

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

Year 6	Science Long Term Overview					
	Autumn 1 Evolution and Inheritance	Autumn 2 Living things and their habitat	Spring 1 Light	Spring 2 Electricity	Summer 1 Animals including humans	Summer 2 Animals including human
Unit of work Driving Question	What is evolution?	How can we classify plants and animals?	How does light travel?	How can I make a bulb brighter?	How does the circulatory system work?	
Values	Friendship and Love		Respect and responsibility		Perseverance and Hope	
Link to NC programme of study	<p>recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</p>	<p>describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals</p> <p>give reasons for classifying plants and animals based on specific characteristics.</p>	<p>recognise that light appears to travel in straight lines</p> <p>use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye</p> <p>explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes</p> <p>use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>	<p>associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>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</p> <p>use recognised symbols when representing a simple circuit in a diagram</p>	<p>identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>describe the ways in which nutrients and water are transported within animals, including humans</p>	

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<p><b>What we need to know</b> Red Hill Riches</p>	<p>Living things change over time and that this is called evolution. Fossils provide information about living things that inhabited the Earth millions of years ago The gradual change of species over millions of years can be observed by looking at examples of fossils. Living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Characteristics are passed from parents to their offspring. Animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</p>	<p>Living things are classified into broad groups including microorganisms, plants and animals. Animals can be subdivided into reptiles, amphibians, mammals, fish, birds, cold blooded and warm blooded</p>	<p>Light appears to travel in straight lines. When light reflects off an object, the angle of incidence is equal to the angle of reflection. Objects are seen because they give out or reflect light into the eye. Light travels in straight lines therefore shadows have the same shape as the object that cast them. White light comprises all the colours of light.</p>	<p>The brightness of a lamp or the volume of a buzzer is dependant on the number and voltage of cells used in the circuit. Voltage is a measure of the power of a cell to produce electricity. The number and voltage of cells in a circuit increases the brightness of a bulb or the volume of a buzzer. There are recognized symbols for a battery, bulb, motor, buzzer and wire.</p>	<p>The human circulatory system circulates oxygen around the body. Oxygen is pumped around your body through the blood by the heart. The heart includes ventricles, chambers, arteries and veins. Exercise makes the heart beat faster. The lungs are an important part of the circulatory system. Diet, exercise, drugs and lifestyle impact on the way bodies function. Nutrients and water are transported within animals including humans.</p>
<p><b>Links to prior knowledge (footprints)</b></p>	<p>Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. (Y2 - Living things and their habitats) • Notice that animals, including humans, have offspring which</p>	<p>Recognise that living things can be grouped in a variety of ways. (Y4 - Living things and their habitats) • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Y4 - Living things and their habitats)</p>	<p>Recognise that they need light in order to see things and that dark is the absence of light. (Y3 - Light) • Notice that light is reflected from surfaces. (Y3 - Light) • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 - Light)</p>	<p>Identify common appliances that run on electricity. (Y4 - Electricity) • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. (Y4 - Electricity) • Identify whether or not a lamp will light in a simple series circuit, based on whether or not</p>	<p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Y2 - Animals, including humans) • 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) • Describe the simple functions of the basic parts of the digestive system in humans. (Y4 - Animals, including humans) • Identify the different types of teeth in humans and their simple functions. (Y4 - Animals, including humans)</p>

