



*celebrating learning together in faith, hope and love*

## SCIENCE – CURRICULUM PROGRESSION

### SCIENCE CURRICULUM INTENT

At Bishop Perrin School, our Science curriculum is designed to encourage curiosity, exploration and wonder of the scientific world. We endeavour to provide a progressive curriculum, which is based on the key scientific skills, allowing for practical activities which are challenging and engaging for all. Children will develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.

Throughout the programmes of study, the children will acquire and develop the key knowledge that has been identified within each unit and across each year group, as well as the application of scientific skills. We ensure that the Working Scientifically skills are built-on and developed throughout children's time at the school so that they can apply their knowledge of science when using equipment, conducting experiments, building arguments and explaining concepts confidently and continue to ask questions and be curious about their surroundings.

### National Curriculum Purpose:

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

### EYFS

#### Understanding the World: The Natural World (proposed reforms)

- Explore the natural world around them, making observations and drawing pictures of animals and plants;
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class;
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

#### Understanding the World: The World (current)

- Look closely at similarities, differences, patterns and change
- Know about similarities and differences in relation to places, object, materials and living things
- Talk about the features of their own environment and how environments might vary from one another
- Make observations of animals and plants and explain why some things occur, and talk about changes

Ourselves and Our Families	Repeating Rhythms and Patterns	Traditional tales	Monsters and Aliens	Space	Christmas	Winter, Snow, Ice and Dark Nights	Chinese New Year and Dragons	Food	People Who Help Us	Superheroes	Life Cycles	On the Farm	Dinosaurs	Around the World
<ul style="list-style-type: none"> <li>• Makes comments on the natural world and familiar surroundings</li> <li>• Observe differences in humans and draw pictures of observations</li> <li>• Measure and compare bodies and body parts</li> </ul>	<ul style="list-style-type: none"> <li>• Human skeleton</li> <li>• Types of bears and where they live</li> <li>• Talk about observations of plants, animals and natural and found objects</li> <li>• Compare different leaves from local trees</li> </ul>	<ul style="list-style-type: none"> <li>• Notices differences in different environments</li> <li>• Changes in food – porridge, toast, butter</li> <li>• Sorting and testing materials used for building houses</li> </ul>	<ul style="list-style-type: none"> <li>• Seasonal changes – autumn</li> <li>• Homes and habitats – why do animals live where they do?</li> <li>• irreversible changes – salt dough</li> </ul>	<ul style="list-style-type: none"> <li>• Planets and the Solar System – Earth in relation to the other planets, the Moon and the Sun</li> <li>• Observe differences between light and dark and identify light sources</li> <li>• How does light travel through different materials?</li> <li>• Launch a rocket</li> </ul>	<ul style="list-style-type: none"> <li>• Electricity – investigating simple circuit</li> <li>• Explore chromatography</li> <li>• Forces – which sleigh travels the furthest</li> </ul>	<ul style="list-style-type: none"> <li>• Seasonal changes – winter</li> <li>• Freezing and melting – reversible changes</li> <li>• Why are polar bears white?</li> <li>• Why do some animals live in cold climates and some in hot climates?</li> </ul>	<ul style="list-style-type: none"> <li>• Make observations of flight and winged vehicles and animals</li> <li>• Talk about why things happen and how things work</li> <li>• Light candles and sparklers and observe changes – what does fire need to burn?