



Science - Year 6



<u>Honesty</u> Giving opinions		<u>Love</u> Caring for the environment Looking after yourself		<u>Forgiveness</u>		<u>Respect</u> Understanding difference of opinions Understanding that we share this planet with other creatures and that we have a duty to care for them		Earth Week		<u>Cultural Capital Opportunities</u>			
<u>A Love Of Language</u> see key skills below <u>Reading:</u> <u>Listening:</u> <u>Speaking:</u> <u>Writing:</u>		<u>Aspirations</u> Love of different Sciences, Job potentials (electrician, nutritionist etc.)		<u>Bringing Learning To Life</u> Hands on learning - physically creating electrical circuits Art/Design and Technology Creative writing Independent Enquires Relevant contexts for learning		<u>Emotional Well-Being</u> How different substances and drugs can impact our emotions and well-being How nutrition and exercise have a positive effect on mood		<u>Resilience</u> Applying phonics Applying vocabulary in different contexts		<u>Valuing Our Diversity</u> Understanding where we come from Understanding inherited and learnt characteristics of ourselves		<u>Respect and Responsibility</u> Understanding that we share this planet with other creatures Looking after our bodies and health Creating safe circuits	
What will they learn?				In what order?									
Key Concepts		Key Skills		Autumn		Spring		Summer		End points			

<p>Sc6/1.1 planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Sc6/1.2 taking measurements, using a range of scientific equipment, with increasing accuracy and precision</p> <p>Sc6/1.3 recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs</p> <p>Sc6/1.4 using test results to make predictions to set up further comparative and fair tests</p> <p>Sc6/1.5 using simple models to describe scientific ideas</p> <p>Sc6/1.6 reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations</p> <p>Sc6/1.7 identifying</p>	<p>Use their science experiences to explore ideas and raise different kinds of questions</p> <p>Talk about how scientific ideas have developed over time</p> <p>Select and plan the most appropriate type of scientific enquiry to use to answer scientific questions</p> <p>Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why</p> <p>Use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment</p> <p>Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact</p> <p>Choose the most appropriate equipment to make measurements with increasing precision and explain how to use it accurately</p> <p>Take repeat measurements where appropriate</p> <p>Make their own decisions about what observations to</p>	<p><u>Light</u></p> <p>Sc6/4.1a recognise that light appears to travel in straight lines</p> <p>Sc6/4.1b 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>Sc6/4.1c 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>Sc6/4.1d 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>Proving that light travels in straight lines. Can they prove who the suspect 'casing' the school was by observing where the torch beams came from?</p> <p>Explore how light reflects in a periscope. Test different reflective materials to eliminate another suspect. Can children make a periscope?</p>	<p><u>Living things and their habitats</u></p> <p>Sc6/2.1a describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals</p> <p>Sc6/2.1b give reasons for classifying plants and animals based on specific characteristics.</p> <p>Look at Carl Linnaeus and his work on classification. Know that we group according to similarities and differences.</p> <p>Look at branching classifications keys to spot subtle differences between plants and animals.</p> <p>Create a classification key based on sweets. Test them out to identify potential flaws. Correct flaws.</p> <p>Collect, record, classify and name some of the botanical items found in our local environment.</p> <p>Look at recently discovered plants/animals etc. How can we classify them? What can we apply from previous lessons?</p>	<p><u>Animals including Humans</u></p> <p>Sc6/2.2a identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>Sc6/2.2b recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>Sc6/2.2c describe the ways in which nutrients and water are transported within animals, including humans.</p> <p>Look at how blood is made up and what it looks like inside our bodies and under a microscope. What role does it have in our body? Look at the structure and function of the heart.</p> <p>Measure our own heartbeats during various activities.</p> <p>Explore how nutrients and water are transported throughout your body in your blood and the processes used to pass in and out of your blood through capillary walls.</p> <p>Look at the circulatory system and how the blood</p>	<p><u>Autumn:</u></p> <p><u>Light</u></p> <p>Can describe with diagrams or models as appropriate how light travels in straight lines either from sources or reflected from other objects into our eyes.