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	<p>grow into adults. (Y2 - Animals, including humans)</p> <ul style="list-style-type: none"> <li>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)</li> <li>Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks)</li> <li>Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)</li> <li>Describe the life process of reproduction in some plants and animals. (Living things and their habitats - Y5)</li> </ul>	<ul style="list-style-type: none"> <li>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats)</li> <li>Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats)</li> </ul>	<ul style="list-style-type: none"> <li>Recognise that shadows are formed when the light from a light source is blocked by an opaque object. (Y3 - Light)</li> <li>Find patterns in the way that the size of shadows change. (Y3 - Light)</li> <li>Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. (Y5 - Properties and changes of materials)</li> </ul>	<p>the lamp is part of a complete loop with a battery. (Y4 - Electricity)</p> <ul style="list-style-type: none"> <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. (Y4 - Electricity)</li> <li>Recognise some common conductors and insulators, and associate metals with being good conductors. (Y4 - Electricity)</li> </ul>	
<b>Vocabulary</b>	<p>offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils, evolve, evolution</p>	<p>vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, warm-blooded, cold-blooded, insects, spiders, snails, worms, flowering, non-flowering, mosses, ferns, conifers</p>	<p>As for Year 3 - Light, plus straight lines, light rays</p>	<p>Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage</p>	<p>Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle</p>
<b>Common Misconceptions</b>	<p>Some children may think:</p> <ul style="list-style-type: none"> <li>adaptation occurs during an animal's lifetime: giraffes' necks stretch during their lifetime to reach higher leaves and animals living in cold environments grow thick fur during their life</li> </ul>	<p>Some children may think:</p> <ul style="list-style-type: none"> <li>all micro-organisms are harmful</li> <li>mushrooms are plants</li> </ul>	<p>Some children may think:</p> <ul style="list-style-type: none"> <li>we see objects because light travels from our eyes to the object</li> </ul>	<p>Some children may think:</p> <ul style="list-style-type: none"> <li>larger-sized batteries make bulbs brighter</li> <li>a complete circuit uses up electricity</li> <li>components in a circuit that are closer to the battery get more electricity.</li> </ul>	<p>Some children may think:</p> <ul style="list-style-type: none"> <li>your heart is on the left side of your chest</li> <li>the heart makes blood</li> <li>the blood travels in one loop from the heart to the lungs and around the body</li> <li>when we exercise, our heart beats faster to work the muscles more</li> <li>some blood in our bodies is blue and some blood is red</li> <li>we just eat food for energy • all fat is bad for you</li> </ul>

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	<ul style="list-style-type: none"> <li>• offspring most resemble their parents of the same sex, so that sons look like fathers</li> <li>• all characteristics, including those that are due to actions during the parent's life such as dyed hair or footballing skills, can be inherited</li> <li>• cavemen and dinosaurs were alive at the same time</li> </ul>				<ul style="list-style-type: none"> <li>• all dairy is good for you</li> <li>• protein is good for you, so you can eat as much as you want</li> <li>• foods only contain fat if you can see it</li> <li>• all drugs are bad for you</li> </ul>
<b>Excellence</b> <b>Enjoyment</b> <b>Everyone</b> <b>Everything</b>	<p>Excellence- Recognise the significance of Charles Darwin and his discoveries</p> <p>Enjoyment-Enjoy exploring how different birds have adapted to the food they eat</p> <p>Everyone-Everyone has evolved over time. God created you to be amazing and humans have evolved to be amazing creatures</p> <p>Everything-Know what evolution is and give a range of examples</p>	<p>Excellence-Recognise the significance of Carl Linnaeus and his classification system</p> <p>Enjoyment-Enjoy classifying a wide variety of plants and animals</p> <p>Everyone-Everyone has characteristics which can be classified. we are all similar and all different</p> <p>Everything-Know how to use a categorisation key</p>	<p>Excellence-Recognise the scientists who have discovered the significance of light</p> <p>Enjoyment-Enjoy first hand experiences of how light travels</p> <p>Everyone-Christians believe God created light in our world. Scientists discovered how we can use it</p> <p>Everything-Know that light travels in straight lines</p>	<p>Excellence-Recognise the significance of electricity in our world and its different uses</p> <p>Enjoyment-Enjoy creating electrical circuits where bulbs can be brighter or dimmer</p> <p>Everyone-Everyone across the world deserves the right to have access to electricity</p> <p>Everything-Know how to adapt an electrical circuit to make bulbs brighter</p>	<p>Excellence- recognise the significance of the human body and the human heart</p> <p>Enjoyment-Enjoy learning about the circulatory system and first hand exploring a pigs heart</p> <p>Everyone-Everyone deserves to live a healthy lifestyle</p> <p>Everything-Know how the circulatory system works</p>