

Nateby Primary School  
SCIENCE CURRICULUM MAP

**The National Curriculum**

**Aims**

The national curriculum for science aims to ensure that all pupils:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

**How will science be taught?**

**Intent**

Through high-quality science teaching, we will teach our pupils to understand how major scientific ideas have played a vital role in society. Moreover, we aim to prepare our pupils for life in an increasingly scientific and technological world. We intend to develop lively, enquiring minds and the ability to question, building on their natural curiosity and enabling them to understand and care for the world in which they live. Pupils will learn scientific skills and knowledge within an environment where they can work in an investigative way and can communicate their findings in a variety of ways.

**Implementation**

At Nateby, we base our Science teaching on the National Curriculum Programmes of Study to ensure that there is continuity and progression. A two-year curriculum map has been devised to ensure that all of the programmes of study are covered.

**Reception**

By the end of the Reception year children will be expected to:

- 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.

The above ELG statements will be taught as part of the rolling programme.

Children's vocabulary and understanding will be deepened with the use of texts linked to topics to support learning. Children's attention will be drawn to topic/subject specific vocabulary.

## CURRICULUM MAP 2023/2024

**Pupils are taught the following Key Learning objectives and by the end of each year or by the time they leave each class, pupils will be able to:-**

	<b>AUTUMN</b>	<b>SPRING</b>	<b>SUMMER</b>
<b>CLASS 1 - EYFS &amp; YEAR ONE</b>	<p><b>Animals including humans</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</li> <li>▪ Recognise that humans are animals.</li> <li>▪ Compare and describe differences in their own features (eye, hair, skin colour, etc.).</li> <li>▪ Recognise that humans have many similarities.</li> <li>▪ Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</li> <li>▪ Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</li> <li>▪ Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, and including pets).</li> <li>▪ Find out and describe how animals look different to one another.</li> <li>▪ Group together animals according to their different features.</li> <li>▪ Recognise similarities between animals:               <ul style="list-style-type: none"> <li>– Structure: head, body, way of moving, senses, body covering, tail.</li> </ul> </li> <li>▪ Animals have senses to explore the world around them and to help them to survive.</li> <li>▪ Recognise that animals need to be treated with care and sensitivity to keep them alive and healthy.</li> <li>▪ Animals are alive; they move, feed, grow, use their senses and reproduce.</li> </ul>	<p><b>Material Properties – Everyday Materials</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Distinguish between an object and the material from which it is made.</li> <li>▪ Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.</li> <li>▪ Describe the simple physical properties of a variety of everyday materials.</li> <li>▪ Compare and group together a variety of everyday materials on the basis of their simple physical properties.</li> </ul>	<p><b>Plants: Common Names and Basic Structure</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</li> <li>▪ Identify and describe the basic structure of a variety of common flowering plants, including trees.</li> </ul>
	<b>Light and Astronomy – Seasonal Change</b>		
	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Observe changes across the four seasons.</li> <li>▪ Observe and describe weather associated with the seasons and how day length varies.</li> </ul>		

