Science Year 3 Curriculum Overview

The Big Picture

In this unit, pupils will be able to make links with their work in Geography lessons. Pupils will explore different kinds of rocks and soils, including those in the local environment.

What do we already know?

Knowledge Retrieval:

The children will build on their knowledge from materials in year 1 and Year 2. They will be aware that rock is a material and they will know the basic properties of it. They will also be aware of what rock may be used for and why it is suitable for this.

Year 3 Science – Rocks

NC objectives – Year 3

Knowledge:

- To compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
- To describe in simple terms how fossils are formed when things that have lived are trapped within rock
- To recognise that soils are made from rocks and organic matter

Working scientifically:

- To ask relevant questions and using different types of scientific enquiries to answer them
- To set up simple practical enquiries, comparative and fair tests
- To make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- To gather, record, classify and present data in a variety of ways to help in answering questions
- To record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- To report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- To use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- To identify differences, similarities or changes related to simple scientific ideas and processes
- To use straightforward scientific evidence to answer questions or to support their findings.

Sticky Knowledge:

- Can they compare and group together different rocks based on their simple physical properties?
- Can they describe and explain how different rocks can be useful to us?
- Can they describe and explain the differences between sedimentary and igneous rocks, considering the way they are formed?
- Can they describe how fossils are formed within sedimentary rock?
- **Challenge** - Can they classify igneous and sedimentary rocks?
- **Challenge** - Can they begin to relate the properties of rocks with their uses?

Working Scientifically:

Planning:

- Can they use different ideas and suggest how to find something out?
- Can they make and record a prediction before testing?
- Can they plan a fair test and explain why it was fair?
- Can they set up a simple fair test to make comparisons?
- Can they explain why they need to collect information to answer a question?
- **Challenge** - Can they record and present what they have found using scientific language, drawings, labelled diagrams, bar charts and tables?

Obtaining and presenting evidence:

- Can they measure using different equipment and units of measure?
- Can they record their observations in different ways? (labelled diagrams, charts etc)
- Can they describe what they have found using scientific words?
- Can they make accurate measurements using standard units?
- **Challenge** - Can they explain their findings in different ways (display, presentation, writing)?
- **Challenge** - Can they use their findings to draw a simple conclusion?
- **Challenge** - Can they suggest improvements and predictions for further tests?

Considering evidence and evaluating:

- Can they explain what they have found out and use their measurements to say whether it helps to answer their question?
- Can they use a range of equipment (including a data-logger) in a simple test?
- **Challenge** - Can they suggest how to improve their work if they did it again?

Key unit objectives

Knowledge

- To compare different types of rock.
- To be able to compare rocks based on their appearance and properties.
- To know that fossils are formed when things that have lived are trapped within rock.
- To know that soils are made from rocks and organic matter.
- To know the type of rock and to look at the layers within the rocks at Castle View Primary.

Types of scientific enquiry covered

- Identifying and classifying
- Pattern seeking
- Research
- Changes overtime

Key vocabulary and understanding for concept connectors

Rocks, igneous, metamorphic, sedimentary, permeable, fossil, extinct, soil

Research/scientists/careers:

Mary Anning - Fossilist

Science Year 3 Curriculum Overview

The Big Picture

In this unit, pupils will be able to observe that magnetic forces can act without direct contact, unlike most forces, where direct contact is necessary (for example, opening a door, pushing a swing). They will explore the behaviour and everyday uses of different magnets (for example, bar, ring, button and horseshoe).

What do we already know?

Knowledge Retrieval:

The children will build on their knowledge from materials. They will have basic knowledge of the properties of materials and they will have a basic knowledge from exploring with magnets in EYFS.

