

Excellence and Enjoyment, Everyone and Everything. "God created you to be amazing" Ephesians 2:10

| Year 4                           | Science Long Term Overview  |   |  |  |  |  |
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|                                  | Autumn 1<br>States of matter  | Autumn 2<br>Sound   | Spring 1<br>Animals including humans   | Spring 2<br>Animals including humans   | Summer 1<br>Living things and their habitats   | Summer 2<br>Electricity  |
| Unit of work<br>Driving Question | What are solids, liquids and gases?   | How does sound travel?  | How do I digest my food?   | What are consumers and producers?  | How can I classify animals?  | Can I make a simple electrical circuit?  |
| Values                           | Friendship and Love   |   | Respect and responsibility   |  | Perseverance and Hope  |  |
| Link to NC programme of study    | <p>compare and group materials together, according to whether they are solids, liquids or gases</p> <p>observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)</p> <p>identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p> | <p>identify how sounds are made, associating some of them with something vibrating</p> <p>recognise that vibrations from sounds travel through a medium to the ear</p> <p>find patterns between the pitch of a sound and features of the object that produced it</p> <p>find patterns between the volume of a sound and the strength of the vibrations that produced it</p> <p>recognise that sounds get fainter as the distance from the sound source increases.</p> | <p>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>describe the simple functions of the basic parts of the digestive system in humans</p> <p>identify the different types of teeth in humans and their simple functions</p> <p>construct and interpret a variety of food chains, identifying producers, predators and prey</p> | <p>recognise that living things can be grouped in a variety of ways</p> <p>explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p> <p>recognise that environments can change and that this can sometimes pose dangers to living things.</p> | <p>identify common appliances that run on electricity</p> <p>construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery</p> <p>recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</p> |

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|  |  |   |  |   |  | recognise some common conductors and insulators, and associate metals with being good conductors   |
| <p><b>What we need to know</b><br/> <b>Red Hill Riches</b></p> | <p>Materials can be grouped together according to whether they are solids, liquids or gases.<br/>         Some materials change state when they are heated or cooled<br/>         Some changes are irreversible<br/>         Evaporation and condensation play a key part in the water cycle<br/>         Evaporation rates are associated with temperature<br/>         As temperature increases, solids can change into liquids.<br/>         With a further increase of temperature, the liquid changes into gas.<br/>         When solids turn into liquids it is called melting. The reverse process is called freezing.<br/>         When liquids turn into gasses, this is called evaporation and the reverse</p> | <p>Sound is generated when an object vibrates.<br/>         Musical instruments use vibration to make sound.<br/>         Vibrations from sounds travel through a medium to the ear.<br/>         Pitch of a sound can depend on the object that produced it.<br/>         Volume of a sound can depend on the strength of the vibrations that produced it.<br/>         Some materials provide the best insulation against sound.<br/>         The volume of a sound is quieter if the listener is further away from the object.</p> | <p>The digestive system helps us to digest our food.<br/>         The digestive system includes the stomach, small/large intestine and the rectum.<br/>         A human has three types of teeth, incisors, canines and molars and these each perform different functions.</p> | <p>Food chains include producers, predators and prey.<br/>         Primary consumers are herbivores.<br/>         Secondary consumers are carnivores.</p> | <p>Living things can be grouped in a variety of ways.<br/>         Animals can be grouped based on their physical characteristics.<br/>         Classification keys can help group, identify and name a variety of living things in their local and wider environment.<br/>         Classification key use questions to sort and identify different living things.<br/>         Environments can change and this can sometimes pose dangers to living things.<br/>         Changes to the environment can make it more difficult for living things to survive and reproduce.<br/>         Humans have an impact on environments.</p> | <p>Many common appliances run on electricity.<br/>         Cells, batteries and the mains are all sources of electrical energy.<br/>         A simple series electrical circuit can be created using cells, wires, bulbs, switches and buzzers.<br/>         A simple circuit diagram can be drawn with symbols.<br/>         Electrical current can flow if there is a complete circuit.<br/>         A lamp will light in a simple series circuit if it is part of a complete loop with a battery.<br/>         A switch functions by completing or breaking a complete circuit.<br/>         Conductors allow electricity to travel through them and insulators do not.<br/>         Metals are good electrical conductors.</p> |

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|   | <p>process is called condensation.</p> <p>The melting point of water is 0 degrees Celsius and the boiling point is 100 degrees Celsius.</p> <p>Water flows around our world in a continuous process called the water cycle.</p>   |  |   |  |   |            |
| <p><b>Links to prior knowledge (footprints)</b></p> | <ul style="list-style-type: none"> <li>• Distinguish between an object and the material from which it is made. (Y1 - Everyday materials)</li> <li>• Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 - Everyday materials)</li> <li>• Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials)</li> <li>• Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials)</li> <li>• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials)</li> </ul> | <p>Describe what they see, hear and feel whilst outside. (Reception – Sound)</p> <ul style="list-style-type: none"> <li>• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans)</li> </ul> | <ul style="list-style-type: none"> <li>• Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals, including humans)</li> <li>• Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). (Y2 - Animals, including humans)</li> <li>• Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Y2 - Animals, including humans)</li> </ul> | <ul style="list-style-type: none"> <li>• Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. (Y3 - Animals, including humans)</li> </ul> | <p>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants)</p> <ul style="list-style-type: none"> <li>• Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants)</li> <li>• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals including humans)</li> <li>• Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 – Animals, including humans)</li> <li>• Identify and name a variety of plants and animals in their habitats, including microhabitats. (Y2 - Living things and their habitats)</li> </ul> | <p>N/A</p> |