<b>CLASS 2 – YEAR TWO &amp; YEAR THREE</b>	<b>Y2 Health – How we grow and stay healthy</b> Pupils should be taught to: <ul style="list-style-type: none"> <li>Notice that humans, have offspring which grow into adults.</li> <li>Find out about and describe the basic needs of humans, for survival (water, food and air).</li> <li>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</li> <li>Medicines can be useful when we are ill.</li> <li>Medicines can be harmful if not used properly.</li> </ul> <b>Y3 Health – (Health/Nutrition)</b> Pupils should be taught to: <ul style="list-style-type: none"> <li>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.</li> <li>An adequate and varied diet is beneficial to health (along with a good supply of air and clean water).</li> <li>Regular and varied exercise <i>from a variety of different activities</i> is beneficial to health (focus on <i>energy in versus energy out</i>. Include information on making informed choices).</li> </ul>	<b>Y2 Material Properties – (Uses of Materials)</b> Pupils should be taught to: <ul style="list-style-type: none"> <li>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> <li>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</li> <li>Some materials can be found naturally; others have to be made</li> </ul>	<b>Y2 Plants – (Plant growth)</b> Pupils should be taught to: <ul style="list-style-type: none"> <li>Observe and describe how seeds and bulbs grow into mature plants</li> <li>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</li> <li>Plants are living and eventually die</li> </ul> <b>Y3 Plants – (Functions of Parts of a Plant)</b> Pupils should be taught to: <ul style="list-style-type: none"> <li>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</li> <li>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.</li> <li>Investigate the way in which water is transported within plants.</li> <li>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> <li>Roots grow downwards and anchor the plant.</li> <li>Water, taken in by the roots, goes up the stem to the leaves, flowers and fruit.</li> <li>Nutrients (not food) are taken in through the roots.</li> <li>Stems provide support and enable the plant to grow towards the light.</li> <li>Plants make their own food in the leaves using energy from the sun.</li> <li>Flowers attract insects to aid pollination.</li> <li>Pollination is when pollen is transferred between plants by insects, birds, other animals and the wind.</li> <li>Fertilisation occurs in the ovary of the flower.</li> <li>Seeds are formed as a result of fertilisation.</li> <li>Many flowers produce fruits which protect the seed and/or aid seed dispersal.</li> <li>Seed dispersal, by a variety of methods, helps ensure that new plants survive.</li> <li>Plants need nutrients to grow healthily (either naturally from the soil or from fertiliser added to soil).</li> </ul>
	<b>Use the local environment throughout the year to identify and study plants and animals in their habitat.</b>		
<b>CLASS THREE</b>	<b>Y5 Forces – Effects on Movement</b> Pupils should be taught to:	<b>Y5 Environment - Observing Life cycles</b> Pupils should be taught to:	<b>Y5 Material Changes - Reversible changes</b> Pupils should be taught to:

<p><b>YEAR FOUR &amp; YEAR FIVE</b></p>	<ul style="list-style-type: none"> <li>▪ Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</li> <li>▪ Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.</li> <li>▪ Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</li> <li>▪ There are different types of forces (push, pull, friction, air resistance, water resistance, magnetic forces, gravity).</li> <li>▪ Gravity can act without direct contact between the Earth and an object.</li> <li>▪ Friction, air resistance and water resistance are forces which slow down moving objects.</li> <li>▪ Friction, air resistance and water resistance can be useful or unwanted.</li> <li>▪ The effects of friction, air resistance and water resistance can be reduced or increased for a preferred effect.</li> <li>▪ More than one force can act on an object simultaneously (either reinforcing or opposing each other).</li> </ul>	<ul style="list-style-type: none"> <li>▪ Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</li> <li>▪ Describe the life process of reproduction in some plants and animals.</li> </ul> <p><b>Y5 Animals - Human Life Cycles</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Describe the changes as humans develop to old age.</li> <li>▪ Animals are alive; they move, feed, grow, use their senses, reproduce, breathe/respire and excrete.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</li> <li>▪ Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</li> <li>▪ Demonstrate that dissolving, mixing and changes of state are reversible changes.</li> <li>▪ Changes can occur when different materials are mixed.</li> <li>▪ Some material changes can be reversed and some cannot.</li> <li>▪ Recognise that dissolving is a reversible change.</li> <li>▪ Distinguish between melting and dissolving.</li> <li>▪ Mixtures of solids (of different particle size) can be separated by sieving.</li> <li>▪ Mixtures of solids and liquids can be separated by filtering if the solid is insoluble (un-dissolved).</li> <li>▪ Evaporation helps us separate soluble materials from water.</li> <li>▪ Changes to materials can happen at different rates (factors affecting dissolving, factors affecting evaporation – amount of liquid, temperature, wind speed).</li> <li>▪ Freezing, melting and boiling changes can be reversed (revision from YR4).</li> </ul> <p><b>Y5 Material Changes – Irreversible changes</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ 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.</li> </ul>
<p><b>CLASS FOUR - YEAR SIX</b></p>	<p><b>Y6 Animals/Health – Exercise, Health &amp; The Circulatory System</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</li> <li>▪ Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</li> <li>▪ Describe the ways in which nutrients and water are transported within animals, including humans.</li> <li>▪ The heart is a major organ and is made of muscle.</li> <li>▪ The heart pumps blood around the body through vessels and this can be felt as a pulse.</li> </ul>	<p><b>Y6 Electricity</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</li> <li>▪ 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.</li> <li>▪ Use recognised symbols when representing a simple circuit in a diagram.</li> </ul>	<p><b>Y6 Light and Astronomy – How Light Travels</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Recognise that light appears to travel in straight lines.</li> <li>▪ 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.</li> <li>▪ Explain that we see things because the light that travels from light sources to our eyes or from light sources to objects and then to our eyes.</li> </ul>

