






# Knowle CE Primary Academy

## Medium Term Plan: SCIENCE



YEAR: 4 TERM: Autumn Term 1:1

TITLE: Sound

	COHERENCE & CREDIBILITY	CREATIVITY - Working Scientifically	COMPASSION & Appreciation of Significant Scientists	COMMUNITY
REVISION / REMIND / REVISIT - Builds on ...	<p><b>NC Links</b></p> <ul style="list-style-type: none"> <li>To identify how sounds are made, associating some of them with something vibrating</li> <li>To recognise that vibrations from sounds travel through a medium to the ear</li> <li>To find patterns between the pitch of a sound and features of the object that produced it</li> <li>To find patterns between the volume of a sound and the strength of the vibrations that produced it</li> <li>To recognise that sounds get fainter as the distance from the sound source increases.</li> </ul> <p><b>Key Learning</b></p> <ul style="list-style-type: none"> <li>A sound source produces vibrations which travel through a medium from the source to our ears.</li> <li>Different mediums such as solids, liquids and gases can carry sound but sound cannot travel through a vacuum (an area empty of matter).</li> <li>The vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound.</li> <li>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.</li> <li>A sound insulator is a material which blocks sound effectively.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Explore making sounds with a range of objects such as musical instruments and other household objects</li> <li>Explore using objects that change in feature to change pitch and volume such as length of guitar string, bottles of water or tuning forks</li> <li>How does the level of sound in the classroom vary through the day? </li> <li>Choose one from: <ul style="list-style-type: none"> <li>Measure sounds over different distances</li> <li>Measure sounds through different insulation materials </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Alexander Bell (research using iPads/laptops - link to computing) </li> </ul>	

**Knowle CE Primary Academy**  
**Medium Term Plan: SCIENCE**

	<b>Vocabulary</b> Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation			
	<b>ASSESSMENT CRITERIA</b> <b>Knowledge:</b> <ul style="list-style-type: none"> <li>• Can name sound sources and state that sounds are produced by the vibration of the object.</li> <li>• Can state that sounds travel through different mediums such as air, water, metal</li> <li>• Can give examples to demonstrate how the pitch of a sound are linked to the features of the object that produced it</li> <li>• Can give examples of how to change the volume of a sound e.g. increase the size of vibrations by hitting or blowing harder</li> <li>• Can give examples to demonstrate that sounds get fainter as the distance from the sound source increases</li> </ul> <b>Working Scientifically:</b> <ul style="list-style-type: none"> <li>• Can explain what happens when you strike a drum or pluck a string and use a diagram to show how sounds travel from an object to the ear</li> <li>• Can demonstrate how to increase or decrease pitch and volume using musical instruments or other objects</li> <li>• Can explain how loudness can be reduced by moving further from the sound source or by using a sound insulating medium</li> </ul>			



# Knowle CE Primary Academy





## Medium Term Plan: SCIENCE



YEAR: 4


TERM: Spring Term 2:1

TITLE: States of matter

	COHERENCE & CREDIBILITY	CREATIVITY - Working Scientifically	COMPASSION & Appreciation of Significant Scientists	COMMUNITY
REVISION / REMIND / REVISIT - Builds on ::	<p><b>NC Links</b></p> <ul style="list-style-type: none"> <li>To compare and group materials together, according to whether they are solids, liquids or gases</li> <li>To 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 (<math>^{\circ}\text{C}</math>)</li> <li>To 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> <ul style="list-style-type: none"> <li>A solid keeps its shape and has a fixed volume.</li> <li>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.</li> <li>A gas fills all available space; it has no fixed shape or volume.</li> <li>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.</li> <li>Melting is a state change from solid to liquid.</li> <li>Freezing is a state change from liquid to solid.</li> <li>The freezing point of water is <math>0^{\circ}\text{C}</math>.</li> <li>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 <math>100^{\circ}\text{C}</math>.</li> <li>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</li> </ul>	<ul style="list-style-type: none"> <li>Observe closely and classify a range of solids</li> <li>Observe closely and classify a range of liquids</li> <li>Explore making gases visible e.g. squeezing sponges under water to see bubbles, and showing their effect e.g. using straws to blow objects, trees moving in the wind               <ul style="list-style-type: none"> <li>What happens when you put currants in lemonade? </li> </ul> </li> <li>Investigating melting point of different materials e.g. ice, margarine, butter and chocolate               <ul style="list-style-type: none"> <li>Do large and small chocolate buttons take the same amount of time to melt? </li> </ul> </li> <li>How is rain formed?  </li> </ul>		

