



**Horsington Church School**  
A Bath and Wells Academy



**'That they may have life, life in all its fullness' John 10:10**

## Science Intent

Science teaching at Horsington Church School aims to give all children a strong understanding of the world around them whilst acquiring specific skills and knowledge to help them to think scientifically, to gain an understanding of scientific processes and also an understanding of the uses and implications of Science, today and for the future.

Themes, such as materials and their properties, are taught in Key Stage One and studied again in further detail throughout Key Stage Two. This model allows children to build upon their prior knowledge and increases their enthusiasm for the topics whilst embedding this procedural knowledge into the long-term memory.

All children are encouraged to develop and use a range of skills including observations, planning and investigations, as well as being encouraged to question the world around them and become independent learners in exploring possible answers for their scientific based questions. Specialist vocabulary for topics is taught and built up, and effective questioning to communicate ideas is encouraged. Concepts taught should be reinforced by focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions

In Science often the most important feature of the lesson is the practical activity and the discussion rather than a written outcome.

# Science Progression

## Years 1 & 2

<b>Unit: Working Scientifically</b> (Taught throughout each unit)	
Pupils should be taught to:	
<ul style="list-style-type: none"> <li>• Asking simple questions and recognising that they can be answered in different ways.</li> <li>• Observing closely, using simple equipment</li> <li>• Performing simple tests</li> <li>• Identifying and classifying</li> <li>• Using their observations and ideas to suggest answers to questions</li> <li>• Gathering and recording data to help in answering questions</li> <li>• Pupils should read and spell scientific vocabulary at a level consistent with their increasing word and spelling knowledge at KS1</li> </ul>	
<b>Unit: Plants</b>	
<b>Year 1</b>	<b>Year 2</b>
<ul style="list-style-type: none"> <li>• Identify and name a variety of common wild &amp; garden plants including deciduous and evergreen trees.</li> <li>• Identify and describe the basic structure of a variety of common flowering plants including trees.</li> </ul>	<ul style="list-style-type: none"> <li>• Observe and describe how seeds and bulbs grow into mature plants.</li> <li>• Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</li> </ul>
<b>Vocabulary:</b> Leaves, trunk, branch, root, seed, bulb, flower, stem, wild, garden, deciduous, evergreen, observe, grow, compare, record, temperature, predict, measure, diagram, germinate, warmth, sunlight.	
<b>Unit: Animals including Humans</b>	
<b>Year 1</b>	<b>Year 2</b>
<ul style="list-style-type: none"> <li>• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</li> <li>• Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</li> <li>• Describe and compare the structure of a variety of common animals, inc pets.</li> <li>• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</li> </ul>	<ul style="list-style-type: none"> <li>• Notice that animals, including humans, have offspring, which grow in to adults.</li> <li>• Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).</li> <li>• Describe the importance for humans of exercise, eating the right amount of different types of food and hygiene.</li> </ul>
<b>Vocabulary:</b> Living, dead, never alive, habitats, micro-habitats, food, food chain, leaf litter, shelter, sea shore, woodland, ocean, rainforest, conditions, desert, damp, shade, amphibians, birds, fish, mammals, reptiles, carnivores, herbivore, omnivore, sight, hearing,	

touch, taste, smell, head, neck, ear, mouth, shoulder, hand, fingers, leg, foot, thumb, eye, nose, knee, toes, teeth, elbow

### **Unit: Living things and habitats**

- Explore and compare the differences between things that are living, dead and things that have never been alive.
- 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.
- Identify and name a variety of plants and animals in their habitats, including micro-habitats.
- 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.

**Vocabulary:** Living, dead, never alive, habitats, micro-habitats, food, food chain, leaf litter, shelter, seashore, woodland, ocean, rainforest, conditions, desert, damp, shade.

### **Unit: Everyday materials**

#### **Year 1**

- Distinguish between an object and the material from which it is made.
- Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock.
- Describe the simple physical properties of a variety of everyday materials.
- Compare and group together a variety of everyday materials on the basis of their simple physical properties.