	<ul style="list-style-type: none"> <li>▪ The heart pumps blood through the lungs in order to obtain a supply of oxygen.</li> <li>▪ Blood carries oxygen/essential materials to different parts of the body.</li> <li>▪ During exercise muscles need more oxygen so the heart beats faster and our breathing and pulse rates increase.</li> <li>▪ Animals are alive; they move, feed, grow, use their senses, reproduce, breathe/respire and excrete.</li> <li>▪ An adequate, varied and balanced diet is needed to help us grow and repair our bodies (proteins), provide us with energy (fats and carbohydrates) and maintain good health (vitamins and minerals).</li> <li>▪ Tobacco, alcohol and other 'drugs' can be harmful.</li> <li>▪ All medicines are drugs, not all drugs are medicines.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Circuit diagrams can be used to construct a variety of more complex circuits predicting whether they will 'work'.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</li> </ul>
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**CURRICULUM MAP 2024/2025**

**Pupils are taught the following Key Learning objectives and by the end of each year or by the time they leave each class, pupils will be able to:-**

	<b>AUTUMN</b>	<b>SPRING</b>	<b>SUMMER</b>
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<p><b>CLASS ONE - EYFS &amp; YEAR ONE</b></p>	<p><b>Animals including humans</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</li> <li>▪ Recognise that humans are animals.</li> <li>▪ Compare and describe differences in their own features (eye, hair, skin colour, etc.).</li> <li>▪ Recognise that humans have many similarities.</li> <li>▪ Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</li> <li>▪ Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</li> <li>▪ Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, and including pets).</li> <li>▪ Find out and describe how animals look different to one another.</li> <li>▪ Group together animals according to their different features.</li> <li>▪ Recognise similarities between animals: <ul style="list-style-type: none"> <li>– Structure: head, body, way of moving, senses, body covering, tail.</li> </ul> </li> <li>▪ Animals have senses to explore the world around them and to help them to survive.</li> <li>▪ Recognise that animals need to be treated with care and sensitivity to keep them alive and healthy.</li> <li>▪ Animals are alive; they move, feed, grow, use their senses and reproduce.</li> </ul>	<p><b>Material Properties – Everyday Materials</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Distinguish between an object and the material from which it is made.</li> <li>▪ Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.</li> <li>▪ Describe the simple physical properties of a variety of everyday materials.</li> <li>▪ Compare and group together a variety of everyday materials on the basis of their simple physical properties.</li> </ul>	<p><b>Plants: Common Names and Basic Structure</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</li> <li>▪ Identify and describe the basic structure of a variety of common flowering plants, including trees.</li> </ul>
<p><b>Light and Astronomy – Seasonal Change</b></p>			
<p><b>CLASS TWO - YEAR TWO &amp; YEAR THREE</b></p>	<p><b>Y3 Material Properties – (Rocks)</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</li> <li>▪ Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</li> <li>▪ Recognise that soils are made from rocks and organic matter.</li> <li>▪ Rocks and soils can feel and look different.</li> <li>▪ Rocks and soils can be different in different places/environments.</li> </ul> <p><b>Y3 Forces – (Non contact forces)</b> Pupils should be taught to:</p>	<p><b>Y2 Animals - Animal survival and growth</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Notice that animals, have offspring which grow into adults.</li> <li>▪ Find out about and describe the basic needs of animals, for survival (water, food and air).</li> </ul> <p><b>Y3 Animals – (Skeletons and Movement)</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</li> </ul>	<p><b>Y2 Environment - Living things and their habitats</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Explore and compare the differences between things that are living, dead, and things that have never been alive.</li> <li>▪ 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.</li> <li>▪ Identify and name a variety of plants and animals in their habitats, including micro-habitats.</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Compare how some things move on different surfaces.</li> <li>▪ Notice that some forces need contact between two objects but magnetic forces can act at a distance.</li> <li>▪ Observe how magnets attract or repel each other and attract some materials and not others.</li> <li>▪ 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.</li> <li>▪ Describe magnets as having two poles.</li> <li>▪ Predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Identify animals (vertebrates) which have a skeleton which supports their body, aids movement &amp; protects vital organs (be able to name some of the vital organs).</li> <li>▪ Identify animals without internal skeletons/backbones (invertebrates) and describe how they have adapted other ways to support themselves, move &amp; protect their vital organs.</li> <li>▪ Know how the skeletons of birds, mammals, fish, amphibians or reptiles are similar (backbone, ribs, skull, bones used for movement) and the differences in their skeletons.</li> <li>▪ Know that muscles, which are attached to the skeleton, help animals move parts of their body.</li> <li>▪ Explore how humans grow bigger as they reach maturity by making comparisons linked to body proportions and skeleton growth – e.g. do people with longer legs have longer arm spans?</li> <li>▪ Recognise that animals are alive; they move, feed, grow, use their senses and reproduce.</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ Different kinds of plants and animals live in different kinds of places.</li> <li>▪ There are different kinds of habitat near school which need to be cared for</li> <li>▪ Habitats provide the preferred conditions for the animals/plants that live there (compare local habitats and less familiar examples).</li> </ul> <p><b>Y3 Light and Astronomy – (Light, reflections and shadows)</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Recognise that they need light in order to see things and that dark is the absence of light.</li> <li>▪ Notice that light is reflected from surfaces.</li> <li>▪ Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</li> <li>▪ Recognise that shadows are formed when the light from a light source is blocked by a solid object.</li> <li>▪ Find patterns in the way that the size of shadows change.</li> </ul>
