

## Bitterley Church of England Primary School

“Be courageous; be strong. Do everything in love” (1 Corinthians 16:13-14)



### SCIENTIFIC SKILLS PROGRESSION

		Year 1/2	Year 3/4	Year 5/6
Working Scientifically	Asking Questions	Pupils should be taught to: <ul style="list-style-type: none"> <li><input type="checkbox"/> ask simple questions and recognise that they can be answered in different ways</li> </ul>	Pupils should be taught to: <ul style="list-style-type: none"> <li><input type="checkbox"/> ask relevant questions and use different types of scientific enquiries to answer them</li> <li><input type="checkbox"/> set up simple practical enquiries, comparative and fair tests</li> </ul>	Pupils should be taught to: <ul style="list-style-type: none"> <li><input type="checkbox"/> plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> </ul>
	Measuring and Recording	Pupils should be taught to: <ul style="list-style-type: none"> <li><input type="checkbox"/> observe closely, using simple equipment</li> <li><input type="checkbox"/> perform simple tests</li> <li><input type="checkbox"/> gather and record data to help in answering questions</li> </ul>	Pupils should be taught to: <ul style="list-style-type: none"> <li><input type="checkbox"/> make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li><input type="checkbox"/> record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li><input type="checkbox"/> gather, record, classify and present data in a variety of ways to help in answering questions</li> </ul>	Pupils should be taught to: <ul style="list-style-type: none"> <li><input type="checkbox"/> take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li><input type="checkbox"/> record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> </ul>
	Concluding	Pupils should be taught to: <ul style="list-style-type: none"> <li><input type="checkbox"/> identify and classify</li> <li><input type="checkbox"/> use their observations and ideas to suggest answers to questions</li> </ul>	Pupils should be taught to: <ul style="list-style-type: none"> <li><input type="checkbox"/> identify differences, similarities or changes related to simple scientific ideas and processes</li> <li><input type="checkbox"/> report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li><input type="checkbox"/> use straightforward scientific evidence to answer questions or to support their findings</li> </ul>	Pupils should be taught to: <ul style="list-style-type: none"> <li><input type="checkbox"/> identify scientific evidence that has been used to support or refute ideas or arguments</li> <li><input type="checkbox"/> report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</li> </ul>

	Evaluating		<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> </ul>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> use test results to make predictions to set up further comparative and fair tests</li> </ul>
		Year 1	Year 2	Year 3
	Plants	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</li> <li><input type="checkbox"/> identify and describe the basic structure of a variety of common flowering plants, including trees</li> </ul>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> observe and describe how seeds and bulbs grow into mature plants</li> <li><input type="checkbox"/> find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</li> </ul>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</li> <li><input type="checkbox"/> explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant</li> <li><input type="checkbox"/> investigate the way in which water is transported within plants</li> <li><input type="checkbox"/> explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</li> </ul>

	Animals Including Humans	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</li> <li><input type="checkbox"/> identify and name a variety of common animals that are carnivores, herbivores and omnivores</li> <li><input type="checkbox"/> describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</li> <li><input type="checkbox"/> identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</li> </ul>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> notice that animals, including humans, have offspring which grow into adults</li> <li><input type="checkbox"/> find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</li> <li><input type="checkbox"/> describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</li> </ul>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> 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</li> <li><input type="checkbox"/> identify that humans and some other animals have skeletons and muscles for support, protection and movement</li> </ul>
	Living Things And Their Habitats		<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> explore and compare the difference between things that are living, dead, and things that have never been alive</li> <li><input type="checkbox"/> identify that most living things live in habitats to which they are suited and describe how different habitats provide the basic needs of different kinds of animals and plants, and how they depend on each other</li> <li><input type="checkbox"/> identify and name a variety of plants and animals in their habitats, including micro-habitats</li> <li><input type="checkbox"/> describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food</li> </ul>	

	Light and Sound		<p>Sound</p> <p>Pupils should be taught to:          Explore sound sources</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> recognise that they need light in order to see things and that the dark is the absence of light</li> <li><input type="checkbox"/> notice that light is reflected from surfaces</li> <li><input type="checkbox"/> recognise that light from the sun can be dangerous and that there are ways to protect their eyes</li> <li><input type="checkbox"/> recognise that shadows are formed when the light from a light source is blocked by a solid object</li> <li><input type="checkbox"/> find patterns in the way that the size of shadows changes</li> </ul>
	Forces And Magnets			<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> compare how things move on different surfaces</li> <li><input type="checkbox"/> notice that some forces need contact between two objects, but magnetic forces can act at a distance</li> <li><input type="checkbox"/> observe how magnets attract or repel each other and attract some materials and not others</li> <li><input type="checkbox"/> compare and group together a variety of everyday materials on the basis on whether they are attracted to a magnet, and identify some magnetic materials</li> <li><input type="checkbox"/> describe magnets as having two poles</li> <li><input type="checkbox"/> predict whether two magnets will attract or repel each other, depending on which poles are facing</li> </ul>
	Seasonal Change	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> observe changes across the four seasons</li> <li><input type="checkbox"/> observe and describe weather associated with the seasons and how day length varies</li> </ul>		

