

Moss Valley's Science Concept Curriculum Progression



We have carefully mapped the development of children's knowledge in specific concepts over time. Recognising that not all topics are revisited annually, we have sought opportunities to draw connections between different units, ensuring that concepts are not forgotten or taught in isolation. In the tables below, black text indicates direct teaching of a concept, while purple text signifies areas where the concept can be linked to the teaching of another unit, thereby reinforcing and enriching the children's understanding.

Animals Including Humans

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Identify and name a variety of common animals including fish, amphibians, reptiles, birds 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 (fish, amphibians, reptiles, birds and mammals 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>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>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>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>Describe the changes as humans develop to old age</p> <p>Describe the life cycles of a mammal including humans</p> <p>Describe the life process of reproduction in humans</p> <p>Describe the changes that occur during puberty</p>	<p>Identify and name the main parts of the human circulatory system, and describe 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>Sight, smell, touch, hear, senses, body, nose, mouth, ears, teeth, mouth, head, neck, arm, knee, foot, leg, hand, elbow, ankle. Carnivore, herbivore, omnivore,</p>	<p>Heart, exercise, diet, meat, vegetables, fruit, sugar, hygiene, germs, doctor, disease, teeth, plaque, filling, pulse Mammal, carnivore, herbivore, omnivore, feathers, beak, wings, insect,</p>	<p>Carbohydrates, protein, dairy, balanced diet, skeleton, movement, protection, skull, jaw, spine, rib cage, pelvis, humerus, radius, ulna, femur, tibia, and fibula, Joint, muscle,</p>	<p>Enamel, pulp, roots, decay, plaque, digestive system, oesophagus, intestines, rectum, saliva, stomach,</p>	<p>Brain development, milestones, adolescence, puberty, period, reproduce, hormones, pubic, penis, testicles, vagina, elderly, life expectancy, womb, foetus, gestation, offspring,</p>	<p>Blood vessels, veins, arteries, ircularatory system, red blood cells, white blood cells, nutrients, plasma, oxygenated, deoxygenated, balanced diet,</p>

amphibians, reptiles, mammals, birds, fish, fur, diet.	scales, gills, shelter, Offspring, growth, adult, parent, life cycle, adolescent, pupa, cub, chick, calf, lamb	transparent, translucent, opaque, light source, shadow		mMammary gland, live young, fledgling, fertilisation, embryo, sperm cells, egg cells,	calories, drugs, stimulants, depressants, addiction, nicotine
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Living things and their habitats

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Observe changes across the 4 seasons</p> <p>Observe and describe weather associated with the seasons and how day length varies</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, using the idea of a simple food chain, and identify and name different sources of food</p>		<p>Recognise that living things can be grouped in a variety of ways</p> <p>Explore and use classification 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>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>Describe the life process of reproduction in some plants and animals</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>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>Living, dead, never alive, habitat, ocean, woodland, desert, polar, seaweed, cactus, blubber, Offspring, growth, adult, parent, life cycle, adolescent, pupa, compare cub, chick, calf, lamb</p>		<p>Rural habitat, urban habitat, biodiversity, natural resources, deforestation, rewilding, nature reserve, producer, consumer, prey, predator, over-fishing, hunting Mammal, bird, fish, amphibian, reptile, vertebrate invertebrate, flowering plant, non-flowering plant, stamen, pistil, fern, moss,</p>	<p>anther, filament, ovule, stigma, style, ovary, asexual, sexual, clone</p>	<p>Classification keys, arachnids, crustaceans, microorganism, bacteria, virus, fungi, mould, excretion</p>
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Plants

