Subject: SCIENCE LTP 2023-2024

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Coit Science Subject Long Term Plan 2023-2024

Colours refer to the 3 natural sciences physical biological and chemical

	A1	A2	SP1	SP2	SU1	SU2
FS	**Science Strands for EYFS (The Natural World)** In reception children will: ● Draw information from a simple map. ● Explore the natural world around them. ● Describe what they see, hear and feel whilst outside. ● Recognise some environments that are different to the one in which they live. ● Understand the effect of changing seasons on the natural world around them. Early learning Goal 'The Natural World': ● Explore the natural world around them, making observations and drawing pictures of animals and plants ● Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class ● Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. In Early Years Foundation Stage (EYFS) children will start to gain the science knowledge that they'll build on throughout their primary school years, such as developing their skills of observation, prediction, critical thinking and discussion. Science at Foundation Stage is introduced indirectly through activities that encourage the children to explore, problem solve, observe, predict, think, make decisions and talk about the world around them.					

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FS ongoing	**Seasons** Autumn – How can we identify autumn? What happens in autumn? what has changed? What do we celebrate in Autumn? How can we tell that it is nearly Winter? Weather Clothing Comparing to autumn - what is different? What is the same? Sorting and matching items to seasons				
	Linked to topic: 'I wonder why I am special' **Our body** -Labelling body parts -Beginning to distinguish how we are different to each other by identifying features of each other (eye colour, hair colour) -How to stay healthy/looking after our bodies (including oral health) -How we have changed from a baby to now (links to history) **Enquiry Types:** Pattern Seeking Researching Identifying and classifying Sorting	**Linked to topic: 'I wonder what sparkles in the sky'** **Enquiry Types:** Observing over time Researching Identifying and classifying	**Linked to Topic: I wonder when the snow falls** **Changes in states** Changing states of matter – water, freezing Observations over time **Animal Adaptation** -Why do some animals only live in the Arctic? Why do they survive there? **Enquiry Types:** Observing over time Identifying, classifying and grouping Researching Sorting	**Linked to Topic: What's in the box? (Toys)** **Materials and forces (toys)** -identifying different materials of toys - Comparing and sorting toys -looking at how toys are powered (batteries, electric) - Forces used to power toys **Enquiry Types:** Sorting Identifying and classifying	**Linked to Topic: What's growing in the garden?** **Growing – minibeast/plants** Lifecycles, sequences Lifecycle of a butterfly Observations over time **Enquiry Types:** Observing over time Identifying, classifying and grouping Researching

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<table>
<tr><td>Y1
Ongoing</td><td colspan="3"><u>Seasonal Changes:</u>
We will investigate the four seasons of the year with a focus on how Autumn transitions into Winter.
We will observe the changes in the weather during the different seasons. This will include how day length varies as the seasons change.
We compare and contrast this season to spring and summer and autumn.
We investigate day and night and how the length of the day changes throughout the year.</td></tr>
<tr><td>Y1</td><td><u>Autumn 1+2 - Materials:</u>

We will distinguish between an object and the material from which it is made

We will identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock

We will 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

Disciplinary (Working Scientifically) Concepts:
• Asking question
• Making predictions
• Setting up tests
• Observing and measuring
• Recording data
• Interpreting and communicating results
• Evaluating</td><td><u>Spring 1+ 2 – Humans/ senses</u>

We will focus on the names of all body parts and the body parts that we use as senses.

We will be exploring our senses.

Cross curricular links

Primary Geography 101

Finding Geography through the senses sensory stories/mapping/building/connections

Disciplinary (Working Scientifically) Concepts:
• Asking questions
• Making predictions
• Setting up tests
• Observing and measuring
• Recording data
• Interpreting and communicating results
• Evaluating</td><td><u>Summer 1- Plants and growth – link to Spring time</u>

We will 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.

<u>Summer 2 – Animals</u>

-We will identify and name a variety of common animals and classify them into birds, reptiles, mammals, amphibians, and fish.

