

## ***Whitehill Junior School Science Curriculum Overview and information 2020***

Science is taught where possible as an integrated subject with our topic based curriculum, but some units will be taught discretely to fulfil the requirements of the National Curriculum.

**Our aim** is for pupils to develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics. Children will develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.

They will be 'Working Scientifically' by asking their own questions about what they observe and making 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. Although the outline below lists the main learning objectives, we recognise that these need to be carefully blended in planning and teaching.



Topic & Term	AUTUMN	SPRING Rainforests (Habitats)	SUMMER Rainforests
Year 3	<p data-bbox="237 177 600 204"><b>Living things and their habitat</b></p> <ul data-bbox="237 248 790 608" style="list-style-type: none"> <li>• recognise that living things can be grouped in a variety of ways</li> <li>• explore and use classification keys to help group, 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 data-bbox="237 687 562 715"><b>Animals, including humans</b></p> <ul data-bbox="237 791 768 1070" 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</li> <li>• identify that humans and some other animals have skeletons and muscles for support, protection and movement.</li> </ul>	<p data-bbox="813 177 1055 204"><b>Forces and magnets</b></p> <ul data-bbox="813 248 1357 823" 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> <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> <p data-bbox="813 871 891 898"><b>Plants</b></p> <ul data-bbox="813 943 1357 1182" style="list-style-type: none"> <li>• identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</li> <li>• 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> </ul>	<p data-bbox="1388 177 1615 204"><b>Plants continued...</b></p> <ul data-bbox="1388 248 1917 456" style="list-style-type: none"> <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 and seed dispersal.</li> </ul> <p data-bbox="1388 504 1458 531"><b>Light</b></p> <ul data-bbox="1388 576 1939 999" 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>

Topic & Term	AUTUMN Footprints From The Past (Dinosaurs)	SPRING Active Planet (Volcanoes)	SUMMER Inventions
Year 4	<p data-bbox="237 236 573 260"><b>Animals, including humans</b></p> <ul data-bbox="237 308 685 627" style="list-style-type: none"> <li>describe the simple functions of the basic parts of the digestive system in humans</li> <li>identify the different types of teeth in humans and their simple functions</li> <li>construct and interpret a variety of food chains, identifying producers, predators and prey.</li> </ul>	<p data-bbox="707 236 786 260"><b>Rocks</b></p> <ul data-bbox="707 308 1234 627" 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 data-bbox="707 707 909 730"><b>States of matter</b></p> <ul data-bbox="707 778 1234 1201" 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>	<p data-bbox="1256 236 1335 260"><b>Sound</b></p> <ul data-bbox="1256 308 1939 667" 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 data-bbox="1256 715 1379 738"><b>Electricity</b></p> <ul data-bbox="1256 786 1939 1217" 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>

Topic & Term	AUTUMN Space	SPRING Fit for life	SUMMER
Year 5	<p><b>Forces</b></p> <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> <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>Earth and space</b></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>Animals, including humans</b></p> <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> <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>Animals, including humans</b></p> <ul style="list-style-type: none"> <li>describe the changes as humans develop to old age.</li> <li>describe the life processes of reproduction in some animals</li> </ul>	<p><b>Properties and changes of material</b></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 (electrical and thermal), and response to magnets</li> <li>know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</li> <li>use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</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> <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>

Topic & Term	AUTUMN Time Tunnel	SPRING Champions for Change	SUMMER Go With The Flow (Rivers)*
Year 6	<p><b>Evolution and inheritance</b></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> <li>recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</li> <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>Electricity</b></p> <ul style="list-style-type: none"> <li>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>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>use recognised symbols when representing a simple circuit in a diagram.</li> </ul>	<p><b>Light</b></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>Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>describe the differences in the life cycles 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> <p><b>Humans (RHS Education)</b></p> <ul style="list-style-type: none"> <li>describe the changes as humans develop to old age.</li> </ul>	<p><b>Living things and their habitats (continued)</b></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>Properties and changes of Materials</b> <b>Link with topic (Rivers)</b></p> <ul style="list-style-type: none"> <li>recognise that the cleanliness of water varies</li> <li>create a water filter that can turn dirty water into clean water</li> <li>know that the pH of water may vary.</li> </ul>