<p><b>CLASS THREE YEAR FOUR &amp; YEAR FIVE</b></p>	<p><b>Y4 Electricity</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Identify common appliances that run on electricity.</li> <li>▪ Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</li> <li>▪ 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.</li> <li>▪ Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</li> <li>▪ Recognise some common conductors and insulators, and associate metals with being good conductors.</li> <li>▪ Electricity can be dangerous.</li> <li>▪ Electricity sources can be mains or battery.</li> <li>▪ Batteries ‘push’ electricity round a circuit and can make bulbs, buzzers and motors work.</li> <li>▪ Faults in circuits can be found by methodically testing connections.</li> </ul>	<p><b>Y4 Sound</b></p> <p>Pupils should be taught to:</p> <p>Vibrations</p> <ul style="list-style-type: none"> <li>▪ Identify how sounds are made, associating some of them with something vibrating.</li> <li>▪ Recognise that vibrations from sounds travel through a medium to the ear.</li> <li>▪ Find patterns between the volume of a sound and the strength of the vibrations that produced it.</li> <li>▪ Recognise that sounds get fainter as the distance from the sound source increases.</li> <li>▪ Sounds can be made in a variety of ways (pluck, bang, shake, blow) using a variety of things (instruments, everyday materials, body).</li> <li>▪ Sounds travel away from their source in all directions.</li> <li>▪ Vibrations may not always be visible to the naked eye.</li> </ul> <p><b>Y4 Environment – Living Things and their habitat</b></p>	<p><b>Y4 Material Properties and Changes – (States of Matter)</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Compare and group materials together, according to whether they are solids, liquids or gases.</li> <li>▪ 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).</li> <li>▪ Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> <li>▪ Solids, liquids and gases can be identified by their observable properties.</li> <li>▪ Solids have a fixed size and shape (the size and shape can be changed but it remains the same after the action).</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Drawings, photographs and diagrams can be used to represent circuits (although standard symbols need not be introduced until UKS2).</li> </ul> <p><b>Y4 Animals – (Teeth, Eating and Digestion)</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Describe the simple functions of the basic parts of the digestive system in humans.</li> <li>▪ Identify the different types of teeth in humans and their simple functions.</li> <li>▪ Construct and interpret a variety of food chains, identifying producers, predators and prey.</li> <li>▪ Describe how teeth and gums have to be cared for in order to keep them healthy.</li> </ul>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Recognise that living things can be grouped in a variety of ways.</li> <li>▪ Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</li> <li>▪ Recognise that environments can change and that this can sometimes pose dangers to living things.</li> <li>▪ Use and make identification keys for plants and animals.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Liquids can pour and take the shape of the container in which they are put.</li> <li>▪ Liquids form a pool not a pile.</li> <li>▪ Solids in the form of powders can pour as if they were liquids but make a pile not a pool.</li> <li>▪ Gases fill the container in which they are put.</li> <li>▪ Gases escape from an unsealed container.</li> <li>▪ Gases can be made smaller by squeezing/pressure.</li> <li>▪ Liquids and gases can flow.</li> </ul>
<p><b>CLASS FOUR - YEAR SIX</b></p>	<p><b>Y5 Light and Astronomy – Earth and Space</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</li> <li>▪ Describe the movement of the Moon relative to the Earth.</li> <li>▪ Describe Sun/Earth/Moon as approximately spherical bodies.</li> <li>▪ Use the idea of the Earth’s rotation to explain day and night.</li> <li>▪ The Earth spins once around its own axis in 24 hours, giving day and night.</li> <li>▪ The Earth orbits the Sun in one year.</li> <li>▪ We can see the Moon because the Sun’s light reflects off it.</li> <li>▪ The Moon orbits the Earth in approximately 28 days and changes to the appearance of the moon are evidence of this.</li> <li>▪ The Sun appears to move across the sky from East to West and this causes shadows to change during the day.</li> <li>▪ Changes to shadow length over a day or changes to sunrise and sunset times over a year are evidence supporting the movement of the Earth.</li> </ul>	<p><b>Y5 Material Properties – Testing Material Properties</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</li> <li>▪ Compare a variety of materials and measure their effectiveness (e.g. hardness, strength, flexibility, solubility, transparency, thermal conductivity, electrical conductivity).</li> </ul> <p>Temperature and Thermal Insulation</p> <ul style="list-style-type: none"> <li>▪ Heat always moves from hot to cold.</li> <li>▪ Some materials (insulators) are better at slowing down the movement of heat than others.</li> <li>▪ Objects/liquids will warm up or cool down until they reach the temperature of their surroundings.</li> </ul>	<p><b>Y6 Environment – Classification</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.</li> <li>▪ Give reasons for classifying plants and animals based on specific characteristics.</li> <li>▪ Living things can be grouped into micro-organisms, plants and animals.</li> <li>▪ Vertebrates can be grouped as fish, amphibians, reptiles, birds and mammals.</li> <li>▪ Invertebrates can be grouped as snails and slugs, worms, spiders and insects.</li> <li>▪ Plants can be grouped as flowering plants (incl. trees and grasses) and non-flowering plants (such as ferns and mosses).</li> </ul> <p><b>Y6 Environment - Evolution and Inheritance</b></p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>▪ Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</li> <li>▪ Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</li> <li>▪ Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</li> </ul>