Year 3 Science – Forces

NC objectives – Year 3

Knowledge:

- To compare how things move on different surfaces
- To notice that some forces need contact between 2 objects, but magnetic forces can act at a distance
- To observe how magnets attract or repel each other and attract some materials and not others
- To 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
- To describe magnets as having 2 poles
- To predict whether 2 magnets will attract or repel each other, depending on which poles are facing

Working scientifically:

- To ask relevant questions and using different types of scientific enquiries to answer them
- To set up simple practical enquiries, comparative and fair tests
- To make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- To gather, record, classify and present data in a variety of ways to help in answering questions
- To record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- To report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- To use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- To identify differences, similarities or changes related to simple scientific ideas and processes
- To use straightforward scientific evidence to answer questions or to support their findings.

Sticky Knowledge:

- Can they observe that magnetic forces can be transmitted without direct contact?
- Can they talk about how some magnets attract or repel each other?
- Can they classify which materials are attracted to magnets?
- Can they describe the speed and direction of moving objects?
- **Challenge** - Can they investigate the strengths of different magnets and find fair ways to compare them?
- **Challenge** - Can they explain why an object will move faster if it is rolling down a hill or a slope?

Working Scientifically:

Planning:

- Can they use different ideas and suggest how to find something out?
- Can they make and record a prediction before testing?
- Can they plan a fair test and explain why it was fair?
- Can they set up a simple fair test to make comparisons?
- Can they explain why they need to collect information to answer a question?
- **Challenge** - Can they record and present what they have found using scientific language, drawings, labelled diagrams, bar charts and tables?

Obtaining and presenting evidence:

- Can they measure using different equipment and units of measure?
- Can they record their observations in different ways? (labelled diagrams, charts etc)
- Can they describe what they have found using scientific words?
- Can they make accurate measurements using standard units?
- **Challenge** - Can they explain their findings in different ways (display, presentation, writing)?
- **Challenge** - Can they use their findings to draw a simple conclusion?
- **Challenge** - Can they suggest improvements and predictions for further tests?

Considering evidence and evaluating:

- Can they explain what they have found out and use their measurements to say whether it helps to answer their question?
- Can they use a range of equipment (including a data-logger) in a simple test?
- **Challenge** - Can they suggest how to improve their work if they did it again?

Key unit objectives

Knowledge

- To know a surface can affect how an object moves.
- To know that some forces need contact between two objects.
- To know that magnetic forces can act at a distance.
- To identify and sort materials that are magnetic.
- To know that magnets have two poles.
- To know that magnets will attract or repel each other, depending on which poles are facing.

Types of scientific enquiry covered

- Comparative/fair testing
- Identifying and classifying

Key vocabulary and understanding for concept connectors

Force, push, pull, friction, magnet, magnetic, pole, north, south, attract, repel,

Research/scientists/careers:

William Gilbert (Doctor who developed the theory of magnetism)

Science Year 3 Curriculum Overview

The Big Picture

In this unit, pupils continue to learn about the importance of nutrition and should be introduced to the main body parts associated with the skeleton and muscles. They will also find out how different parts of the body have special functions.

What do we already know?

Knowledge Retrieval:

The children will build on their knowledge from their animals topic in Year 2.

They will be aware of the basic needs of animals to survive (water, food and air) and they will know that offspring are animal babies that grow into adults. They will know that some animals give birth to live young, others lay eggs and that the young of some animals do not look like their parents – for example, tadpoles.

Year 3 Science – Animals

NC objectives – Year 3

Knowledge:

- 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
- To identify that humans and some other animals have skeletons and muscles for support, protection and movement

Working scientifically:

- To ask relevant questions and using different types of scientific enquiries to answer them
- To set up simple practical enquiries, comparative and fair tests
- To make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- To gather, record, classify and present data in a variety of ways to help in answering questions
- To record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- To report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- To use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- To identify differences, similarities or changes related to simple scientific ideas and processes
- To use straightforward scientific evidence to answer questions or to support their findings.