-We will identify and name a variety of common animals that are carnivores, herbivores and omnivores

We will describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)

Primary Science 168</td></tr>
</table>

<table>
<tr>
<td></td>
<td>Scientific Enquiry Types:

• Identifying, Classifying and grouping
• Observing over time
• Comparative and fair testing
• Research using secondary sources
• Pattern seeking</td>
<td>Scientific Enquiry Types:

• Identifying, Classifying and grouping
• Observing over time
• Comparative and fair testing
• Research using secondary sources
• Pattern seeking</td>
<td>Teaching Adaptation

Disciplinary (Working Scientifically) Concepts:

• Asking questions
• Making predictions
• Setting up tests
• Observing and measuring
• Recording data
• Interpreting and communicating results
• Evaluating

Scientific Enquiry Types:

• Identifying, Classifying and grouping
• Observing over time
• Comparative and fair testing
• Research using secondary sources
• Pattern seeking</td>
</tr>
<tr>
<td>Y1</td>
<td colspan="3">Working Scientifically

During Years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

• asking simple questions and recognising that they can be answered in different ways
• observing closely, using simple equipment</td>
</tr>
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<table>
<tr><td></td><td colspan="4">

- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions

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<tr><td>Y2</td><td>

Materials

We will identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses

We will find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

Disciplinary (Working Scientifically) Concepts:

- Asking question
- Making predictions
- Setting up tests

</td><td>

Human Offspring and health and hygiene

We will consider:
What is meant by offspring?
Why do animals reproduce? How and why do animals change as they grow?
What are their basic survival needs?

We will investigate how humans grow and learn about the importance of a healthy diet.
We will also explore different methods of exercise and the impact that exercise has on our

</td><td>

Living things and their habitats

We will identify what things are alive/dead/never been alive? We will explore and compare these

We will 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

We will 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

Disciplinary (Working Scientifically) Concepts:

- Asking question

</td><td>

Plants

We will observe and describe how seeds and bulbs grow into mature plants

We will find out and describe how plants need water, light and a suitable temperature to grow and stay healthy

Disciplinary (Working Scientifically) Concepts:

- Asking question
- Making predictions
- Setting up tests
- Observing and measuring
- Recording data
- Interpreting and communicating results
- Evaluating

Scientific Enquiry Types:

- Identifying, Classifying and grouping
- Observing over time
- Comparative and fair testing

</td></tr>
</table>

	• Observing and measuring • Recording data • Interpreting and communicating results • Evaluating **Scientific Enquiry Types**: • Identifying, Classifying and grouping • Observing over time • Comparative and fair testing • Research using secondary sources • Pattern seeking	bodies. We will learn about different hygiene techniques including handwashing and teeth brushing. **Disciplinary (Working Scientifically) Concepts**: • Asking question • Making predictions • Setting up tests • Observing and measuring • Recording data • Interpreting and communicating results • Evaluating **Scientific Enquiry Types**:	• Making predictions • Setting up tests • Observing and measuring • Recording data • Interpreting and communicating results • Evaluating **Scientific Enquiry Types**: • Identifying, Classifying and grouping • Observing over time • Comparative and fair testing • Research using secondary sources • Pattern seeking Primary Science 168 Teaching Adaptation	• Research using secondary sources • Pattern seeking

		• Identifying, Classifying and grouping • Observing over time • Comparative and fair testing • Research using secondary sources • Pattern seeking			
Y2	**Working Scientifically** During Years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions				
Y3	**Rocks and Fossils** We will compare and group together different kinds of	**Forces and Magnets**	**Animals Including Humans**	**Plants** We will identify and describe the functions of	**Light** We will recognise that they need light in order to see things and that dark is the absence of light

