

Science Topic Overview

Term	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Term 1	<p>Plants</p> <p>Identify and name common plants, including trees – explore local habits</p> <p>Identify the basic structure of plants, including trees</p> <p>Keep records of how plants, including trees, change over time – repeat in term 3 & 5</p>	<p>Use of Everyday Materials</p> <p>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</p> <p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending and twisting.</p> <p>Find out about people who have developed useful new materials throughout the years and link to modern day discoveries.</p>	<p>Rocks</p> <p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p> <p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock</p> <p>Recognise that soils are made from rocks and organic matter</p> <p>Explore different kinds of rocks and soils, including those in the local environment</p>	<p>Electricity</p> <p>Identify common appliances that run on electricity</p> <p>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>Use circuits to create simple devices</p> <p>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</p> <p>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</p> <p>Recognise some common conductors and insulators, and associate metals with being good conductors</p>	<p>Earth and Space</p> <p>Describe the movement of the Earth, and other planets, relative to the Sun in the solar system</p> <p>Describe the movement of the Moon relative to the Earth</p> <p>Describe the Sun, Earth and Moon as approximately spherical bodies</p> <p>Use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky</p> <p>Find out about the way that ideas about the solar system have developed, understanding how the geocentric model gave way to the heliocentric model by considering the work of scientists such as Ptolemy, Alhazen and Copernicus.</p> <p>Research the work of modern day scientists such as Dr Maggie Aderin-Pocock and the latest developments in space technology and exploration</p> <p>Research and prepare presentations about a particular space topic of interest.</p>	<p>Living Things and Their Habitats</p> <p>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>Give reasons for classifying plants and animals based on specific characteristics.</p> <p>Identify animals and plants in the immediate environment using classification systems and keys</p> <p>Research unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system</p> <p>Find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification</p>

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Term 2	<p>Seasonal Changes – short unit Observe and talk about the changes across the four seasons</p> <p>Observe and discuss weather associated with the seasons and how day length varies – make tables, charts and an ongoing display about changes in the world around them, including day length and weather as the seasons change.</p> <p style="color: red;">Topic linked Science</p>	<p>Science enquiry linked to topic</p>	<p>Science enquiry linked to topic</p>	<p>Sound Identify how sounds are made, associating some of them with something vibrating</p> <p>Explore and identify how a sound is made through vibration in a range of different musical instruments from around the world</p> <p>Recognise that vibrations from sound travel through a medium to the ear</p> <p>Find patterns between the pitch of a sound and features of the object that produced it</p> <p>Find patterns between the volume of a sound and the strength of the vibrations that produced it. Recognise that sounds get fainter as the distance from the sound source increases</p>	<p>Properties and Changes of Materials – Term 2 & 3</p> <p>Compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</p> <p>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>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.</p> <p>Find out about how chemists create new materials e.g. Spencer Silver who invented the glue for sticky notes or Ruth Benerito, who invented wrinkle-free cotton</p>	<p>Light</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>Explore a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters</p>

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Term 3	<p>Plants – short unit Keep records of how plants, including trees, change over time. (Compare to term 1)</p> <p>Plant flowers and vegetables from seeds and observe growth</p> <p>Animals, Including Humans (Terms 3 & 4) Identify and name a variety of common animals that are birds, fish, amphibians, reptiles and mammals</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores</p> <p>Describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles, mammals and invertebrates including pets)</p> <p>Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</p> <p>Explore the local environment throughout the year to explore and answer questions about animals in their habitat.</p> <p>Use observations to compare and contrast animals describing how they identify and group them according to what they eat; and using their senses to compare them.</p>	<p>Plants (Term 3 & 4) Observe and record the growth of a variety of plants as they change over time from a seed or bulb and observe similar plants at different stages of growth.</p> <p>Find out about the requirements of plants for germination, growth and survival as well as the processes of reproduction and growth</p> <p>Use the local environment throughout the year to observe how different plants grow.</p>	<p>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</p> <p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement</p>	<p>Living Things and Their Environment – short unit Study the local environment throughout the year and identify how it changes – habitat studies in term 3 to compare with term 5.</p> <p>Science enquiry linked to topic</p>	<p>Properties and Changes of Materials cont</p>	<p>Animals Including Humans Identify and name the main parts of the human circulatory system, and explain 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> <p>Explore the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health</p>

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Term 4	<p>Animals, Including Humans – cont from term 3</p> <p>Seasonal Changes – short unit Observe and talk about the changes across the four seasons</p> <p>Observe and discuss weather associated with the seasons and how day length varies – make tables, charts and an ongoing display about changes in the world around them, including day length and weather as the seasons change.</p>	<p>Continue Plants topic</p> <p>STEM project – Primary Engineer</p> <p>Work alongside an engineer to design and make a vehicle which travels in a straight line and which includes a safety feature.</p>	<p>Forces and Magnets</p> <p>Compare how things move on different surfaces</p> <p>Notice that some forces need contact between two objects, but magnetic forces can act at a distance</p> <p>Observe how magnets attract or repel each other and attract some materials and not others</p> <p>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</p> <p>Describe magnets as having two poles</p> <p>Predict whether two magnets will attract or repel each other, depending on which poles are facing.</p>	<p>States of Matter</p> <p>Compare and group materials together, according to whether they are solids, liquids or gases 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)</p> <p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	<p>Forces</p> <p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>Experience forces that make things move, get faster or slow down</p> <p>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect</p> <p>Find out how scientists such as Galileo Galilei and Isaac Newton helped to develop the theory of gravitation</p>	<p>Electricity</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 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 use recognised symbols when representing a simple circuit in a diagram.</p> <p>STEM project – Primary Engineer</p> <p>Work alongside an engineer to use knowledge of electrical circuits to design and make a controllable vehicle which can move forwards and backwards and climb a ramp.</p>