#### **Year 2**

- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
- Find out how the shape of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

**Vocabulary:** Fabric, rubber, cars, rock, paper, cardboard, wood, metal, plastic, glass, brick, twisting, squashing, bending, matches, cans, spoons, hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy/not bendy, waterproof/not waterproof, absorbent, opaque.

### **Unit: Seasonal changes**

- Observe changes across the four seasons.
- Observe and describe weather associated with the seasons and how day length varies.

**Vocabulary:** Seasons, spring, summer, autumn, winter, windy, sunny, overcast, snow, rain, temperature

## Years 3 & 4

### Unit: Working Scientifically (Taught throughout each unit)

Pupils should be taught to:

- Asking relevant questions and using different types of scientific enquiries to answer them.
- Using straight forward scientific evidence to answer questions or to support their findings
- Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.
- Setting up simple practical enquiries, comparative and fair tests
- Identifying difference, similarities or changes related to simple scientific ideas and processes.
- Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.
- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.
- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
- Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

### Unit: Plants

- Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.
- Explore the requirements of plants for life & growth (air, light, water, nutrients from soil, & room to grow) & 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 a flowering plant, including pollination, seed formation and seed dispersal.

**Vocabulary:** Air, light, water, nutrients, soil, support, anchor, reproduction, pollination, dispersal, transportation, flower, energy, growth, seedling, carbon dioxide, oxygen, sugar, material, photosynthesis, chlorophyll.

### Unit: Animals including Humans

#### Year 3

- 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 animals have skeletons and muscles for support, protection and movement.

#### Year 4

- Construct and interpret a variety of food chains, identifying producers, predators and prey.
- 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.

**Vocabulary:** Nutrients, nutrition, carbohydrates, protein, fats, vitamins, minerals, water, fibre, skeleton, bones, joints, endoskeleton, exoskeleton, hydrostatic skeleton, vertebrates, invertebrates, muscles, contract, relax, herbivore, Carnivore, Digestive system, tongue, mouth, teeth, oesophagus, stomach, gall bladder, small intestine, pancreas, large intestine, liver, tooth, canine, incisor, molar, premolar, producer, consumer.

### **Unit: Living things and habitats**

- Recognise that living things can be grouped in a variety of ways.
- Explore and use classification keys to help group, identify & name a variety of living things in their local environment.
- Recognise that environments can change and that this can sometimes pose dangers to living things.

**Vocabulary:** Environment, flowering, nonflowering, plants, animals, vertebrates, fish, amphibians, reptiles, mammals, invertebrate, human impact, nature reserves, deforestation.

### **Unit: Rocks**

- 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.

**Vocabulary:** Rocks, igneous, metamorphic, sedimentary, anthropic, permeable, impermeable, chemical fossil, body fossil, trace fossil, Mary Anning, cast fossil, mould fossil, replacement fossil, extinct, organic matter, top soil, sub soil, base rock.

### **Unit: State of matter**

- 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.
- Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

**Vocabulary:** Solid, liquid, gas, particles, state, materials, properties, matter, melt, freeze, water, ice, temperature, process, condensation, evaporation, water vapour, energy, precipitation, collection.

### **Unit: Light**

- 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.

**Vocabulary:** Light source, dark, reflect, ray, mirror, bounce, visible, beam, sun, glare, travel, straight, opaque, shadow, block, transparent, translucent.

### **Unit: Sound**

- Identify how sounds are made, associating some of them with something vibrating.

- Recognising 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 produce it.
- Recognised that sounds get fainter as the distance from the sound increases.

**Vocabulary:** Amplitude, volume, quiet, loud, ear, pitch, high, low, particles, instruments, wave.

## **Unit: Forces and Magnets**

- 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.

**Vocabulary:** Force, push, pull, friction, surface, magnet, magnetic, magnetic field, pole, north, south, attract, repel, compass.

## **Unit: Electricity**

- Identify common appliances that run on electricity.
- Construct a simple series electrical circuit and name its basic parts, including cells, wires, bulbs, switches and buzzers.
- Identify whether or not a lamp will light in a simple circuit, based on whether or not the lamp is part of a completed 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 circuit.
- Recognise some common conductors and insulators and associate metals with being good conductors.