	rocks on the basis of their appearance and simple physical properties We will describe in simple terms how fossils are formed when things that have lived are trapped within rock We will recognise that soils are made from rocks and organic matter **Disciplinary (Working Scientifically) Concepts**: • Asking question • Making predictions • Setting up tests • Observing and measuring • Recording data • Interpreting and communicating results • Evaluating **Scientific Enquiry Types**:	We will compare how things move on different surfaces We notice that some forces need contact between 2 objects, but magnetic forces can act at a distance We can observe how magnets attract or repel each other and attract some materials and not others We can 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 We describe magnets as having 2 poles	We will 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 We will identify that humans and some other animals have skeletons and muscles for support, protection and movement **Disciplinary (Working Scientifically) Concepts**: • Asking question • Making predictions • Setting up tests • Observing and measuring	different parts of flowering plants: roots, stem/trunk, leaves and flowers We will 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 We will investigate the way in which water is transported within plants We will explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal	We will notice that light is reflected from surfaces We will recognise that light from the sun can be dangerous and that there are ways to protect their eyes We will recognise that shadows are formed when the light from a light source is blocked by an opaque object We will find patterns in the way that the size of shadows change **Disciplinary (Working Scientifically) Concepts**: • Asking question • Making predictions • Setting up tests • Observing and measuring • Recording data • Interpreting and communicating results • Evaluating **Scientific Enquiry Types**: • Identifying, Classifying and grouping • Observing over time • Comparative and fair testing • Research using secondary sources

	• Identifying, Classifying and grouping • Observing over time • Comparative and fair testing • Research using secondary sources • Pattern seeking	We can predict whether 2 magnets will attract or repel each other, depending on which poles are facing **Disciplinary (Working Scientifically) Concepts**: • Asking question • Making predictions • Setting up tests • Observing and measuring • Recording data • Interpreting and communicating results • Evaluating **Scientific Enquiry Types**:	• Recording data • Interpreting and communicating results • Evaluating **Scientific Enquiry Types**: • Identifying, Classifying and grouping • Observing over time • Comparative and fair testing • Research using secondary sources • Pattern seeking	**Disciplinary (Working Scientifically) Concepts**: • Asking question • Making predictions • Setting up tests • Observing and measuring • Recording data • Interpreting and communicating results • Evaluating **Scientific Enquiry Types**: • Identifying, Classifying and grouping • Observing over time • Comparative and fair testing	• Pattern seeking

		• Identifying, Classifying and grouping • Observing over time • Comparative and fair testing • Research using secondary sources • Pattern seeking		• Research using secondary sources • Pattern seeking	
Y3	**Working Scientifically** During Years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • 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 • 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.				

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Y4	**Animals including humans** We will describe the simple functions of the basic parts of the digestive system in humans We can identify the different types of teeth in humans and their simple functions We will construct and interpret a variety of food chains, identifying producers, predators and prey **Disciplinary (Working Scientifically) Concepts:** • Making predictions • Setting up tests • Observing and measuring • Recording data • Interpreting and communicating results • Evaluating	**Sound** We will identify how sounds are made, associating some of them with something vibrating We will recognise that vibrations from sounds travel through a medium to the ear-We find patterns between the pitch of a sound and features of the object that produced it We will find patterns between the volume of a sound and the strength of the vibrations that produced it We will recognise that sounds get fainter as the distance from the sound source increases **Disciplinary (Working Scientifically) Concepts:** • Asking questions • Making predictions • Observing and measuring • Recording data • Interpreting and communicating results **Scientific Enquiry Types:** • Identifying, Classifying and grouping	**States of Matter** We will compare and group materials together, according to whether they are solids, liquids or gases We will 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) We will identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	**Electricity** We will identify common appliances that run on electricity We will construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers We will 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 We will recognise that a switch opens closes a circuit and associate this with whether or not a lamp lights in a simple series circuit	**Living things and their habitats** We will recognise that living things can be grouped in a variety of ways We will explore and use classification keys to help group, identify and name a variety of living things in our local and wider environment We will recognise that environments can change and that this can sometimes pose dangers to living things **Disciplinary (Working Scientifically) Concepts:** • Asking questions