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Term 5	<p>Plants and Animals – short unit</p> <p>Identify and name common plants, including trees – explore local habits and keep records of how plants, including trees, change over time (Compare to terms 1 & 3)</p> <p>Explore the local environment throughout the year to explore and answer questions about animals in their habitat.</p> <p>Focus on gardening - Plant seeds in class plot and observe growth</p> <p>Everyday Materials (Terms 5 & 6)</p> <p>Distinguish between an object and the material from which it has been made</p> <p>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock</p> <p>Describe the simple physical properties of a variety of everyday materials – hard/soft, stretchy/stiff, shiny/dull, rough/smooth, bendy/not bendy, waterproof/ not waterproof, absorbent/ not absorbent, opaque/ transparent</p> <p>Explore questions to find the best material for different functions.</p> <p>Compare and group together a variety of everyday materials on the basis of their simple physical properties</p>	<p>Living Things and their Habitats</p> <p>Explore and compare the differences between things that are living, dead and things that have never been alive</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</p> <p>Identify and name a variety of plants and animals in their habitats, including microhabitats</p> <p>Describe how animals obtain their food from plants and other animals in their habitats, including micro-habitats</p> <p>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</p>	<p>Plants</p> <p>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</p> <p>Explore the requirements of plants for life and growth (air, light, water, nutrients from soil and room to grow)</p> <p>Explore the way in which water is transported within plants</p> <p>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal – observe the different stages of plant life cycles over a period of time</p>	<p>Living Things and their Habitats</p> <p>Recognise that living things can be grouped in different ways</p> <p>Put vertebrates into groups such as fish, amphibians, reptiles, birds and mammals; invertebrates into snails, slugs, worms, spiders and insects and plants into flowering plants (including grasses) and non-flowering plants such as ferns and grasses</p> <p>Explore, use and make classification guides and keys to help group, identify and name a variety of living things in their local and wider environment</p> <p>Recognise that environments can change and that this can sometimes pose dangers to living things</p> <p>Explore examples of human impact (both positive and negative) on environments e.g. nature reserves, ecologically planned parks, garden ponds, population and development, litter, deforestation.</p> <p>Identify how local habitats have changed since term 3</p>	<p>Animals including humans – short unit</p> <p>Describe the changes as humans develop from birth to old age</p> <p>Learn about the changes experienced in puberty</p> <p>Research the gestation periods of other animals and compare them with humans</p> <p style="color: red;">Science enquiry linked to topic</p>	<p>Evolution and Inheritance</p> <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>Appreciate that variation in offspring over time can make animals more or less able to survive in particular environments, e.g. by exploring how giraffes’ necks got longer or the development of insulating fur on the arctic fox</p> <p>Find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution</p>

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Term 6	<p>Everyday Materials cont from Term 5</p> <p>Seasonal Changes Observe and talk about the changes across the four seasons</p> <p>Observe and discuss weather associated with the seasons and how day length varies – make tables, charts and an ongoing display about changes in the world around them, including day length and weather as the seasons change.</p>	<p>Animals Including Humans</p> <p>Notice that animals, including humans, have offspring which grow into adults</p> <p>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene</p>	<p>Light</p> <p>Recognise that they need light in order to see things and that dark is the absence of light</p> <p>Notice that light is reflected from surfaces</p> <p>Recognise that light from the sun can be dangerous and that there are ways to protect eyes</p> <p>Recognise that shadows are formed when the light from a source is blocked by a solid object</p> <p>Find patterns in the way that the size of shadows change</p>	<p>Animals including humans</p> <p>Describe the simple functions of the basic parts of the digestive system in humans (mouth, tongue, teeth, oesophagus, stomach and small and large intestine)</p> <p>Identify the different types of teeth in humans and their simple functions</p> <p>Find out what damages teeth and how to look after them</p> <p>Compare the teeth of carnivores and herbivores and suggest reasons for differences</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey.</p>	<p>Living Things and their habitats</p> <p>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>Observe the life-cycle changes in a variety of living things, e.g. plants in the vegetable garden or flower border, and animals in the local environment and compare with other plants and animals around the world</p> <p>Describe the life process of reproduction in some plants and animals.</p> <p>Grow new plants from different parts of the parent plant e.g. seeds, stem and root cuttings, tubers and bulbs</p> <p>Find out about different types of reproduction, including sexual and asexual reproduction in plants, and sexual reproduction in animals</p> <p>Find out about the work of naturalists and animal behaviourists e.g. David Attenborough and Jane Goodall</p>	

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Working Scientifically	<p>During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions. 	<p>During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and • raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings. 	<p>During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs • using test results to make predictions to set up further comparative and fair tests • using simple models to describe scientific ideas • 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 • identifying scientific evidence that has been used to support or refute ideas or arguments.