</li> </ul>	<ul style="list-style-type: none"> <li>• Seasonal changes – spring</li> <li>• Five human senses</li> <li>• How does bread rise?</li> <li>• Heating and cooling</li> <li>• Healthy and less healthy choices</li> <li>• Where does food come from?</li> </ul>	<ul style="list-style-type: none"> <li>• Observation and investigation of teeth (dentist) and eyes (optician)</li> <li>• recycling – sorting materials</li> <li>• Compare and observe fingerprints</li> <li>• Talk about why things happen and how things work</li> <li>• Forces – friction and ramps</li> </ul>	<ul style="list-style-type: none"> <li>• Observe changes to potatoes: how they grow and ways they can be cooked</li> <li>• Floating and sinking</li> <li>• Healthy diet</li> <li>• What do plants need to survive?</li> <li>• Grow fruit and vegetables – peas and potatoes to observe changes over time</li> <li>• Electricity – making simple circuits</li> </ul>	<ul style="list-style-type: none"> <li>• Observe changes in animals including butterflies and frogs</li> <li>• What do plants and animals need to survive?</li> <li>• Describe home and garden environment</li> <li>• Identify how living things are suited to their unique environment</li> <li>• Grow tadpoles and caterpillars</li> </ul>	<ul style="list-style-type: none"> <li>• Sorting foods into different groups</li> <li>• Lifecycle of a chicken</li> <li>• Reversible and irreversible changes – cooking of eggs</li> <li>• Incubation and hatching chicken eggs</li> </ul>	<ul style="list-style-type: none"> <li>• Group dinosaurs according to observations</li> <li>• Dinosaur types and habitats – herbivores, carnivores, omnivores</li> <li>• Similarities and differences between dinosaurs and other animals</li> <li>• Animals classifications - egg laying creatures</li> <li>• Volcanoes</li> </ul>	<ul style="list-style-type: none"> <li>• Seasonal changes – summer</li> <li>• Talk about changes to the environment and the body in the heat</li> <li>• Make an erupting volcano</li> </ul>
<ul style="list-style-type: none"> <li>• Observation</li> <li>• Researching</li> <li>• Measuring</li> </ul>	<ul style="list-style-type: none"> <li>• Observation</li> <li>• Researching</li> <li>• Measuring</li> </ul>	<ul style="list-style-type: none"> <li>• Questioning</li> <li>• Predicting</li> </ul>	<ul style="list-style-type: none"> <li>• Observation</li> <li>• Planning</li> <li>• Interpreting</li> </ul>	<ul style="list-style-type: none"> <li>• Researching</li> <li>• Planning</li> <li>• Observation</li> <li>• Reporting</li> </ul>	<ul style="list-style-type: none"> <li>• Observing</li> <li>• Planning</li> <li>• Predicting</li> <li>• Measuring</li> </ul>	<ul style="list-style-type: none"> <li>• Observing</li> <li>• Predicting</li> <li>• Measuring</li> <li>• Researching</li> </ul>	<ul style="list-style-type: none"> <li>• Measuring</li> <li>• Observing</li> <li>• Researching</li> <li>• Reporting</li> </ul>	<ul style="list-style-type: none"> <li>• Observing</li> <li>• Questioning</li> <li>• Researching</li> </ul>	<ul style="list-style-type: none"> <li>• Measuring</li> <li>• reporting</li> <li>• Interpreting</li> <li>• Evaluating</li> </ul>	<ul style="list-style-type: none"> <li>• Planning</li> <li>• Predicting</li> <li>• Interpreting</li> <li>• Evaluating</li> </ul>	<ul style="list-style-type: none"> <li>• Observation</li> <li>• Research</li> <li>• Reporting</li> <li>• Questioning</li> </ul>	<ul style="list-style-type: none"> <li>• Observing</li> <li>• Predicting</li> <li>• Planning</li> <li>• Evaluating</li> </ul>	<ul style="list-style-type: none"> <li>• Observation</li> <li>• Researching</li> <li>• Measuring</li> <li>• Questioning</li> </ul>	<ul style="list-style-type: none"> <li>• Observation</li> <li>• Reporting</li> <li>• Measuring</li> <li>• Interpreting</li> </ul>

## KS1

The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.

‘Working scientifically’ is described separately in the programme of study, but must always be taught through and clearly related to the teaching of substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.

Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>Year 1</b>	<p><b>Me, Myself and I</b></p> <p><b>Animals, including humans</b> Pupils should be taught to:</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</li> <li>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Year 2)</li> </ul> <p><b>Working Scientifically</b> use observation and ideas to suggest answers to questions.</p>	<p><b>A Small Island (The UK)</b></p> <p><b>Seasonal Changes</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>observe changes across the four seasons</li> <li>observe and describe weather associated with the seasons and how day length varies</li> </ul> <p><b>Working Scientifically</b> Pupils might work scientifically by: making tables and charts about the weather; and making displays of what happens in the world around them, including day length, as the seasons change. observe closely, using simple equipment</p>	<p><b>A Knight’s Tale</b></p> <p><b>Everyday Materials</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Distinguish between an object and the material it’s made from</li> <li>Identify and name a variety of everyday materials including wood, plastic, glass, metal, water and rock</li> <li>Describe the simple physical properties of a variety of everyday materials</li> <li>Compare and group together a variety of everyday materials on the basis of their simple physical properties.</li> </ul> <p><b>Working Scientifically</b> Pupils might work scientifically by: performing simple tests to explore questions, for example: ‘What is the best material for an umbrella? ...for lining a dog basket? ...for curtains? ...for a bookshelf? ...for a gymnast’s leotard?’ gather and record data to help in answering questions</p>	<p><b>The Enchanted Forest</b></p> <p><b>Plants</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</li> <li>Identify and describe the basic structure of a variety of common flowering plants, including trees.</li> </ul> <p><b>Working Scientifically</b> Pupils might work scientifically by: observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants; describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants including trees. Pupils might keep records of how plants have changed over time, for example the leaves falling off trees and buds opening; and compare and contrast what they have found out about different plants. use observation and ideas to suggest answers to questions.</p>	<p><b>Toy Story</b></p> <p><b>Everyday Materials (FLOATING AND SINKING)</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>describe the simple physical properties of a variety of everyday materials</li> <li>compare and group together a variety of everyday materials on the basis of their simple physical properties</li> </ul> <p><b>Working Scientifically</b> Pupils might work scientifically by: performing simple tests to explore questions, for example: ‘What is the best material for an umbrella? ...for lining a dog basket? ...for curtains? ...for a bookshelf? ...for a gymnast’s leotard?’ ask simple questions and recognising that they can be answered in different ways. perform simple tests.</p>	<p><b>Shiver Me Timbers!</b></p> <p><b>Animals, including humans</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</li> <li>Identify and name a variety of common animals that are carnivores, herbivores and omnivores</li> <li>Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds, mammals, including pets)</li> </ul> <p><b>Working Scientifically</b> Pupils might work scientifically by: using their observations to compare and contrast animals at first hand or through videos and photographs, describing how they identify and group them; grouping animals according to what they eat; and using their senses to compare different textures, sounds and smells. identify and classify</p>
<b>Year 2</b>	<p><b>It’s a Small World</b></p> <p><b>Plants</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Observe and describe how seeds and bulbs grow into mature plants.</li> <li>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</li> </ul> <p><b>Working Scientifically</b> observe closely, using simple equipment</p>	<p><b>Fire! Fire!</b></p> <p><b>Living things and their habitats</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>explore and compare the differences between things that are living, dead, and things that have never been alive</li> </ul> <p><b>Working Scientifically</b> identify and classify</p>	<p><b>There’s No Place Like Home</b></p> <p><b>Living things and their habitats</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>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</li> </ul> <p><b>Working Scientifically</b> identify and classify</p>	<p><b>London Calling</b></p> <p><b>Animals, including humans</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Notice that animals, including humans, have offspring which grow into adults.</li> <li>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).</li> </ul> <p><b>Working Scientifically</b> ask simple questions and recognise that they can be answered in different ways.</p>	<p><b>The Animal Kingdom</b></p> <p><b>Living things and their habitats</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>identify and name a variety of plants and animals in their habitats, including micro-habitats</li> <li>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> <p><b>Working Scientifically</b> observe closely and using simple equipment perform simple tests</p>	<p><b>Chocolate</b></p> <p><b>Uses of Everyday Materials</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <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</li> <li>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>Working Scientifically</b> use observation and ideas to suggest answers to questions. gather and record data to help in answering questions.</p>

## Lower KS2

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

'Working scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.

Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

Year 3	<u>Rainforest Rescue</u>	<u>The Stone Age</u>	<u>Food, Glorious Food!</u>	<u>Egyptology</u>	<u>Rise of the Robots</u>	<u>Spy Kids</u>
	<p><b>Living things and their habitats (Y4)</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>recognise living things can be grouped in a variety of ways</li> <li>explore and use classification keys to help groups, identify and name a variety of living things in their local and wider environment</li> <li>recognise that environments can change and that this can sometimes pose dangers to living things</li> </ul> <p><b>Working Scientifically</b> gather, record, classify and present data in a variety of ways to help in answering questions</p>	<p><b>Rocks (Y3)</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</li> <li>describe in simple terms how fossils are formed when things that have lived are trapped within rock</li> <li>recognise that soils are made from rocks and organic matter.</li> </ul> <p><b>Working Scientifically</b> ask relevant questions and use different types of scientific enquiry to answer them</p>	<p><b>Animals, including humans</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Identify that animals, including humans, need the right types and amounts of nutrition, and that they cannot make their own food; they get information from what they eat (Y3)</li> <li>describe the simple functions of the basic parts of the digestive system in humans (Y4)</li> <li>identify the different types of teeth in humans and their simple functions (Y4)</li> </ul> <p><b>Working Scientifically</b></p> <ul style="list-style-type: none"> <li>set up simple practical enquiries, comparative and fair tests</li> <li>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>record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables</li> </ul>	<p><b>Forces (Y3)</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>compare how things move on different surfaces</li> <li>notice that some forces need contact between two objects, but magnetic forces can act at a distance</li> </ul> <p><b>Working Scientifically</b></p> <ul style="list-style-type: none"> <li>use straightforward scientific evidence to answer questions or to support their findings</li> <li>use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> </ul>	<p><b>Electricity (Y4)</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>identify common appliances that run on electricity</li> <li>construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</li> <li>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>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>recognise some common conductors and insulators, and associate metals with being good conductors</li> </ul> <p><b>Working Scientifically</b> identify differences, similarities or changes related to simple scientific ideas and processes</p>	<p><b>Light (Y3)</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>recognise that they need light in order to see things and that dark is the absence of light</li> <li>notice that light is reflected from surfaces</li> <li>recognise that light from the sun can be dangerous and that there are ways to protect their eyes</li> <li>recognise that shadows are formed when the light from a light source is blocked by a solid object</li> <li>find patterns in the way that the size of shadows change</li> </ul> <p><b>Working Scientifically</b> report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p>

