Science
Curriculum Coverage for EYFS, KS1 and KS2

Reception

Out in the Garden

To explore the natural world.

- I can talk about how to care for the natural world.
- I can draw pictures of the natural world (including plants and animals.)
- I can observe and talk about natural processes such as ice melting, a sound causing a vibration, light travelling through transparent material, an object casting a shadow, a magnet attracting an object and boat floating water.

To describe what they see hear and feel around us.

- I can observe the world around me and talk about what I see.
- I can name some plants and animals that live in the school grounds.
- I can name plants and animals that live in the local environment.

To understand the effect of changing seasons on the natural world around them.

- I can name the seasons.
- I can name different types of weather.
- I can record/ makes notes what the weather is like.
- I can observe seasonal changes.
- I can talk about seasonal changes.

Year One

The 5 Senses

Children will gain the knowledge and of the human body and senses to be able to describe how they use their senses, identifying which body parts help them.

National Curriculum Statutory Requirement

- identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.

Working Scientifically Statements

- asking simple questions and recognising that they can be answered in different ways observing closely, using simple equipment performing simple tests
- Using their observations and ideas to suggest answers to questions

Everyday Materials

Children will investigate and describe which materials will be best for a purpose (e.g an umbrella).

National Curriculum Statutory Statements

- 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.

Working Scientifically Statutory Statements

- identifying and classifying
- using their observations and ideas to suggest answers to questions
- performing simple tests

Animals Including Humans

Children will acquire knowledge about a variety of animals and will be able to answer the question "What animals will we find in our local environment?" making sensible predictions and identifying the name and type of a variety of animals that they find.

National Curriculum Statutory Statements

- identify and name a variety of common animals including fish, amphibians, reptiles, birds 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 (fish, amphibians, reptiles, birds and mammals, including pets)

Working Scientifically Statutory Statements

- identifying and classifying
- using their observations and ideas to suggest answers to questions

Plants

Children will acquire the knowledge and skills about plants to make informed predictions about what they will find, and then record by producing a simple map of plants in the school garden.

National Curriculum Statutory Statements

- identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
- identify and describe the basic structure of a variety of common flowering plants, including trees

Working Scientifically Statutory Statements

- identifying and classifying
- using their observations and ideas to suggest answers to questions

Trees

Children will acquire knowledge about trees to be able to name its key parts and compare and contrast a variety of trees. N.B. Plants will have been studied in the prior half-term.

National Curriculum Statutory Statements

- identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
- identify and describe the basic structure of a variety of common flowering plants, including trees

Working Scientifically Statutory Statements

- Observing closely, using simple equipment
- Identifying and classifying
- Using their observations and ideas to suggest answers to questions

The Seasons

Children will learn about seasonal changes and will be able to describe the differences in seasons throughout the year.

National Curriculum Statutory Statements

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

Working Scientifically Statutory Statements

- observing closely, using simple equipment
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions.

Year Two

Animals: Needs and Lifecycles

Children will apply knowledge about the needs of humans, animals and a variety of life cycles to carry out their own scientific research.
It builds on the Animals unit taught in Year 1. It should recap some of the learning from Year 1 when children learnt to identify animals from different groups including mammals, fish, amphibians, birds and reptiles; this knowledge should be consolidated where possible.

National Curriculum Statements

Pupils should be taught to:

- 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)

Working Scientifically Statements

- using their observations and ideas to suggest answers to questions

Animals: Food and Exercise

Children will learn about different food groups, hygiene and exercise in order to make an informed response to the question "What do I have to do to stay healthy?"
This unit builds on Year 1 learning where children found out about the function and use of different body parts associated with the five senses (this should be revised as a starter to Lesson 1).

National Curriculum Statements:

Pupils should be taught to:

- describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

Working Scientifically Statutory Requirements

- gathering and recording data to help in answering questions.

Plants

Children will acquire the knowledge and skills about plants to make a video guide for growing plants that can be added to the school website.

National Curriculum Statutory Statements

Pupils should be taught to:

- **Pupils should be taught to:**
  - 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.

Working Scientifically Statutory Statements

- Performing simple tests
- using their observations and ideas to suggest answers to questions

Living things and their habitat

Children will use knowledge and skills learnt throughout the unit to research and create a fact file about an animal.

National Curriculum Statements

Pupils should be taught to:

- 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 microhabitats
- 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

Working Scientifically Statements

- asking simple questions and recognising that they can be answered in different ways
- identifying and classifying
- using their observations and ideas to suggest answers to questions

Everyday Materials

Children will acquire the knowledge and skills to describe the function and qualities of a wide variety of everyday materials.

National Curriculum Statutory Statements

Pupils should be taught to:

- **Pupils should be taught to:**
  - 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.

Working Scientifically Statutory Statements

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- identifying and classifying

Year Three

Rocks

Children will apply knowledge about rocks, fossils and soil to plan and carry out an independent investigation.
This unit builds from Year 2, where children categorise and compared a range of materials, including rock.

National Curriculum Statutory Requirements

Pupils should be taught to:

- 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
- Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties

Working Scientifically Statutory Requirements

- setting up simple practical enquiries, comparative and fair tests
- identifying differences, similarities or changes related to simple scientific ideas and processes

Forces and Magnets

Children will work practically to gain skills and knowledge to be able to identify and describe the effect of magnetism and a variety of forces.