**Vocabulary:** Electricity, electric current, appliances, mains, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch, conductor, electrical insulator, component.

## Years 5 & 6

<b>Unit: Working Scientifically</b> (Taught throughout each unit)	
Pupils should be taught to:	
<ul style="list-style-type: none"> <li>• Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</li> <li>• Identifying scientific evidence that has been used to support or refute ideas or arguments.</li> <li>• Taking measurements using a range of scientific equipment, with increasing accuracy and precision, taking repeat findings where necessary.</li> <li>• Using test results to make predictions to set up further comparative and fair tests.</li> <li>• Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs.</li> <li>• Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral, written forms such as displays and other presentations.</li> <li>• Pupils should read, spell and pronounce scientific vocabulary correctly.</li> </ul>	
<b>Unit: Animals including humans</b>	
<b>Year 5</b>	<b>Year 6</b>
<ul style="list-style-type: none"> <li>• Describe the changes as humans develop from birth to old age.</li> </ul>	<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>• Recognised the impact of diet, exercises, drugs and lifestyle on the way their bodies function.</li> </ul>
<p><b>Vocabulary:</b> Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty, Hormone, Physical, Emotional, Sexual, Asexual, Pollination, Dispersal, reproduction, cell, fertilisation, pollination, male, female, pregnancy, young, mammal, metamorphosis, amphibian, insect, egg, embryo, bird, plant, Oxygenated, Deoxygenated, Valve, Exercise, Respiration Circulatory system, heart, lungs, blood vessels, blood, artery, vein, pulmonary, alveoli, capillary, digestive, transport, gas exchange, villi, nutrients, water, oxygen, alcohol, drugs, tobacco.</p>	
<b>Unit: Living things and habitats</b>	
<b>Year 5</b>	<b>Year 6</b>
<ul style="list-style-type: none"> <li>• Describe the difference in the life cycle 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>	<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>

**Vocabulary:** Variation Organisms Populations. Classification Characteristics Environment, flowering, nonflowering, plants, animals, vertebrates, fish, amphibians, reptiles, mammals, invertebrate, human impact, nature reserves, deforestation. Classify, compare, bacteria, microorganism, organism, invertebrates, vertebrates, Linnaean.

### **Unit: Evolution and inheritance**

- 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.

**Vocabulary:** Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics, Variation, Inherited, Environmental, Mutation, Competition, Survival of the Fittest, Evidence.

### **Unit: Properties and changes of materials**

- 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.
- Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from the solution.
- 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 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.

**Vocabulary:** Solid, liquid, gas, particles, state, materials, properties, matter, melt, freeze, water, ice, temperature, process, condensation, evaporation, water vapour, energy, precipitation, collection,

### **Unit: Light**

- 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 a light source 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 objects that cast them.

**Vocabulary:** Light source, dark, reflect, ray, mirror, bounce, visible, beam, sun, glare, travel, straight, opaque, shadow, block, transparent, translucent. Reflect Absorb Emitted Scattered Refraction

### **Unit: Forces**



- Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the Falling object
- Identify the effect of air resistance and friction that act between moving surfaces
- Recognised that some mechanisms, including levers, pulleys and gears, allow a smaller force to have greater effect.

**Vocabulary:** Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys, force, push, pull, opposing, streamline, brake, mechanism, lever, cog, machine, pulley.

### **Unit: Earth and Space**

- Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.
- Describe the movement of the Moon relative to the Earth.
- Describe the Earth, Sun and Moon as approximate spherical bodies.
- Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.

**Vocabulary:** Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, star, constellation, waxing, waning, crescent, gibbous. Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, planets, solar system, day, night, rotate, orbit, axis, spherical, geocentric, heliocentric.

### **Unit: Electricity**

- 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 reason 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.

**Vocabulary:** Electricity, neutrons, protons, electrons, nucleus, atom, electric current, appliances, mains, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch, conductor, electrical insulator, conductor.