Sticky Knowledge:

- Can they explain the importance of a nutritious balanced diet?
- Can they describe how nutrients, water and oxygen are transported within animals and humans?
- Can they describe and explain the skeletal system of a human?
- Can they describe and explain the muscular system of a human?
- **Challenge** - Can they explain how the muscular and skeletal systems work together to create movement?
- **Challenge** - Can they classify living things and non-living things by a number of characteristics that they have thought of?
- **Challenge** - Can they explain how people, weather and the environment can affect living things?
- **Challenge** - Can they explain how certain living things depend on one another to survive?

Working Scientifically:

Planning:

- Can they use different ideas and suggest how to find something out?
- Can they make and record a prediction before testing?
- Can they plan a fair test and explain why it was fair?
- Can they set up a simple fair test to make comparisons?
- Can they explain why they need to collect information to answer a question?
- **Challenge** - Can they record and present what they have found using scientific language, drawings, labelled diagrams, bar charts and tables?

Obtaining and presenting evidence:

- Can they measure using different equipment and units of measure?
- Can they record their observations in different ways? (labelled diagrams, charts etc)
- Can they describe what they have found using scientific words?
- Can they make accurate measurements using standard units?
- **Challenge** - Can they explain their findings in different ways (display, presentation, writing)?
- **Challenge** - Can they use their findings to draw a simple conclusion?
- **Challenge** - Can they suggest improvements and predictions for further tests?

Considering evidence and evaluating:

- Can they explain what they have found out and use their measurements to say whether it helps to answer their question?
- Can they use a range of equipment (including a data-logger) in a simple test?
- **Challenge** - Can they suggest how to improve their work if they did it again?

Key unit objectives

Knowledge

- To know that animals need food, water, shelter and space to survive.
- To know that animals do not make their own food.
- To know that animals including humans need the right types and amount of nutrition and they get this from what they eat.
- To know the main food groups
- To know that humans and some other animals have a skeleton to support and protect muscles and gives the body its shape.
- To know that we have a heart, bowls, lungs and a brain.
- To know that we have muscles for movements.

Types of scientific enquiry covered

Identifying and classifying

Research

Pattern seeking

Key vocabulary and understanding for concept connectors

carbohydrates, bones, joints, vertebrates, invertebrates, muscles,

Research/scientists/careers:

Wilhelm Roentgen (Physicist who discovered x-rays)

Science Year 3 Curriculum Overview

The Big Picture

In this unit, pupils will explore what happens when light reflects off a mirror or other reflective surfaces to help them to answer questions about how light behaves. The children will discuss why it is important to protect their eyes from bright lights and will discuss how dangerous it is to look directly at the sun, even when they are wearing sunglasses. They will explore shadows, finding out how they are formed and what might cause them to change.

Year 3 Science – Light

NC objectives – Year 3

Knowledge:

- To recognise that they need light in order to see things and that dark is the absence of light
- To notice that light is reflected from surfaces
- To recognise that light from the sun can be dangerous and that there are ways to protect their eyes
- To recognise that shadows are formed when the light from a light source is blocked by an opaque object
- To find patterns in the way that the size of shadows change

Working scientifically:

- To ask relevant questions and using different types of scientific enquiries to answer them
- To set up simple practical enquiries, comparative and fair tests
- To make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- To gather, record, classify and present data in a variety of ways to help in answering questions
- To record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- To report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- To use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- To identify differences, similarities or changes related to simple scientific ideas and processes
- To use straightforward scientific evidence to answer questions or to support their findings.

Sticky Knowledge:

- Can they explain the difference between transparent, translucent and opaque?
- Can they compare the brightness and colour of lights?
- Can they explain how bulbs work in an electrical circuit?
- Can they explain how shadows are formed?
- **Challenge** – Can they explain why lights need to be bright or dimmer according to need?
- **Challenge** – Can they make a bulb go on and off?
- **Challenge** – Can they say what happens to the electricity when more batteries are added?
- **Challenge** – Can they explain why their shadow changes when the light source is moved closer or further from the object?