## Working Scientifically Progression Map

SKILL	EYFS	Key Stage One	Lower Key Stage Two	Upper Key Stage Two
Observing over time	<ul style="list-style-type: none"> <li>• Know about similarities and differences in relation to places, objects, materials, and living things.</li> <li>• Look closely at/notice.</li> <li>• Explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</li> <li>• Select and use technology for particular purposes.</li> </ul>	<ul style="list-style-type: none"> <li>• Use their observations and ideas to suggest answers to questions.</li> <li>• Talk about what they have found out and how they found out about it</li> <li>• Observe closely using simple equipment.</li> <li>• With help, observe changes over time.</li> </ul>	<ul style="list-style-type: none"> <li>• Make systematic and careful observations.</li> <li>• Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used.</li> <li>• Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions.</li> </ul>	<ul style="list-style-type: none"> <li>• Make their own decisions about what observations to make, what measurements to use and how long to make them for.</li> </ul>
Pattern Seeking	<ul style="list-style-type: none"> <li>• Talk about what they notice/observe.</li> <li>• Talk about changes they notice and changes over time.</li> </ul>	<ul style="list-style-type: none"> <li>• With guidance, they should begin to notice patterns and relationships.</li> <li>• Use simple measurements and equipment to gather data.</li> </ul>	<ul style="list-style-type: none"> <li>• With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions.</li> <li>• Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them.</li> <li>• Take accurate measurements using standard units.</li> </ul>	<ul style="list-style-type: none"> <li>• Look for different casual relationships in their data and identify evidence that refutes or supports their ideas.</li> <li>• Choose the most appropriate equipment to make measurements with increasing precision and explain how to use it accurately. Take repeat measurements where appropriate.</li> </ul>