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p> <p>Identify and describe the basic structure of a variety of common flowering plants, including trees</p>	<p>Observe and describe how seeds and bulbs grow into mature plants</p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</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) and how they vary from plant to plant</p> <p>Investigate 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</p>		<p>Describe the life process of reproduction in some plants</p>	<p>Describe how living things are classified into broad groups according to common observable characteristics</p> <p>Give reasons for classifying plants based on specific characteristics</p>
<p>Spring, daylight, weather, season, flowers, stem,, leaves, flower, trunk, branches, wild flower, garden plant, evergreen, deciduous, seasons, summer, daylight, temperature</p>	<p>Flower, fruit, vegetable, blossom, seed, sunlight, compost, germination</p>	<p>seedling, germination, water transportation, stamen, pistil, pollination, disperasal</p>		<p>Asexual, anther, filament, ovule, stigma, style, ovary, asexual reproduction</p>	<p>Classification keys</p>

Materials and their properties

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Distinguish between an object and the material from which it is 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</p> <p>Compare and group together a variety of everyday materials on the basis of their simple physical properties</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, twisting and stretching</p>		<p>Compare and group materials together, according to whether they are solids, liquids or gases</p> <p>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>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</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>To Know the material a light travels through change can cause the light to change direction</p>
<p>Object, material, hard, soft, stretchy, bendy, stiff, rough, smooth, dull, float, sink, season, weather,, temperature, autumn, weather</p>	<p>Material, smooth, rough, flexible, rigid, brittle, transparent, translucent, opaque, bend, squash, stretch, twist, waterproof</p>			<p>Magnetism, transparency, electrical conductivity, conductor, insulator, thermal conductivity</p>	

Electricity

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			<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>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><i>Understanding that materials can be grouped by the electrical conductivity.</i></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</p> <p>Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches</p> <p>Use recognised symbols when representing a simple circuit in a diagram</p>
			<p>Electricity, energy. Electrical, cell, battery, switch, bulb, conductor, insulator, electrical safety</p>		<p>Buzzer, incomplete circuit, voltage, current,</p>

Earth & Space

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Observe changes across the 4 seasons</p> <p>Observe and describe weather associated with the seasons and how day length varies</p>	<p>When discussing animal habitats notice how conditions on Earth can vary from place to place by identifying where on Earth these regions may be found.</p>	<p>While studying rocks, minerals, and soils, touch upon the Earth's crust being made from rock.</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>When studying light, revisit the concepts of Earth and Space by discussing how we see the Sun, Moon, and stars, and how light travels.</p>
				<p>Solar, system, planets, orbit, sun, moon, geocentric model, heliocentric model, rotate, axis, Earth, moon, gravitational force</p>	

Light & Sound

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Investigating the properties of materials and whether torch light can pass through them .	When discussing the properties of everyday materials, include how some materials allow light to pass through them (transparent), some do not (opaque), and some allow some light to pass (translucent)	<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 their eyes</p> <p>Recognise that shadows are formed when the light from a light source is blocked by an opaque object</p> <p>Find patterns in the way that the size of shadows change</p>	<p>Identify how sounds are made, associating some of them with something vibrating</p> <p>Recognise that vibrations from sounds 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</p> <p>Recognise that sounds get fainter as the distance from the sound source increases</p>	To understand night and day in terms of shadow and light from the sun.	<p>Recognise that light travels 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>
		transparent, translucent, opaque, light source, shadow	Vibration, volume, pitch, decibels, decibel metre		Iris, pupil, retina, lens . light source, ray diagram, angle, refraction, medium, lens, coloured filter, refraction

Forces & Magnets

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</p>	<p>Compare how things move on different surfaces</p> <p>Notice that some forces need contact between 2 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 2 poles predict whether 2 magnets will attract or repel each other, depending on which poles are facing</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>Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</p>	<p>When learning about electrical circuits, discuss how batteries provide a push (force) to move electricity around a circuit. This links back to the concept of forces and introduces how they are fundamental to understanding electricity.</p>
		<p>Magnet, magnetic, pole, opposite, attract, repel, friction, force</p>		<p>Friction, surface, air resistance, streamline, , variable, gravity, levers, pulleys, gears</p>	