Working Scientifically:

Planning:

- Can they use different ideas and suggest how to find something out?
- Can they make and record a prediction before testing?
- Can they plan a fair test and explain why it was fair?
- Can they set up a simple fair test to make comparisons?
- Can they explain why they need to collect information to answer a question?
- **Challenge** - Can they record and present what they have found using scientific language, drawings, labelled diagrams, bar charts and tables?

Obtaining and presenting evidence:

- Can they measure using different equipment and units of measure?
- Can they record their observations in different ways? (labelled diagrams, charts etc)
- Can they describe what they have found using scientific words?
- Can they make accurate measurements using standard units?
- **Challenge** - Can they explain their findings in different ways (display, presentation, writing)?
- **Challenge** - Can they use their findings to draw a simple conclusion?
- **Challenge** - Can they suggest improvements and predictions for further tests?

Considering evidence and evaluating:

- Can they explain what they have found out and use their measurements to say whether it helps to answer their question?
- Can they use a range of equipment (including a data-logger) in a simple test?
- **Challenge** - Can they suggest how to improve their work if they did it again?

Key unit objectives

Knowledge

- To know that we need light in order to see things.
- To know that dark is the absence of light.
- To know what opaque and transparent mean.
- To understand that light from the sun can be dangerous and we can protect our eyes.
- To know that shadows are formed when light is blocked by an opaque object.
- To find patterns in the way that the size of shadows can change.
- To know that light can be reflected from surfaces.

Types of scientific enquiry covered

- Identifying and classifying
- fair testing
- Changes overtime

Key vocabulary and understanding for concept connectors

Light source, reflect, visible, beam, opaque, shadow, block, transparent, translucent

Research/scientists/careers:

Wilhelm Roentgen (Physicist who discovered x-rays)

Science Year 3 Curriculum Overview

The Big Picture

In this unit, pupils will be introduced to the relationship between structure and function: the idea that every part has a job to do. They will explore questions that focus on the role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction. This will link to their 'Island Life' topic.

What do we already know?

Knowledge Retrieval:

The children will build on their knowledge from year 1 and Year 2. They can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees and they can identify and describe the basic structure of a plants and trees. They have gained experience of observing and describing how seeds and bulbs grow and they know that plants need water, light and a suitable temperature to grow and stay healthy.

Year 3 Science – Plants

NC objectives – Year 3

Knowledge:

- To identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers
- To 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
- To investigate the way in which water is transported within plants
- To explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal

Working scientifically:

- To ask relevant questions and using different types of scientific enquiries to answer them
- To set up simple practical enquiries, comparative and fair tests
- To make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- To gather, record, classify and present data in a variety of ways to help in answering questions
- To record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- To report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- To use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- To identify differences, similarities or changes related to simple scientific ideas and processes
- To use straightforward scientific evidence to answer questions or to support their findings.

Sticky Knowledge:

- Can they identify and describe the functions of different parts of plants? (roots, stem, leaves and flowers)
- Can they identify what a plant needs for life and growth?
- Can they describe the ways in which nutrients, water and oxygen are transported within plants?
- Can they explain how the needs and functions of plant parts vary from plant to plant e.g. insect and wind pollinated plants?
- Can they investigate the way in which water is transported within plants?
- **Challenging** - Can they classify a range of common criteria? (environment found, size, climate required etc)
- **Challenging -** Can they explore the role of flowers in the life cycle of flowering plants including pollination, seed formation and seed dispersal?

Working Scientifically:

Planning:

- Can they use different ideas and suggest how to find something out?
- Can they make and record a prediction before testing?
- Can they plan a fair test and explain why it was fair?
- Can they set up a simple fair test to make comparisons?
- Can they explain why they need to collect information to answer a question?
- **Challenge** - Can they record and present what they have found using scientific language, drawings, labelled diagrams, bar charts and tables?