National Curriculum Statutory Requirements

Pupils should be taught to:

- compare how things move on different surfaces
- notice that some forces need contact between 2 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 2 poles
- predict whether 2 magnets will attract or repel each other, depending on which poles are facing

Working Scientifically Statements

- Setting up simple practical enquiries, comparative and fair tests
- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables

Animals including Humans

Children will gain skills and knowledge to be able to present a short video answering key questions relating to food, nutrition and the human body.

National Curriculum Statutory Requirements

Pupils should be taught to:

- 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.

Working Scientifically Statements

- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.

Light

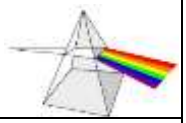
Children will gain skills and knowledge to be able to identify and describe whether or not an object is a light source and how an object's properties will affect whether it will cast light. They will use their knowledge of light to make predictions and carry out an investigation examining how shadows are formed.

National Curriculum Statutory Requirements

Pupils should be taught to:

- 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.

Working Scientifically Statements



- Setting up simple practical enquiries, comparative and fair tests
- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables

Plants

Children will acquire the knowledge and skills to describe in detail how a plant in their classroom has grown.

National Curriculum Statutory Statements

Pupils should be taught to:

- **Pupils should be taught to:**
  - 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

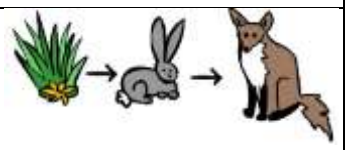
Working Scientifically Statutory Statements

- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes

Year Four

Animals including Humans

Children will acquire knowledge and skills to accurately identify and categorise producers, predators and prey and create food chains in a variety of ways. They will also be able to recognise and describe the function of different teeth and the digestive system.



- 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

Working Scientifically Objectives

- Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- Using straightforward scientific evidence to answer questions or to support their findings.

Living Things and Habitats

Children will acquire knowledge and skills learning about living things and habitats to carry out a case study of a local area, considering what creatures live there and the effect of the local environment.

- 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

Working Scientifically Objectives

- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

Electricity

Children will acquire knowledge and skills throughout the unit to create a presentation about electricity that can be shown on the school website.

- 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

Working Scientifically Statements

- setting up simple practical enquiries, comparative and fair tests
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

States of Matter

Children will gain skills and knowledge to be able to create a presentation where they share knowledge about states of matter with an audience (Y5 who have also learnt about states of matter and could provide feedback/ask questions).

- 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

Working Scientifically Statements

- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions

Sound

Children will gain skills and knowledge to be able to create a presentation where they share knowledge about sound to an audience.

- 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

Working Scientifically Statements

- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions

Year Five

Forces

Children will acquire the skills and knowledge about forces to carry out an investigation involving parachutes, making reference to different forces at work.

- 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

Working Scientifically Objectives

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.

Space

Children will acquire the knowledge and skills to respond to an investigation describing the effect of the rotation of the Earth and Sun.

- 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.

Working Scientifically Statements

- Planning different types of scientific enquiries to answer questions, including
- recognising and controlling variables where necessary
- Recording data and results of increasing complexity using scientific diagrams and
- labels, classification keys, tables, scatter graphs, bar and line graphs
- Identifying scientific evidence that has been used to support or refute ideas or arguments.

Properties of Materials

Children will gain skills and knowledge to be able to choose, analyse and describe the most suitable materials for a variety of different functions.

- 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

Working Scientifically Statements

- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations

Changes of Materials

Children will gain skills and knowledge to be able to present a short video (or something similar) answering the question "How can we change materials?"

- know 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

Working Scientifically Statements

- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- Using test results to make predictions to set up further comparative and fair tests
- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations

Living things and their habitats

Children will acquire the knowledge and skills to describe the life cycles and processes of a variety of living things.

Pupils should be taught to:

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

Working Scientifically Statutory Statements

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations

Year Six

Electricity

Children will acquire the skills and knowledge about electricity to plan, make and reflect on their own "burglar alarm," involving the use a variety of electrical components.

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

Working Scientifically Statements

- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- Using test results to make predictions to set up further comparative and fair tests
- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations

Light

Children will acquire the skills and knowledge about how light travels, reflects and travels to be able to plan, design and evaluate a periscope.

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.

Working Scientifically Statutory Requirements

- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations

Evolution and Inheritance

Children will gain skills and knowledge to clarify the concepts of evolution and inheritance, to describe their own creature and how it has advantageously adapted itself.

- 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

Working Scientifically Statements

- identifying scientific evidence that has been used to support or refute ideas or arguments.
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.

Living things and their habitats

Children will gain skills and knowledge to be able to research and present information on an animal species of their choosing, referring to its characteristics and classification group.

- 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

Working Scientifically Statements

- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.
- identifying scientific evidence that has been used to support or refute ideas or arguments

Animals including Humans

Children will acquire the knowledge and skills to script and perform an advertisement to persuade someone about healthy lifestyle choices, drawing on the scientific concepts taught throughout the unit.

- identify and name the main parts of the human circulatory system, and describe 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

Working Scientifically Statutory Statements

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- I can plan an investigation into my pulse rate.
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- I can show my findings as a graph.
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- I discuss how reliable my findings are.