<b>Year 4</b>	<b>Hail Caesar!</b>  <b>Animals, including humans (Y3)</b> Pupils should be taught to: <ul style="list-style-type: none"> <li>identify that humans and some other animals have skeletons and muscles for support, protection and movement</li> </ul> <b>Working Scientifically</b> <ul style="list-style-type: none"> <li>set up simple practical enquiries, comparative and fair tests</li> <li>identify differences, similarities or changes related to simple scientific ideas &amp; processes</li> </ul>	<b>India</b>  <b>States of Matter(Y4)</b> Pupils should be taught to: <ul style="list-style-type: none"> <li>compare and group materials together, according to whether they are solids, liquids or gases</li> <li>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>identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> </ul> <b>Working Scientifically</b> record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and table	<b>The Tudors in London</b>  <b>Magnets (Y3)</b> Pupils should be taught to: <ul style="list-style-type: none"> <li>observe how magnets attract or repel each other and attract some materials and not others</li> <li>compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials</li> <li>describe magnets as having two poles</li> <li>predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> </ul> <b>Working Scientifically</b> <ul style="list-style-type: none"> <li>identify differences, similarities or changes related to simple scientific ideas &amp; processes</li> <li>make systematic &amp; careful observations &amp;, where appropriate, take accurate measurements, using a range of equipment, including thermometers &amp; data loggers</li> </ul>	<b>One World</b>  <b>Living things and their habitats (Y4)</b> Pupils should be taught to: <ul style="list-style-type: none"> <li>recognise that environments can change and that this can sometimes pose dangers to living things</li> </ul> Pupils should explore examples of human impact (both positive and negative) on environments, for example, the positive effects of nature reserves, ecologically planned parks, or garden ponds, and the negative effects of population and development, litter or deforestation.  <b>Working Scientifically</b> <i>Pupils might work scientifically by: using and making simple guides or keys to explore and identify plants and animals; making a guide to living things; raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched.</i>  gather, record, classify& present data in a variety of ways to help in answering questions	<b>How Does Your Garden Grow?</b>  <b>Plants (Y3)</b> Pupils should be taught to: <ul style="list-style-type: none"> <li>Identify &amp; describe the functions of different parts of flowering plants: roots, stem/trunk, Leaves &amp; flowers</li> <li>Explore the requirements of plants for life &amp; growth (air, light, water, nutrients for soil &amp; room to grow) &amp; how they vary from plant to plant</li> <li>Investigate the way in which water is transported within plants</li> <li>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation &amp; seed dispersal</li> </ul> <b>Working Scientifically</b> <ul style="list-style-type: none"> <li>ask relevant questions &amp; use different types of scientific enquiries to answer them</li> <li>report on findings from enquiries, including oral &amp; written explanations, displays or presentations of results &amp; conclusions</li> <li>use results to draw simple conclusions, make predictions for new values, suggest improvements &amp; raise further questions</li> </ul>	<b>Ancient Greeks</b>  <b>Animals, including humans (Y4)</b> <ul style="list-style-type: none"> <li>construct and interpret a variety of food chains, identifying producers, predators and prey.</li> </ul> <b>Working Scientifically</b> <ul style="list-style-type: none"> <li>identify differences, similarities or changes related to simple scientific ideas &amp; processes</li> </ul>
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## UPPER KS2