</p> <p>Can describe with diagrams or models as appropriate how light travels in straight lines past translucent or opaque objects to form a shadow of the same shape.</p> <p>Can explain how evidence from enquiries shows that light travels in straight lines.</p> <p>Can predict and explain with diagrams or models as appropriate how the path of light rays can be directed by reflection to be seen, for example reflection in car rear view mirrors or in a periscope.</p> <p>Can predict and explain with diagrams or models as appropriate how the shape of shadows can be varied.</p> <p><u>Electricity</u></p> <p>Can make electric circuits and demonstrate how variation in the working of particular components, such as the brightness of bulbs can be changed by increasing or decreasing</p>
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<p>scientific evidence that has been used to support or refute ideas or arguments.</p> <p>Sc6/4.1a recognise that light appears to travel in straight lines</p> <p>Sc6/4.1b 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>Sc6/4.1c 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>Sc6/4.1d use the idea that light travels in straight lines to explain why</p>	<p>make, what measurements to use and how long to make them for</p> <p>Decide how to record data and results of increasing complexity from a choice of familiar approaches: scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graph</p> <p>Look for different causal relationships in their data and identify evidence that refutes or supports their ideas</p> <p>Identify scientific evidence that has been used to support or refute ideas or arguments</p> <p>Use relevant scientific language and illustrations to discuss, communicate and justify their Evaluate data, showing awareness of</p>	<p>The relationship between light and shadows. Light travelling through glass to create rainbow colours.</p> <p><u>Electricity</u></p> <p>Sc6/4.2a 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>Sc6/4.2b 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>Sc6/4.2c use recognised symbols when representing a simple circuit in a diagram</p>	<p>Can they create a new creature they can fit into the Animalia classification system?</p> <p><u>Evolution and Inheritance</u></p> <p>Sc6/2.3a 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>Sc6/3.2b recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>Sc6/2.3c identify how animals and plants are adapted to suit their</p>	<p>platelets travel around our body.</p> <p>Discover the true impact (both visible and hidden) of diet, exercise and lifestyle on the human body. Produce a creative TV advert/leaflet that explores this impact and how to keep our bodies healthy.</p> <p>Look at the impact drugs and alcohol can have on the body.</p> <p><u>The Science of Sport</u> (Revision from KS2 Science)</p> <p>Sc6/2.1a describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including</p>	<p>the number of cells or using cells of different voltages</p> <p>Can draw circuit diagrams of a range of simple series circuits using recognised symbols</p> <p>Can incorporate a switch into a circuit to turn it on and off</p> <p>Can change cells and components in a circuit to achieve a specific effect</p> <p>Can communicate structures of circuits using circuit diagrams with recognised symbols</p> <p>Can devise ways to measure brightness of bulbs, speed of motors, volume of a buzzer during a fair test</p> <p>Can predict results and answer questions by drawing on evidence gathered</p>
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<p>shadows have the same shape as the objects that cast them</p> <p>Sc6/4.2a 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>Sc6/4.2b 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>Sc6/4.2c use recognised symbols when representing a simple circuit in a diagram</p> <p>Sc6/2.3a 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>Sc6/3.2b recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>Sc6/2.3c identify how animals and plants are</p>	<p>potential sources of random and systematic error scientific ideas</p> <p>Use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degree of trust in results</p> <p>Use their results to make predictions and identify when further observations, comparative and fair tests might be needed</p>	<p>Make a range of circuits, changing/adding/adjusting elements to a buzzer work etc.</p> <p>Design a circuit that could be entered into Dragon's Den festival of light. Can they create a blueprint of their circuit using the correct symbols?</p> <p>Can they include a dimmer switch into their designs?</p> <p>Make their designs using electrical equipment.</p> <p>Present their pitch and circuits to 'Dragon's Den' and show/explain how their circuits work, how they've included a dimmer switch to change the brightness etc.