	Scientific Enquiry Types: • Identifying, Classifying and grouping • Observing over time • Comparative and fair testing • Research using secondary sources • Pattern seeking **TAPS Assessment Activities:** • How can you prove if Colgate is the best toothpaste? • Which drink is the best to protect your teeth?	• Comparative and fair testing • Research using secondary sources • Pattern seeking **TAPS Assessment Activities:** • String Telephones • Investigating Pitch	**Disciplinary (Working Scientifically) Concepts**: • Making predictions • Setting up tests • Observing and measuring • Recording data • Interpreting and communicating results • Evaluating **Scientific Enquiry Types**: • Identifying, Classifying and grouping • Observing over time • Comparative and fair testing • Pattern seeking	We will recognise some common conductors and insulators, and associate metals with being good conductors **Disciplinary (Working Scientifically) Concepts**: • Asking questions • Making predictions • Setting up tests • Observing and measuring • Recording data • Interpreting and communicating results • Evaluating **Scientific Enquiry Types**: • Identifying, Classifying and grouping	• Observing and measuring • Recording data • Interpreting and communicating results **Scientific Enquiry Types**: • Identifying, Classifying and grouping • Comparative and fair testing • Research using secondary sources • Pattern seeking **TAPS Assessment Activity:** • Local environmental survey

			TAPS Assessment Activities: • Drying materials • Cornflour slime	• Observing over time • Comparative and fair testing • Research using secondary sources • Pattern seeking **TAPS Assessment Activities:** • Does it conduct electricity?	

	Working Scientifically • During Years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • 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 • 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.

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Y5	**Properties and changes in materials** We will investigate different materials, their uses and their properties and learn how to classify and group materials based on these properties. We will use our knowledge gained from comparative and fair tests to give evidence for the particular uses of everyday materials including metals, wood and plastic. We will investigate dissolving, separating mixtures and irreversible changes and recognise how some materials can be separated across different states of matter (liquid, solid and gas). We will use a range of techniques in order to separate a range of materials such as sieving, filtering and evaporating. We will also learn about dissolving, mixing and changes of state in reference to reversible change. The children will then learn about irreversible changes, and participate in two exciting investigations to create new materials, including casein plastic and carbon dioxide. **Stephanie Kwolek** **Ruth Benerito** **Disciplinary (Working Scientifically) Concepts:**	**Earth and Space** We will be exploring the movement of the Earth and other planets in our solar system relative to the sun as well as the movement of the moon around the Earth. We will discover how, because of their spherical nature, rotation and orbit, the Sun appears to move across the Earth's sky creating day and night. STEM Resources https://www.stem.org.uk/elibrary/collection/4144 Great British Space Dinner www.stem.org/exomars	**Forces** We will learn about balanced and unbalanced forces, gravity, friction and the use of mechanisms such as levers, gears and pulleys. We will investigate Isaac Newton and his discoveries about gravity. The children will look for patterns and links between the mass and weight of objects, using newton metres to measure the force of gravity. We will collaboratively investigate air and water resistance, participating in challenges to design the best parachute and boat.	**Living things and their habitats** We will learn about the process of reproduction and the life cycles of plants, mammals, amphibians, insects and birds. The children will explore reproduction in different plants, including different methods of pollination and asexual reproduction. **-Jane Goodall** **Disciplinary (Working Scientifically) Concepts:** • Asking question • Making predictions • Setting up tests • Observing and measuring • Recording data	**Animals (including humans)** We will focus on the changes that human beings experience as they develop to old age. We will tackle some sensitive subjects including puberty and death. Children will learn about the life cycle of a human being. We will investigate the development of babies and compare the gestation period of humans and other animals. We will learn about the changes experienced during puberty and why these occur. **Disciplinary (Working Scientifically) Concepts:**