			<ul style="list-style-type: none"> <li>Learn how to use a range of (new) equipment, such as data loggers/thermometers appropriately.</li> </ul>	
Identifying, classifying and grouping	<ul style="list-style-type: none"> <li>Represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories.</li> <li>Draw pictures, take photographs, make models or scrapbooks.</li> </ul>	<ul style="list-style-type: none"> <li>Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying)</li> </ul>	<ul style="list-style-type: none"> <li>Talk about criteria for grouping, sorting and classifying and use simple keys.</li> </ul>	<ul style="list-style-type: none"> <li>Use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment.</li> </ul>
Comparative and Fair Testing	<ul style="list-style-type: none"> <li>Make suggestions, show resilience, work with others.</li> <li>Notice similarities, notice differences and compare.</li> </ul>	<ul style="list-style-type: none"> <li>Record simple data.</li> <li>Carry out simple tests.</li> <li>With help, they should record and communicate their findings in a range of ways and begin to use simple scientific language.</li> <li>Experience different types of science enquiries, including practical activities.</li> <li>Begin to recognise different ways in which they might answer scientific questions.</li> </ul>	<ul style="list-style-type: none"> <li>Should be given a range of scientific experiences including different types of science enquiries to answer questions.</li> <li>Start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions.</li> <li>Set up simple practical enquiries, comparative and fair tests.</li> <li>Recognise when a simple fair test is necessary and help to decide how to set it up.</li> <li>Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts</li> </ul>	<ul style="list-style-type: none"> <li>Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas.</li> <li>Use oral and written forms such as displays and other presentations to report conclusions, casual relationships and explanations of degree of trust in results.</li> <li>Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why.</li> <li>Select and plan the most appropriate type of scientific enquiry to use to answer scientific questions.</li> </ul>

			and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data.	<ul style="list-style-type: none"> <li>Decide how to record data and results of increasing complexity from a choice of familiar approaches: scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</li> <li>Identify scientific evidence that has been used to support or refute ideas or arguments.</li> <li>Use their results to make predictions and identify when further observations, comparative and fair tests might be needed.</li> </ul>
Researching	<ul style="list-style-type: none"> <li>Choose the resources they need for their chosen activities and say when they do or don't need help.</li> <li>Talk to people, think of questions to ask to find things out and find out how things work; use first hand experiences/use secondary sources.</li> </ul>	<ul style="list-style-type: none"> <li>Explore the world around them and raise their own simple questions.</li> <li>Ask people questions and use simple secondary sources to find answers.</li> </ul>	<ul style="list-style-type: none"> <li>Raise their own relevant questions about the world around them.</li> <li>Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations.</li> </ul>	<ul style="list-style-type: none"> <li>Talk about how scientific ideas have developed over time.</li> <li>Use their scientific experiences to explore ideas and raise different kinds of questions.</li> <li>Recognise which secondary sources will be most useful to research their ideas and begin to separate their opinion from fact.</li> </ul>

Science capital is a broad and diverse concept, which includes a wide range of knowledge, experiences, attitudes, behaviours and practices. We aim to foster a love of science and scientifically thinking outside of the classroom and a curiosity of the world in which we live. As a way of promoting this, pupils have observed chicken eggs hatching in the classroom and caterpillars transforming into butterflies. Children have been on educational visits to the zoo and the Museum of Science & Industry and we have invited forensic scientists into school to work with pupils. Pupils take part in Peer2Peer days where children work in mixed age groups on a particular aspect of science.

### **COVID 19 RESPONSE**

Children who were home schooled received the same content of learning in science as those who were taught in school. However, we appreciate that this may have looked differently from one child to another and from pupils taught in school. As a result, and part of our 'good practice' whenever a new topic is being taught, pupils complete a KWL grid to think about what they already know about the topic and what they would like to find out. This also acts as part of the class teacher's initial assessment of pupils and therefore informs planning.

### **Impact**

Through a well thought out science curriculum we aim to have children who enjoy and are enthusiastic about science in our school.

Science is assessed in a formative manner throughout lessons so that the teacher can make constructive interventions where needed. This is used to inform the planning of future lessons, ensuring children are supported and challenged appropriately.

At the end of each unit, pupils are assessed against the learning objectives taken from the national curriculum of the EYFS framework (ELG's). This assessment is then collated and used to help make an informed judgement at the end of the school year. Assessments are reported back to parents.

Where possible, children are encouraged to assess their own work or the work of their peers. They learn how to provide constructive opinions of what went well and of how work could be improved. This enables them to apply these skills to make informed choices and decisions in the real world.