	Materials	<p><b>Everyday Materials</b>                  Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> distinguish between an object and the material from which it is made</li> <li><input type="checkbox"/> identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</li> <li><input type="checkbox"/> describe the simple physical properties of a variety of everyday materials</li> <li><input type="checkbox"/> compare and group together a variety of everyday materials on the basis of their simple physical properties</li> </ul>	<p><b>Uses of Everyday Materials</b>                  Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> <li><input type="checkbox"/> find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</li> </ul>	<p><b>Rocks</b>                  Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</li> <li><input type="checkbox"/> describe in simple terms how fossils are formed when things that have lived are trapped within rock</li> <li><input type="checkbox"/> recognise that soils are made from rocks and organic matter</li> </ul>
		Year 4	Year 5	Year 6
	Living And Their Habitats	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> recognise that living things can be grouped in a variety of ways</li> <li><input type="checkbox"/> explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</li> <li><input type="checkbox"/> recognise that environments can change and that this can sometimes pose dangers to living things</li> </ul>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</li> <li><input type="checkbox"/> describe the life process of reproduction in some plants and animals</li> </ul>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> 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</li> <li><input type="checkbox"/> give reasons for classifying plants and animals based on specific characteristics</li> </ul>

	Animals Including Humans	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> describe the simple functions of the basic parts of the digestive system in humans</li> <li><input type="checkbox"/> identify the different types of teeth in humans and their simple functions</li> <li><input type="checkbox"/> construct and interpret a variety of food chains, identifying producers, predators and prey</li> </ul>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> describe the changes as humans develop to old age</li> </ul>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</li> <li><input type="checkbox"/> recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</li> <li><input type="checkbox"/> describe the ways in which nutrients and water are transported within animals, including humans</li> </ul>
	Evolution and Inheritance			<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</li> <li><input type="checkbox"/> recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</li> <li><input type="checkbox"/> identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</li> </ul>
	States Of Matter	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> compare and group materials together, according to whether they are solids, liquids or gases</li> <li><input type="checkbox"/> 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><input type="checkbox"/> identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</li> </ul>		

	Earth And Space		<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> describe the movement of the Earth, and other planets, relative to the Sun</li> <li><input type="checkbox"/> describe the movement of the Moon relative to the Earth</li> <li><input type="checkbox"/> describe the Sun, Earth and Moon as approximately spherical bodies</li> <li><input type="checkbox"/> use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</li> </ul>	
	Forces		<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li><input type="checkbox"/> identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> <li><input type="checkbox"/> recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect</li> </ul>	
	Light			<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> recognise that light appears to travel in straight lines</li> <li><input type="checkbox"/> 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</li> <li><input type="checkbox"/> 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</li> <li><input type="checkbox"/> use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</li> </ul>

	<p style="text-align: center;">Sound</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> identify how sounds are made, associating some of them with something vibrating</li> <li><input type="checkbox"/> recognise that vibrations from sounds travel through a medium to the ear</li> <li><input type="checkbox"/> find patterns between the pitch of a sound and features of the object that produced it</li> <li><input type="checkbox"/> find patterns between the volume of a sound and the strength of the vibrations that produced it</li> <li><input type="checkbox"/> recognise that sounds get fainter as the distance from the sound source increases</li> </ul>		
	<p style="text-align: center;">Electricity</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> identify common appliances that run on electricity</li> <li><input type="checkbox"/> construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</li> <li><input type="checkbox"/> 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><input type="checkbox"/> 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><input type="checkbox"/> recognise some common conductors and insulators, and associate metals with being good conductors</li> </ul>		<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</li> <li><input type="checkbox"/> 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</li> <li><input type="checkbox"/> use recognised symbols when representing a simple circuit in a diagram</li> </ul>

	Properties Of Materials		<p>Pupils should be taught to:</p> <ul style="list-style-type: none"><li><input type="checkbox"/> 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</li><li><input type="checkbox"/> know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</li><li><input type="checkbox"/> use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</li><li><input type="checkbox"/> give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</li><li><input type="checkbox"/> demonstrate that dissolving, mixing and changes of state are reversible changes</li><li><input type="checkbox"/> explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda</li></ul>	
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