• Talk about actions they could take to protect our planet</li> </ul>	<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> </ul>	<p><b>Key Learning</b></p> <p>Living things can be grouped (classified) in different ways according to their features. Classification keys can be used to identify and name living things.</p> <p>Living things live in a habitat which provides an environment to which they are suited (year 2 learning). These environments may change naturally e.g. through flooding, fire, earthquakes etc. Humans also cause the environment to change. This can be in a good way i.e. positive human impact, such as setting up nature reserves or in a bad way i.e. negative human impact, such as littering. These environments also change with the seasons; different living things can be found in a habitat at different times of the year.</p> <p>Living things can be classified as producers, predators and prey according to their place in the food chain.</p> <p><b>Key Vocabulary</b> Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate herbivore, carnivore, omnivore, producer, predator, prey, food chain</p>
<p><b>Scientific enquiries for living things &amp; their habitats</b></p> <ul style="list-style-type: none"> <li>• What nature will you see on our doorstep? (identifying and classifying)</li> </ul>		
<p><b>Key experiences</b></p>		

- To watch the video 'How Wolves saved Yellowstone National Park'.
- Classify their classmates using knowledge from how scientists categorise and identify plants and animals
- Use the WWF website to learn about endangered and threatened species around the World
- Save our Home! Find out about the rainforests of Sumatra and how deforestation has occurred in order to grow palm oil and how this has affected the Sumatran orang-utans (Miss Cradock to speak about her trip to Sumatra)

**Working scientifically**

- Observe, describe and compare using Key Stage 2 scientific vocabulary
- Group and order observations giving scientific reasons
- Collect evidence/find information to test out an idea/prediction or answer a question
- Predict what might happen and begin to explain why using everyday ideas and scientific facts/ideas
- Measure in standard units
- Select equipment, with help
- Plan ways to test out their own/someone else's ideas
- Set up a fair test and explain why it is important to do so
- Draw tables and bar charts to record observations/data
- Explain observations/results using cause and effects and scientific facts and ideas
- Explain what the evidence shows and whether it supports any predictions
- Identify and explain simple trends and patterns in results
- Communicate findings in a variety of ways
- Talk about how to improve their own work

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- 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
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.