



Malvern Parish CE Primary School

Long Term Curriculum Plan

(Year 3 and Year 4)

Science

KS2 - National Curriculum Overview

Working Scientifically

- Across all year groups scientific knowledge and skills should be learned by working scientifically

Biology – Plants

- Look at the function of parts of flowering plants, requirements of growth, water transportation in plants, life cycles and seed dispersal.

Biology - Evolution and inheritance

- Look at resemblance in offspring.
- Look at changes in animals over time.
- Look at adaptation to environments.
- Look at differences in offspring.
- Look at adaptation and evolution.
- Look at changes to the human skeleton over time.

Biology - Animals and humans

- Look at nutrition, transportation of water and nutrients in the body, and the muscle and skeleton system of humans and animals.
- Look at the digestive system in humans.
- Look at teeth.
- Look at the human circulatory system.

Biology - All living things

- Identify and name plants and animals
- Look at classification keys.
- Look at the life cycle of animals and plants.
- Look at classification of plants, animals and micro-organisms.
- Look at reproduction in plants and animals, and human growth and changes.
- Look at the effect of diet, exercise and drugs.
- Identify, classify and describe their basic structure
- Observe and describe growth and conditions for growth

Chemistry – Rocks and fossils

- Compare and group rocks and describe the formation of fossils.

Chemistry - States of matter

- Look at solids, liquids and gases, changes of state, evaporation, condensation and the water cycle.

Chemistry - Materials

- Examine the properties of materials using various tests.

- Look at solubility and recovering dissolved substances.
- Separate mixtures.
- Examine changes to materials that create new materials that are usually not reversible.

Physics – Light

- Look at sources, seeing, reflections and shadows.
- Explain how light appears to travel in straight lines and how this affects seeing and shadows.

Physics - Sound

- Look at sources, vibration, volume and pitch.

Physics - Electricity

- Look at appliances, circuits, lamps, switches, insulators and conductors.
- Look at circuits, the effect of the voltage in cells and the resistance and conductivity of materials.

Physics - Forces and magnets

- Look at contact and distant forces, attraction and repulsion, comparing and grouping materials.
Look at poles, attraction and repulsion.
- Look at the effect of gravity and drag forces.
- Look at transference of forces in gears, pulleys, levers and springs.

Physics - Earth and space

- Look at the movement of the Earth and the Moon
- Explain day and night

Concept	LKS2 Milestones for Progress
Working scientifically	<ul style="list-style-type: none"> • Ask relevant questions. • Set up simple, practical enquiries and comparative and fair tests. • Make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers. • Gather, record, classify and present data in a variety of ways to help in answering questions. • Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables. • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests. • Identify differences, similarities or changes related to simple, scientific
Biology – Understand plants	<ul style="list-style-type: none"> • Identify and describe the functions of different parts of flowering plants: roots, stem, leaves and flowers. • 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. • Investigate the way in which water is transported within plants. • Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.
Biology – Understand animals and humans	<ul style="list-style-type: none"> • Identify that animals, including humans, need the right types and amounts of nutrition, that they cannot make their own food and they get nutrition from what they eat. • Construct and interpret a variety of food chains, identifying producers, predators and prey.

	<ul style="list-style-type: none"> • Identify that humans and some animals have skeletons and muscles for support, protection and movement. • Describe the simple functions of the basic parts of the digestive system in humans. • Identify the different types of teeth in humans and their simple functions.
Biology – Investigate living things	<ul style="list-style-type: none"> • Recognise that living things can be grouped in a variety of ways. • Explore and use classification keys. • Recognise that environments can change and that this can sometimes pose dangers to specific habitats.
Chemistry – Investigate materials	<p>Rocks and Soils</p> <ul style="list-style-type: none"> • Compare and group together different kinds of rocks on the basis of their simple, physical properties. • Relate the simple physical properties of some rocks to their formation (igneous or sedimentary). • Describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock. • Recognise that soils are made from rocks and organic matter. <p>States of Matter</p> <ul style="list-style-type: none"> • 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 the temperature at which this happens in degrees Celsius (°C), building on their teaching in mathematics. • identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.
Physics – Understand movement, forces and magnets	<ul style="list-style-type: none"> • Compare how things move on different surfaces. • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others. • 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. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing.
Physics – understand light and seeing	<ul style="list-style-type: none"> • Recognise that they need light in order to see things and that dark is the absence of light. • Notice that light is reflected from surfaces. • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. • Recognise that shadows are formed when the light from a light source is blocked by a solid object. • Find patterns in the way that the size of shadows change.
Physics – understand sound and hearing	<ul style="list-style-type: none"> • Identify how sounds are made, associating some of them with something vibrating. • Recognise that vibrations from sounds travel through a medium to the ear.
Physics – understand electrical circuits	<ul style="list-style-type: none"> • Identify common appliances that run on electricity. • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. • 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. • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. • Recognise some common conductors and insulators, and associate metals with being good conductors.

CYCLE A**Key Knowledge and Vocabulary to be taught**

Autumn	Spring	Summer
Substantive Knowledge	Substantive Knowledge	Substantive Knowledge
<ul style="list-style-type: none"> • 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). • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature • Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others. • 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. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing. 	<ul style="list-style-type: none"> • Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. • Recognise that soils are made from rocks and organic matter 	<ul style="list-style-type: none"> • Identify and describe the functions of different parts of flowering plants: roots; stem/trunk; leaves; and flowers. • 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. • Investigate the way in which water is transported within plants. • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. • Recognise that living things can be grouped in a variety of ways. • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. • Recognise that environments can change and that this can sometimes pose dangers to living things.
Disciplinary Knowledge	Disciplinary Knowledge	Disciplinary Knowledge
Observation over time – melting and freezing Making Predictions Measuring and Observing	Identify/classify/group Asking questions Research	Setting up tests – colour water Interpreting and communicating Comparative/fair test
Vocabulary	Vocabulary	Vocabulary
Solid, liquid, gas, evaporation, water cycle, melting, freezing, temperature	Rock, fossil, soil, marble, chalk, granite, sandstone, slate, peat, layers	Photosynthesis, pollen, pollination, dispersal, classification, habitat, environment, migrate, hibernate

Force, poles, magnet, attract, repel		
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CYCLE B		
Key Knowledge and Vocabulary to be taught		
Autumn	Spring	Summer
Substantive Knowledge	Substantive Knowledge	Substantive Knowledge
<ul style="list-style-type: none"> 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. Identify that humans and some other animals have skeletons and muscles for support, protection and movement. Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions. Construct and interpret a variety of food chains, identifying producers, predators and prey. 	<ul style="list-style-type: none"> Recognise that they need light in order to see things, and that dark is the absence of light. Notice that light is reflected from surfaces. Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. Recognise that shadows are formed when the light from a light source is blocked by an opaque object. Find patterns in the way that the size of shadows change. 	<ul style="list-style-type: none"> Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sounds travel through a medium to the ear. Find patterns between the pitch of a sound and features of the object that produced it. 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. Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. 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. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors.
Disciplinary Knowledge	Disciplinary Knowledge	Disciplinary Knowledge
Recording data – skeleton Evaluating	Pattern seeking Observation over time Recording data	Pattern seeking Making predictions Setting tests
Vocabulary	Vocabulary	Vocabulary
Nutrition, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, skeleton, mouth,	Light, dark, transparent, translucent, opaque, shadow, reflect, sunlight, light source	Vibration, sound, pitch, volume, electricity, circuit, conductor, insulator, connection, battery, bulb, switch

teeth, saliva, oesophagus, stomach, small intestine, large intestine, rectum, anus		
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