States of matter

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Children explore how a substance can change through the melting and freezing of water.</p>		<p>While studying rocks and soils, touch upon the concept of changes in states of matter by discussing how rocks can change due to extreme heat and pressure, introducing the idea of matter changing states under different conditions.</p>	<p>Compare and group materials together, according to whether they are solids, liquids or gases</p> <p>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>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>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>Solid, liquid, gas, particle, volume, states of matter, flow, pouring solid, freezing, boiling, melting, condensing, evaporation Degrees Celsius, thermometer, stop watch, water cycle</p>	<p>Soluble, insoluble solution, dissolving, sieve, filtering, mixture, funnel, reversible, irreversible, chemical reactions, burning</p>	

Evolution

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					<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>Adaptation, variation, species, offspring, characteristics, inheritance, desirable characteristics adaptations</p>

Working Scientifically

EYFS	Key Stage 1	Lower Key Stage 2	Upper Key Stage Two
Show curiosity about objects, events and people. Question why things happen and how things work	Explore the world around them and raise their own simple questions.	Raise their own relevant questions about the world around them.	Use their scientific experiences to explore ideas and raise different kinds of questions.
Engage in open-ended activities	Experience different types of science enquiries, including practical activities.	Should be given a range of scientific experiences including different types of science enquiries to answer.	Talk about how science ideas have developed over time.
Take risks, engage in new experiences and learn by trial and error.	Begin to recognise different ways in which they might answer scientific questions.	Start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions.	Select and plan the most appropriate type of scientific enquiry to use to answer scientific questions
Find ways to solve problems/find new ways to do things/test out ideas.	Carry out simple tests.	Set up simple practical enquiries, comparative and fair tests.	Recognise when and how to set up comparative and fair tests and explain why variables need to be controlled and why.
Develop ideas about grouping, sequences, cause and effect.	Use simple features to compare objects, materials and living things and, with help decide how to sort and group them (identify and classify).	Recognise when a simple fair test is necessary and help others to decide how to set it up	
Know about similarities and differences in relation to places, objects and materials and living things.		Talk about criteria for grouping, sorting and classifying; and use simple keys.	Use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment.
Comment and ask questions about aspects of their familiar world such as the place they live or the natural world.	Ask people questions and use simple secondary sources to find answers.	Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations.	Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact.
Closely observes what animals, people and vehicles do. Uses senses to explore the world around them.	Observe closely using simple equipment. With help, observe changes over time.	Make systematic and careful observations. Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used	Make their own decisions about what observations to make, what measurements to use and how long to make them for.
Makes links and notices patterns in their experience.	With guidance, they should begin to notice patterns and relationships.	Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them.	Look at different causal relationships in their data and identify evidence that refutes or supports ideas.
Chooses the resources they need for their chosen activities. Handle equipment and tools effectively.	Use simple measurements and equipment (hand lenses, egg timers) to gather data.	Take accurate measurements using standard units. Learn how to use a range of (new) equipment, such as data loggers, thermometers appropriately.	Choose the most appropriate equipment to make measurements with increasing precision and explain how to use it accurately. Take repeat measurements where appropriate.
Create simple representations of events, people and objects.	Record simple data	Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units,	Decide how to record data and results of increasing complexity from a choice of familiar approaches: scientific diagrams and labels,

		drawings, labelled diagrams, keys and help to make decisions about how to analyse this data.	classification keys, tables, scatter graphs, bar and line graphs.
Answer how and why questions about their experiences.	Use their observations and ideas to suggest answers to questions.	With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions.	Identify scientific evidence that has been used to support or refute ideas or arguments.
Make observations of animals and plants and explain why some things occur, and talk about changes.	Talk about what they have found out and how they found it out.	Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions.	Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas. Use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degree of trust in results.
Develop their own narratives and explanations by connecting ideas and events.	With help, they should record and communicate their findings in a range of ways and begin to use simple scientific language.	With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done.	Use their results to make predictions and identify when further observations, comparative and fair tests might be needed.
Build up vocabulary that reflects the breadth of their experiences.			