



Malvern Parish CE Primary School

Long Term Curriculum Plan

(Year 5 and Year 6)

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

CYCLE A

Key Knowledge and Vocabulary to be taught

Autumn	Spring	Summer
Substantive Knowledge	Substantive Knowledge	Substantive Knowledge
<ul style="list-style-type: none"> • Describe the differences in the life cycles of a mammal (whale/dolphin), an amphibian (salamander), an insect (water boatman) and a bird (puffin) <ul style="list-style-type: none"> ○ Animals including have offspring which grow in to adults ○ Some animals lay eggs, some have live young, some go through metamorphosis • Describe the life processes of reproduction in some plants and animals <ul style="list-style-type: none"> ○ Living things reproduce 	<ul style="list-style-type: none"> • Describe the movement of the Earth, and other (8) planets, relative to the Sun (a star) in the solar system <ul style="list-style-type: none"> ○ Move in fixed orbits ○ 365 ¼ days to complete earth’s orbit ○ Earth spins on it’s axis every 24 hours • Describe the movement of the Moon relative to the Earth <ul style="list-style-type: none"> ○ Moon orbits Earth – 28 days • Describe the Sun, Earth and Moon as approximately spherical bodies 	<ul style="list-style-type: none"> • A force causes an object to start moving, stop moving, speed up, slow down or change direction. • Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object <ul style="list-style-type: none"> ○ Gravity acts on objects at a distance • Identify the effects of air resistance, water resistance and friction that act between moving surfaces <ul style="list-style-type: none"> ○ These forces act between moving/moving or moving/stationary surfaces

<ul style="list-style-type: none"> ○ Animals – sexual reproduction (two parents, male sperm fertilize female egg) ○ Plants – sexual (pollination) and asexual reproduction (bulbs, tubers, runners, plantlets = one parent) ● Describe how living things are classified into broad groups by common observable characteristics (including micro-organisms, plants and animals) <ul style="list-style-type: none"> ○ Plants/animals/micro-organisms ○ Vertebrates/invertebrates ○ Flowering/non-flowering ● Give reasons for classifying based on specific characteristics 	<ul style="list-style-type: none"> ● Use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky. 	<ul style="list-style-type: none"> ● Recognise that some mechanisms, including levers, pulleys and gears (simple machines), allow a smaller force to have a greater effect. ● Recognise that light appears to travel in straight lines ● 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 ● 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 ● Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
Disciplinary Knowledge	Disciplinary Knowledge	Disciplinary Knowledge
Pattern seeking – Look for patterns between the size of an animal and its expected life span Working Scientifically: making predictions – Compare the gestation times for mammals and look for patterns	Observation over time – how shadows caused by the sun change throughout the day Working Scientifically: asking questions – pose scientifically relevant questions about the views of scientists in the past and research answers Working Scientifically: measuring	Comparative test – parachutes and air resistance Working Scientifically: evaluating – what worked/didn’t Working Scientifically: recording
Vocabulary	Vocabulary	Vocabulary
Life cycle; reproduce; sexual; sperm; fertilizes; egg; metamorphosis; asexual; vertebrates; invertebrates; flowering; non-flowering	Earth; Sun; Moon; spherical; solar system; rotates; star; orbit; planets	Force; gravity; Earth; air resistance; water resistance; friction; mechanisms; simple machines; levers; pulleys; gears; light; straight lines; ray

CYCLE B		
Key Knowledge and Vocabulary to be taught		
Autumn 1	Spring 1	Summer 1
Substantive Knowledge	Substantive Knowledge	Substantive Knowledge
<ul style="list-style-type: none"> ● Describe the changes as humans develop to old age ● Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood 	<ul style="list-style-type: none"> ● 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 	<ul style="list-style-type: none"> ● Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (thermal), and response to magnets ● Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution

<ul style="list-style-type: none"> • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • Describe the ways in which nutrients and water are transported within animals, including humans. • Recognise that living things have changed over time and that fossils provide information about living things that inhabited the earth millions of years ago • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. 	<ul style="list-style-type: none"> • Use recognised symbols when representing a simple circuit in a diagram. • Compare and group together everyday materials on the basis of conductivity 	<ul style="list-style-type: none"> • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • Demonstrate that dissolving, mixing and changes of state are reversible changes • 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
Disciplinary Knowledge	Disciplinary Knowledge	Disciplinary Knowledge
Fair Test – effect of different activities on pulse rate Identify and classify – parents and offspring Working scientifically: interpreting and communicating – create role play of circulatory system	Identify and Classify - Compare and group together everyday materials Working Scientifically: making predictions	Comparative Test - Investigate rates of dissolving by carrying out comparative and fair test. Working Scientifically: observing - Explore a range of non-reversible changes e.g. rusting, adding fizzy tablets to water, burning
Vocabulary	Vocabulary	Vocabulary
Puberty; heart; pulse; blood: blood vessels; lungs; oxygen; carbon dioxide; nutrients; circulatory system; offspring; variation; adapted; inherited	Circuit; voltage; components; conductor; insulator	Change of state; mixture; dissolve; solution; soluble; insoluble; reversible; irreversible; filter