*The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.*

*'Working and thinking scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.*

*Pupils should read, spell and pronounce scientific vocabulary correctly.*

<b>Year 5</b>	<b>Crime and Punishment</b>  <b>Properties of Materials</b> Pupils should be taught to: <ul style="list-style-type: none"> <li>know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from the solution.</li> </ul>	<b>Masterchef</b>  <b>Properties of Materials</b> Pupils should be taught to: <ul style="list-style-type: none"> <li>Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity, and response to magnets.</li> </ul>	<b>Long Live the Queen</b>  <b>Electricity (Y6)</b> Pupils should be taught to: <ul style="list-style-type: none"> <li>Associate the brightness of a lamp or volume of a buzzer with the number and the voltage of cells used in the circuit.</li> <li>Compare and give reasons for variations in how components</li> </ul>	<b>Heartbeat</b>  <b>Animals including humans</b> Pupils should be taught to: <ul style="list-style-type: none"> <li>identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood</li> </ul>	<b>Creeping Coasts</b>  <b>Forces</b> Pupils should be taught to: <ul style="list-style-type: none"> <li>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> </ul>	<b>Amazing Africa</b>  <b>Living Things and their Habitats/</b> Pupils should be taught to: <ul style="list-style-type: none"> <li>Describe the differences in the lifecycles of a mammal, an amphibian, an insect and a bird</li> <li>Describe the life process of reproduction in some plants and animals</li> </ul>
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	<ul style="list-style-type: none"> <li>use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through the filtering, sieving and evaporating.</li> <li>demonstrate that dissolving, mixing and changes of state are reversible changes.</li> <li>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> <p><b>Working Scientifically</b></p> <ul style="list-style-type: none"> <li>plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs and bar/line graphs</li> </ul>	<ul style="list-style-type: none"> <li>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</li> </ul> <p><b>Working Scientifically</b></p> <p>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</p>	<p>function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.</p> <ul style="list-style-type: none"> <li>Use recognised symbols when representing a simple circuit in a diagram.</li> <li>Take necessary safety precautions for working safely with electricity.</li> </ul> <p><b>Working Scientifically</b></p> <ul style="list-style-type: none"> <li>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> <li>use test results to make predictions to set up further comparative and fair tests</li> </ul>	<ul style="list-style-type: none"> <li>recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</li> <li>describe the ways in which nutrients and water are transported within animals, including humans</li> </ul> <p><b>Working Scientifically</b></p> <p>take measurements, using a variety of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p>	<ul style="list-style-type: none"> <li>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> <li>recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</li> </ul> <p><b>Working Scientifically</b></p> <ul style="list-style-type: none"> <li>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> <li>take measurements, using a variety of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> </ul>	<p><b>Animals, including humans</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>describe the changes as humans develop to old age.</li> </ul> <p><b>Working Scientifically</b></p> <p>Pupils could work scientifically by researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows.</p> <ul style="list-style-type: none"> <li>plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>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>
<b>Year 6</b>	<p><b>Tales of the Thames</b></p> <p><b>Living Things and their Habitats</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>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>give reasons for classifying plants and animals based on specific characteristics.</li> </ul> <p><b>Working Scientifically</b></p> <p>record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p>	<p><b>Your Country Needs You!</b></p> <p><b>Sound (Y4)</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>identify how sounds are made, associating some of them with something vibrating</li> <li>recognise that vibrations from sounds travel through a medium to the ear</li> <li>find patterns between the pitch of a sound and features of the object that produced it</li> <li>find patterns between the volume of a sound and the strength of the vibrations that produced it</li> <li>recognise that sounds get fainter as the distance from the sound source increases.</li> </ul> <p><b>Working Scientifically</b></p> <ul style="list-style-type: none"> <li>use straightforward scientific evidence to answer questions or support their findings</li> <li>make systematic &amp; careful observations &amp;, where appropriate, take accurate measurements, using a range of equipment, including thermometers &amp; data loggers</li> </ul>	<p><b>To Infinity and Beyond</b></p> <p><b>Earth and Space (Y5)</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>describe the movement of the Earth, and other planets, relative to the Sun in the solar system</li> <li>describe the movement of the Moon relative to the Earth</li> <li>describe the Sun, Earth and Moon as approximately spherical bodies</li> <li>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> <p><b>Working Scientifically</b></p> <p>identify scientific evidence that has been used to support or refute ideas or arguments.</p>	<p><b>To Boldly Go</b></p> <p><b>Properties of Materials</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity, and response to magnets.</li> <li>give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</li> </ul> <p>(Link with DT, extension of objectives worked on in Y5 by looking at ways freezinf affactes materials, autumn 1 and link with space work in previous theme)</p> <p><b>Working Scientifically</b></p> <p>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</p>	<p><b>Lights, Camera, Action</b></p> <p><b>Light</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>recognise that light appears to travel in straight lines</li> <li>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>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>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><b>Working Scientifically</b></p> <ul style="list-style-type: none"> <li>plan different types of scientific enquiry to answer questions, including recognising and controlling variables where necessary</li> <li>use test results to make predictions to set up further comparative and fair tests</li> </ul>	<p><b>Back to the Future</b></p> <p><b>Evolution and Inheritance</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>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> </ul> <p>recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <ul style="list-style-type: none"> <li>identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</li> </ul> <p><b>Working Scientifically</b></p> <ul style="list-style-type: none"> <li>identify scientific evidence that has been used to support or refute ideas or arguments</li> </ul>