	• Asking question • Making predictions Setting up tests • Observing and measuring • Recording data • Interpreting and communicating results • Evaluating **Scientific Enquiry Types**: • Identifying, Classifying and grouping • Observing over time • Comparative and fair testing • Research using secondary sources • Pattern seeking	exporify.wellcome.ac.uk/exomars **Disciplinary (Working Scientifically) Concepts**: • Asking question • Making predictions • Setting up tests • Observing and measuring • Recording data • Interpreting and communicating results • Evaluating **Scientific Enquiry Types**: • Identifying, Classifying and grouping	**-Isaac Newton** **Disciplinary (Working Scientifically) Concepts**: • Asking question • Making predictions • Setting up tests • Observing and measuring • Recording data • Interpreting and communicating results • Evaluating **Scientific Enquiry Types**: • Identifying, Classifying and grouping • Observing over time	• Interpreting and communicating results • Evaluating **Scientific Enquiry Types**: • Identifying, Classifying and grouping • Observing over time • Comparative and fair testing • Research using secondary sources • Pattern seeking	• Asking question • Making predictions • Setting up tests • Observing and measuring • Recording data • Interpreting and communicating results • Evaluating **Scientific Enquiry Types**: • Identifying, Classifying and grouping • Observing over time • Comparative and fair testing • Research using secondary sources

		• Observing over time • Comparative and fair testing • Research using secondary sources • Pattern seeking	• Comparative and fair testing • Research using secondary sources • Pattern seeking		• Pattern seeking

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	Working Scientifically During Years 5 and 6, pupils will be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • 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 la- bels, 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 results, explanations of and 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.				
Y6	**Animals including Humans** We identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood	**Electricity** We associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit	**Living Things** -We describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including	**Evolution** recognise that living things have changed over time and that fossils provide information about living things that inhabited the	**Light** We recognise that light appears to travel in straight lines We 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

	We recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function We describe the ways in which nutrients and water are transported within animals, including humans. **William Harvey** **Disciplinary (Working Scientifically) Concepts**: • Asking question • Making predictions • Setting up tests • Observing and measuring • Recording data • Interpreting and communicating results • Evaluating	We 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 We use recognised symbols when representing a simple circuit in a diagram. **James Watt** Name electrical components Compare different circuits Explain impact of changing components	microorganisms, plants and animals We give reasons for classifying plants and animals based on specific characteristics. **Carl Linnaeus** **Disciplinary (Working Scientifically) Concepts**: • Asking question • Making predictions • Setting up tests • Observing and measuring • Recording data • Interpreting and communicating results	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. **Charles Darwin** **Mary Anning**	We 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 We use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. **Thomas Edison** **Disciplinary (Working Scientifically) Concepts**: • Asking question • Making predictions • Setting up tests • Observing and measuring • Recording data • Interpreting and communicating results • Evaluating **Scientific Enquiry Types**: • Identifying, Classifying and grouping

	Scientific Enquiry Types: • Identifying, Classifying and grouping • Observing over time • Comparative and fair testing • Research using secondary sources • Pattern seeking	**Disciplinary (Working Scientifically) Concepts**: • Asking question • Making predictions • Setting up tests • Observing and measuring • Recording data • Interpreting and communicating results • Evaluating **Scientific Enquiry Types**: • Identifying, Classifying and grouping • Observing over time • Comparative and fair testing • Research using secondary sources	• Evaluating **Scientific Enquiry Types**: • Identifying, Classifying and grouping • Observing over time • Comparative and fair testing • Research using secondary sources • Pattern seeking	Primary Science 168 Teaching Adaptation **Disciplinary (Working Scientifically) Concepts**: • Asking question • Making predictions • Setting up tests • Observing and measuring • Recording data • Interpreting and communicating results • Evaluating **Scientific Enquiry Types**: • Identifying, Classifying and grouping	• Observing over time • Comparative and fair testing • Research using secondary sources • Pattern seeking

		• Pattern seeking		• Observing over time • Comparative and fair testing • Research using secondary sources • Pattern seeking	

Working Scientifically

During Years 5 and 6, pupils will be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- 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 la- bels, 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 results, explanations of and 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.