</p>	<p>environment in different ways and that adaptation may lead to evolution.</p> <p>Look at inherited and environmental characteristics. Look at example variations in dogs/cross-breeding. Look at mutations and adaptations in real examples of plants and animals. How has adapting/not adapting led to the survival or extinction of animals?</p> <p>Charles Darwin (there is also a Stephen Fry series about rare animals and looks at their adaptation/survival). Which creatures would survive in different environments/biomes?</p> <p>Revisit Darwin's work and introduce Anning and Wallace: can we have a go at proving their theories?</p> <p>How has the biscuit evolved over the past 100 years?</p> <p>Create a biscuit cladogram and use your evolutionary expertise in the exploration of bird flight and animal cladograms.</p> <p>How did the giraffe get a long neck and why does the camel have a hump? Read some traditional folk tales to explain these features then find out the</p>	<p>micro-organisms, plants and animals</p> <p>i) Compare and group together everyday materials on the basis of their properties.</p> <p>ii) Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p> <p>i) Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>ii) Identify the effects of air resistance, water resistance and friction that act between moving surfaces.</p> <p>iii) Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p> <p>Sc6/2.2b recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>Recognise that living things produce offspring of the same kind, but normally</p>	<p><u>Spring:</u> <u>Living things and their habitats</u></p> <p>Can give examples of animals in the five vertebrate groups and some of the invertebrate groups</p> <p>Can give the key characteristics of the five vertebrate groups and some invertebrate groups</p> <p>Can compare the characteristics of animals in different groups</p> <p>Can give examples of flowering and non-flowering plants</p> <p>Can use classification materials to identify unknown plants and animals</p> <p>Can create classification keys for plants and animals</p> <p>Can give a number of characteristics that explain why an animal belongs to a particular group</p> <p><u>Evolution and Inheritance</u></p> <p>Can explain the process of evolution</p> <p>Can give examples of how plants and animals are suited to an environment</p> <p>Can give examples of how an animal or plant has evolved over time e.g. penguin, peppered moth</p> <p>Give examples of living things that lived millions of years ago and the fossil</p>
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<p>adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p>Sc6/2.1a describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals</p> <p>Sc6/2.1b give reasons for classifying plants and animals based on specific characteristics.</p> <p>Sc6/2.2a identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>Sc6/2.2b recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>Sc6/2.2c describe the ways in which nutrients and water are transported within animals, including humans.</p>			<p>evolutionary facts behind the myths and write your own fact-based versions.</p>	<p>offspring vary and are not identical to their parents.</p> <p>Sc6/4.2a 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>Sc6/4.2b 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>Explore and classify different types of grass for a sport's pitch. Explore different sports clothes and their materials including Paralympic biomechanical materials and their impact on disability sport. Can you identify the invisible impact of forces on a sport? Explore how friction and air resistance can be used to improve performance and have a go at creating exact sizes of impact forces needed to score goals.</p> <p>Explore the ways that nutrition, exercise and injury prevention impact on sports performance. Design</p>	<p>evidence we have to support this</p> <p>Can give examples of fossil evidence that can be used to support the theory of evolution</p> <p>Can identify characteristics that will make a plant or animal suited or not suited to a particular habitat</p> <p>Can link the patterns seen in the model to the real examples</p> <p>Can explain why the dominant colour of the peppered moth changed over a very short period of time</p> <hr/> <p><u>Summer:</u> <u>Animals including Humans</u> Can draw a diagram of the circulatory system and label the parts and annotate it to show what the parts do Produces a piece of writing that demonstrates the key knowledge e.g. explanation text, job description of the heart Use the role play model to explain the main parts of the circulatory system and their role Can use subject knowledge about the heart whilst writing conclusions for investigations Can explain both the positive and negative</p>
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