## Knowle CE Primary Academy

### Medium Term Plan: SCIENCE

	<p>liquid. Evaporation happens more quickly if the temperature is higher, the liquid is spread out or it is windy.</p> <ul style="list-style-type: none"> <li>• Condensation is the change back from a gas to a liquid caused by cooling.</li> <li>• 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.</li> </ul> <p><b>Vocabulary</b> Solid, liquid, gas, change of state, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle</p>	<ul style="list-style-type: none"> <li>• Set up investigations to explore changing the rate of evaporation e.g. washing, puddles, handprints on paper towels, liquids in containers </li> <li>- How can we dry socks more quickly?</li> </ul>		
<p><b>ASSESSMENT CRITERIA</b></p> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>• Can create a concept map, including arrows linking the key vocabulary</li> <li>• Can name properties of solids, liquids and gases</li> <li>• Can give everyday examples of melting and freezing</li> <li>• Can give everyday examples of evaporation and condensation</li> <li>• Can describe the water cycle</li> </ul> <p><b>Working Scientifically:</b></p> <ul style="list-style-type: none"> <li>• Can give reasons to justify why something is a solid liquid or gas</li> <li>• Can give examples of things that melt/freeze and how their melting points vary</li> <li>• From their observations, can give the melting points of some materials</li> <li>• Using their data, can explain what affects how quickly a solid melts</li> <li>• Can measure temperatures using a thermometer</li> <li>• Can present their learning about the water cycle in a range of ways e.g. diagrams, explanation text, story of a water droplet</li> </ul>				



# Knowle CE Primary Academy




## Medium Term Plan: SCIENCE



YEAR: 4

TERM: Spring Term 2:2

TITLE: Living things and their habitats

REVISION / REMIND / REVISIT - Builds on Year 2 Living things and their habitats	COHERENCE & CREDIBILITY	CREATIVITY - Working Scientifically	COMPASSION & Appreciation of Significant Scientists	COMMUNITY
	<p><b>NC Links</b></p> <ul style="list-style-type: none"> <li>To recognise that living things can be grouped in a variety of ways</li> <li>To explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</li> <li>To recognise that environments can change and that this can sometimes pose dangers to living things.</li> </ul> <p><b>Key Learning</b></p> <ul style="list-style-type: none"> <li>Living things can be grouped (classified) in different ways according to their features. Classification keys can be used to identify and name living things.</li> <li>Living things live in a habitat which provides an environment to which they are suited (year 2 learning).</li> <li>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.</li> <li>These environments also change with the seasons; different living things can be found in a habitat at different times of the year</li> </ul> <p><b>Vocabulary</b> Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate</p>	<ul style="list-style-type: none"> <li>Use classification keys to name unknown living things</li> <li>Create a simple identification key based on observable features</li> <li>Use Ogden Trust for identifying/classifying question </li> <li>Use secondary sources to find out about human impact, both positive and negative, on environments </li> <li>How much litter is there on our playgrounds? </li> </ul>	<ul style="list-style-type: none"> <li>Carl Linnaeus</li> </ul>	<p>Active Science - Mini-beast and Habitat Hunt/Mini-beast Top Trumps</p>
<p><b>ASSESSMENT CRITERIA</b></p> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>Can name living things living in a range of habitats, giving the key features that helped them to identify them</li> </ul>				

**Knowle CE Primary Academy**  
**Medium Term Plan: SCIENCE**

- Can give examples of how an environment may change both naturally and due to human impact

**Working Scientifically:**

- Can use classification keys to identify unknown plants and animals
- Can present their learning about changes to the environment in different ways e.g. campaign video, persuasive letter