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|                              | <ul style="list-style-type: none"> <li>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials)</li> </ul>  |   |  |  |  |   |
| <b>Vocabulary</b>            | <p>solid, liquid, gas, heating, cooling, state change, melting, freezing, melting point, boiling, boiling point, evaporation, condensation, temperature, water cycle</p>  | <p>Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation</p>  | <p>Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars,</p>  | <p>herbivore, carnivore, omnivore, producer, predator, prey, food chain</p>  | <p>Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate</p>   | <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> |
| <b>Common Misconceptions</b> | <p>Some children may think:</p> <ul style="list-style-type: none"> <li>'solid' is another word for hard or opaque</li> <li>solids are hard and cannot break or change shape easily and are often in one piece</li> <li>substances made of very small particles like sugar or sand cannot be solids</li> <li>particles in liquids are further apart than in solids and they take up more space</li> <li>when air is pumped into balloons, they become lighter</li> <li>water in different forms – steam, water, ice – are all different substances</li> <li>all liquids boil at the same temperature as water (100 degrees)</li> <li>melting, as a change of state, is the same as dissolving</li> </ul> | <p>Pitch and volume are frequently confused, as both can be described as high or low. Some children may think:</p> <ul style="list-style-type: none"> <li>sound is only heard by the listener</li> <li>sound only travels in one direction from the source</li> <li>sound can't travel through solids and liquids</li> <li>high sounds are loud and low sounds are quiet</li> </ul> | <p>Some children may think:</p> <ul style="list-style-type: none"> <li>your stomach is where your belly button is</li> <li>food is digested only in the stomach</li> <li>when you have a meal, your food goes down one tube and your drink down another</li> <li>the food you eat becomes "poo" and the drink becomes "wee"</li> </ul> | <p>Some children may think:</p> <ul style="list-style-type: none"> <li>arrows in a food chains mean 'eats'</li> <li>the death of one of the parts of a food chain or web has no, or limited, consequences on the rest of the chain</li> <li>there is always plenty of food for wild animals</li> </ul> | <p>Some children may think:</p> <ul style="list-style-type: none"> <li>the death of one of the parts of a food chain or web has no or limited consequences on the rest of the chain</li> <li>there is always plenty of food for wild animals</li> <li>animals are only land-living creatures</li> <li>animals and plants can adapt to their habitats, however they change</li> <li>all changes to habitats are negative</li> </ul> | <p>Some children may think:</p> <ul style="list-style-type: none"> <li>electricity flows to bulbs, not through them</li> <li>electricity flows out of both ends of a battery</li> <li>electricity works by simply coming out of one end of a battery into the component.</li> </ul>                 |

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|   | <ul style="list-style-type: none"> <li>• steam is visible water vapour (only the condensing water droplets can be seen)</li> </ul>  |   |  |  |  |  |
| <b>Excellence</b><br><b>Enjoyment</b><br><b>Everyone</b><br><b>Everything</b> | <p>Excellence- Recognise the excellence of scientists who discovered evaporation and condensation to determine between solids, liquids and gases</p> <p>Enjoyment-Enjoy experimenting with solids, liquids and gases including boiling water</p> <p>Everyone-Everyone needs a world with solids, liquids and gases to support our water cycle in life</p> <p>Everything-Know what solids, liquids and gases are</p> | <p>Excellence-Recognise the excellence of musicians and scientists who use sound to create music of different pitches and tempos</p> <p>Enjoyment-Enjoy experimenting with a wide variety of instruments and sounds</p> <p>Everyone-Not everyone can hear. Provide equality for the hearing impaired</p> <p>Everything-Know how sound travels and how it can be altered</p> | <p>Excellence-Recognise the excellence of doctors and surgeons who help our digestive system</p> <p>Enjoyment-Enjoy exploring the process of food digestion</p> <p>Everyone-Recognise how we can support people who have difficulties with their digestive system including providing gluten free food</p> <p>Everything-Know how the digestive system works</p> | <p>Excellence-Recognise the significance that consumers and producers play on our everyday lives. God created all creatures and each relies on each other</p> <p>Enjoyment-Enjoy creating food chains and exploring a variety of species</p> <p>Everyone-Everyone is dependant on producers within our world. Many people chose to be vegetarians and vegans to protect other animals.</p> <p>Everything-Know what producers and consumers are</p> | <p>Excellence-Recognise the importance of scientists such as Carl Linnaeus</p> <p>Enjoyment- Enjoy classifying different animals into groups</p> <p>Everyone-Everyone is entitled to a safe environment and we can help to protect our world for the future</p> <p>Everything-Know how animals can be classified</p> | <p>Excellence- Recognise the excellence of the invention of electricity and the importance it has on our everyday lives</p> <p>Enjoyment-Enjoy creating electrical circuits</p> <p>Everyone-Everyone deserves electricity around the world. We need to provide equality for everyone around the world</p> <p>Everything-Know how to create an electrical circuit</p> |