



Whiston Willis Primary Academy

Curriculum Progression
Subject: Science

Cycle A Topics		Cycle B Topics	Working Scientifically
Year 1 and 2	<p><u>ANIMALS INCLUDING HUMANS</u></p> <p>YEAR 1</p> <ul style="list-style-type: none"> Identify and name a variety of common animals that are birds, fish, amphibians, reptiles and mammals. Identify and name a variety of common animals that are carnivores, herbivores and omnivores. Describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles and mammals, and including pets). Identify, name draw and label the basic parts of the human body and say which parts of the body is associated with each sense. <p>YEAR 2</p> <ul style="list-style-type: none"> Notice that animals, including humans, have offspring which grow into adults. Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. <p><u>MATERIALS</u></p> <p>YEAR 1 (EVERYDAY MATERIALS)</p>	<p><u>PLANTS</u></p> <p>YEAR 1</p> <ul style="list-style-type: none"> Identify and name a variety of common plants, including garden plants, wild plants and trees, and those classified as deciduous and evergreen. Identify and describe the basic structure of a variety of common plants including roots, stem/trunk, leaves and flowers. <p>YEAR 2</p> <ul style="list-style-type: none"> Observe and describe how seeds and bulbs grow into mature plants. Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. <p><u>SEASONAL CHANGE</u></p> <p>YEAR 1</p> <ul style="list-style-type: none"> Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies. <p><u>LIVING THINGS AND THEIR HABITATS</u></p> <p>YEAR 2</p>	<p>The following opportunities for working scientifically should be provided across Years 1 and 2 so that the expectations in the programme of study can be met by the end of Year 2. Pupils are not expected to cover each aspect for every area of study.</p> <p>Asking questions – Children should ask simple questions and recognise that they can be answered in different ways.</p> <p>Scientific enquiries – They should be able to do the following types of enquiry:</p> <ul style="list-style-type: none"> Observations. They should observe closely, using simple equipment. Simple tests Identifying and classifying Secondary sources. They should use simple secondary sources to find answers. <p>Recording – They should gather and record data to suggest answers to their questions. With help, they should record in a range of ways and begin to use simple scientific language.</p> <p>Analysing observations – They should use their observations and ideas to suggest answers to questions. They should notice patterns and relationships in their observations. They should talk about what they have found out and how they found out.</p>

- Distinguish between an object and the material from which it is made.
- Identify and name a variety of everyday materials, including wood, plastic, glass, 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 physical properties.

YEAR 2 (USES OF EVERYDAY MATERIALS)

- 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 shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

- 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.

MATERIALS

YEAR 4 (STATES 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 (°C).
- Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

FORCES

YEAR 3 (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.

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

- 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.

MATERIALS

YEAR 3 (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.

The following opportunities for working scientifically should be provided across Years 3 and 4 so that the expectations in the programme of study can be met by the end of Year 4. Pupils are **not** expected to cover each aspect for every area of study.

Raising Questions – They should be given a range of scientific experiences to enable them to raise their own questions about the world around them.

Choosing a suitable scientific enquiry – They should start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions.

Observations – They should help to make decisions about what observations to make, how long to make them for. They should make systematic and careful observations.

Fair testing – Recognise when a simple fair test is necessary.

Sorting and classifying – Talk about the criteria for grouping, sorting and classifying and use simple keys.

Secondary sources – They should recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations.

Choosing equipment – They should help to make decisions about the type of simple equipment that might be used. They should learn how to use new equipment, such as a data loggers and thermometers, appropriately.

Collecting data – They should collect data from their own observations and measurements.

LIVING THINGS AND THEIR HABITATS

YEAR 4

- 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.

SOUND

YEAR 4

- Identify how sounds are made, associating some of them with something vibrating.
- Recognise that vibrations from a sound 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.

ELECTRICITY

PLANTS

YEAR 3

- Identify and describe the functions of different parts of 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 ways 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.

LIGHT

YEAR 3

- 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 sizes of shadows change.

Measuring – They should use standard units.

Recording – They should make decisions as to how to record. They should record in notes, drawings, labelled diagrams, bar charts and simple tables. Pupils should use relevant scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences.

Analysing data – They should make decisions as to how to analyse the data. They should begin to look for patterns and decide what data to collect to identify them. With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions. With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected.

Making improvements – They should find ways of improving what they have already done.

YEAR 4

- 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.

LIVING THINGS AND THEIR HABITATS

YEAR 5

- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.
- Describe the life process of reproduction in some plants and animals.

YEAR 6

- 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.
- Give reasons for classifying plants and animals based on specific characteristics.

ELECTRICITY

YEAR 6

- 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

ANIMALS INCLUDING HUMANS

YEAR 5

- Describe the changes as humans develop from birth to old age.

YEAR 6

- Identify and name the main parts of the human circulatory system, and explain the functions of the heart, blood vessels and blood.
- 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.

FORCES

YEAR 5

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

These opportunities for working scientifically should be provided across years 5 and 6 so that the expectations in the programme of study can be met by the end of year 6. Pupils are **not** expected to cover each aspect for every area of study.

Planning enquires – Children should plan different types of enquiry to answer questions.

Identifying variables – Children should recognize and control variables where necessary.

Secondary sources – Children should recognize when secondary sources will be most useful to research their ideas and begin to separate opinion from fact.

Using equipment – They should choose the most appropriate equipment. Children should take measurements, using a range of scientific equipment with increasing accuracy and precision.

Collecting data – They should make their own decisions about what observations to make, what measurements to use, and how long make them for.

Recording – They should choose how to record data. Children should record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs. They should report and present findings from enquires, including conclusions, causal relationships and explanations of results (in oral and written forms).

bulbs, the loudness of buzzers and the on/off position of switches.

- Use recognised symbols when representing a simple circuit in a diagram.

LIGHT

YEAR 6

- 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.

EVOLUTION AND INHERITANCE

YEAR 6

- Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.

MATERIALS

YEAR 5 (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.
- Understand that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a 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 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.

EARTH AND SPACE

YEAR 5

Analysing data – Children should use test results to make predictions to set up further comparative and fair test. They should use simple models to describe scientific ideas. They should identify scientific evidence that has been used to support or refute ideas or arguments.

Making Improvements – They should use their results to identify when further tests and observations might be needed

	<ul style="list-style-type: none">• 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">• 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 Sun, Earth and Moon as approximately 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.	
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