# Knowle CE Primary Academy

## Medium Term Plan: SCIENCE



YEAR: 4 TERM: Summer Term 3:1

TITLE: Electricity

REVISION / REMIND / REVISIT - Builds on ...	COHERENCE & CREDIBILITY	CREATIVITY - Working Scientifically	COMPASSION & Appreciation of Significant Scientists	COMMUNITY
	<p><b>NC Links</b></p> <ul style="list-style-type: none"> <li>To identify common appliances that run on electricity</li> <li>To construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</li> <li>To 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>To recognise that a switch opens and closes a circuit and to associate this with whether or not a lamp lights in a simple series circuit</li> <li>To recognise some common conductors and insulators, and associate metals with being good conductors</li> </ul> <p><b>Key Learning</b></p> <ul style="list-style-type: none"> <li>Many household devices and appliances run on electricity.</li> <li>Some plug in to the mains and others run on batteries.</li> <li>An electrical circuit consists of a cell or battery connected to a component using wires.</li> <li>If there is a break in the circuit, a loose connection or a short circuit the component will not work.</li> <li>A switch can be added to the circuit to turn the component on and off.</li> <li>Metals are good conductors so they can be used as wires in a circuit.</li> <li>Non-metallic solids are insulators except for graphite (pencil lead). Water, if not completely pure, also conducts electricity</li> </ul> <p><b>Vocabulary</b></p>	<ul style="list-style-type: none"> <li>Construct a range of circuits - which materials conduct electricity? </li> <li>Explore how to connect a range of different switches and investigate how they function in different ways</li> <li>Apply their knowledge of conductors and insulators to design and make different types of switch (<i>focus on evaluating - how can they improve what they've already done?</i>)</li> </ul> <p><b>N.B. Children should be given one component at a time to add to circuits.</b></p>	<ul style="list-style-type: none"> <li>Thomas Edison</li> </ul>	

**Knowle CE Primary Academy**  
**Medium Term Plan: SCIENCE**

<p>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>ASSESSMENT CRITERIA</b></p> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>• Can name the components in a circuit</li> <li>• Can make electric circuits</li> <li>• Can control a circuit using a switch</li> <li>• Can name some metals that are conductors</li> <li>• Can name materials that are insulators</li> </ul> <p><b>Working Scientifically:</b></p> <ul style="list-style-type: none"> <li>• Can communicate structures of circuits using drawings which show how the components are connected</li> <li>• Can incorporate a switch into a circuit to turn it on and off</li> <li>• Can connect a range of different switches identifying the parts that are insulators and conductors</li> <li>• Can describe how their switch works</li> </ul>			



# Knowle CE Primary Academy




## Medium Term Plan: SCIENCE



YEAR: 4

TERM: Summer Term 3:2

TITLE: Animals, including humans

REVISION / REMIND / REVISIT - Builds on Years 1, 2 and 3 Animals, including humans	COHERENCE & CREDIBILITY	CREATIVITY - Working Scientifically	COMPASSION & Appreciation of Significant Scientists	COMMUNITY
	<p><b>NC Links</b></p> <ul style="list-style-type: none"> <li>To describe the simple functions of the basic parts of the digestive system in humans</li> <li>To identify the different types of teeth in humans and their simple functions</li> <li>To construct and interpret a variety of food chains, identifying producers, predators and prey.</li> </ul> <p><b>Key Learning</b></p> <ul style="list-style-type: none"> <li>Food enters the body through the mouth.</li> <li>Digestion starts when the teeth start to break the food down.</li> <li>Saliva is added and the tongue rolls the food into a ball. T</li> <li>he 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.</li> <li>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.</li> <li>The rest of the food then passes into the large intestine. Here the water is removed for use elsewhere in the body.</li> <li>What is left is then stored in the rectum until it leaves the body through the anus when you go to the toilet.</li> <li>Humans have four types of teeth - incisors for cutting, canines for tearing, molars and premolars for grinding (chewing).</li> <li>Living things can be classified as producers, predators and prey according to their place in the food chain.</li> </ul>	<ul style="list-style-type: none"> <li>Research the function of the parts of the digestive system (Jigsaw activity) </li> <li>Explore eating different types of food, to identify which teeth are being used for cutting, tearing and grinding (chewing)</li> <li>Classify animals as herbivores, carnivores or omnivores according to the type of teeth they have in their skulls </li> <li>How many of the different types of teeth does my partner have? </li> <li>Use food chains to identify producers, predators and prey within a habitat</li> </ul>		<p>Active Science - Animal Grouping/Animal Grouping Hunt/Animal Key Class Dash/Animal Guess Who</p>

**Knowle CE Primary Academy**  
**Medium Term Plan: SCIENCE**

<p><b>Vocabulary</b>  Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain</p>			
<p><b>ASSESSMENT CRITERIA</b></p> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>• Can sequence the main parts of the digestive system</li> <li>• Can draw the main parts of the digestive system onto a human outline</li> <li>• Can describe what happens in each part of the digestive system</li> <li>• Can point to the three different types of teeth in their mouth and talk about their shape and what they are used for</li> <li>• Can name producers, predators and prey within a habitat</li> <li>• Can construct food chains</li> </ul> <p><b>Working Scientifically:</b></p> <ul style="list-style-type: none"> <li>• Can use diagrams or a model to describe the journey of food through the body explaining what happens in each part.</li> <li>• Can explain the role of the different types of teeth</li> <li>• Can explain how the teeth in animal skulls show they are carnivores, herbivores or omnivores.</li> <li>• Can create food chains based on research</li> </ul>			