Obtaining and presenting evidence:

- Can they measure using different equipment and units of measure?
- Can they record their observations in different ways? (labelled diagrams, charts etc)
- Can they describe what they have found using scientific words?
- Can they make accurate measurements using standard units?
- **Challenge** - Can they explain their findings in different ways (display, presentation, writing)?
- **Challenge** - Can they use their findings to draw a simple conclusion?
- **Challenge** - Can they suggest improvements and predictions for further tests?

Considering evidence and evaluating:

- Can they explain what they have found out and use their measurements to say whether it helps to answer their question?
- Can they use a range of equipment (including a data-logger) in a simple test?
- **Challenge** - Can they suggest how to improve their work if they did it again?

Key unit objectives

Knowledge

- To know the functions of different parts of flowering plants.
- To understand the need for air, light, water, nutrients from soil and room of plants for life and growth.
- To understand that different plants have different requirements.
- To investigate the way in which water is transported around the plant.
- To understand the life cycle of flowers, including pollination, seed formation and dispersal.

Possible investigations

- **Cycle 1:** rocket (seed), tuplip (bulb)
- **Cycle 2:** raddish (seed), crocus (bulb)
- **Possible investigation:** Investigate requirements comparing 2 types of plant. Which grows better in which condition.

Types of scientific enquiry covered

- Identifying and classifying
- fair testing
- Changes overtime
- Pattern seeking

Key vocabulary and understanding for concept connectors

Nutrients, pollination, dispersal, transportation, energy, growth, oxygen,

Research/scientists/careers:

Carl Linnaeus (Botanist who studied the conditions for successfully growing bananas and developed a method to reproduce them in Europe)

Science Year 3 Curriculum Overview

The Big Picture

Children will have built up an understanding of science over the year. This time allows the teacher to identify and fill any gaps that may still be present. The 'super scientists' topic allows the children time to use their creative side and come up with their own scientific enquiry based questions and allows them the time to plan and investigate these ideas. The whole topic is child centred and allows the children to have fun whilst learning the fundamental skills working scientifically.

Year 3 Science – Super Scientists

Sticky knowledge:
Working Scientifically:
Planning:

- Can they use different ideas and suggest how to find something out?
- Can they make and record a prediction before testing?
- Can they plan a fair test and explain why it was fair?
- Can they set up a simple fair test to make comparisons?
- Can they explain why they need to collect information to answer a question?
- **Challenge** - Can they record and present what they have found using scientific language, drawings, labelled diagrams, bar charts and tables?

Obtaining and presenting evidence:

- Can they measure using different equipment and units of measure?
- Can they record their observations in different ways? (labelled diagrams, charts etc)
- Can they describe what they have found using scientific words?
- Can they make accurate measurements using standard units?
- **Challenge** - Can they explain their findings in different ways (display, presentation, writing)?
- **Challenge** - Can they use their findings to draw a simple conclusion?
- **Challenge** - Can they suggest improvements and predictions for further tests?

Considering evidence and evaluating:

- Can they explain what they have found out and use their measurements to say whether it helps to answer their question?
- Can they use a range of equipment (including a data-logger) in a simple test?
- **Challenge** - Can they suggest how to improve their work if they did it again?

NC objectives – Lower Key Stage 2
Working scientifically:

- To ask relevant questions and using different types of scientific enquiries to answer them
- To set up simple practical enquiries, comparative and fair tests
- To make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- To gather, record, classify and present data in a variety of ways to help in answering questions
- To record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- To report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- To use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- To identify differences, similarities or changes related to simple scientific ideas and processes
- To use straightforward scientific evidence to answer questions or to support their findings.

Types of scientific enquiry covered

- Identifying and classifying
- Pattern seeking
- Comparative tests
- Observations over time
- research

Key vocabulary and understanding for concept connectors

Prediction – Where you say what you think will happen.
Change, measure
Equipment – What we use.
Conclusion
Research

Research/scientists/careers:
Linked to children's interests and ideas.