Science Long Term Plan

Ranskill Primary School

Working scientifically is carried out throughout each unit to support scientific understanding and allow pupils to develop skills of enquiry. Specific enquiry types have been assigned to each unit to ensure all five types are taught throughout each year. This is a minimum requirement and teachers will plan further enquiry types into their individual lessons. A diverse range of scientists and inventors will be discovered through research, including diversity of gender, race and time period.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Foundation Stage	In nursery and Foundation Stage, children will have had numerous opportunities to explore different materials and to make basic comparisons, perhaps indicating some preferences (taggies, cellophane, fleece, wooden blocks etc) They may make certain associations with certain materials, such as the soft ones make good snuggles but the hard ones don't. They might begin to recognise that some materials can be changed, for example, adding water to sand makes it better for building sandcastles. Our youngest pupils will have had some experience of what plants are. They may have grown plants in the setting. They might have discussed which of their foods are plants. They may have heard about plants in stories such as The Enormous Turnip and Jack and the Beanstalk. Many children will have picked common plants such as dandelions, daisies and daffodils. Many children will be able to distinguish between an animal and a plant. In our Early Years, our children will have begun to find out about their body and hygiene. They will be encouraged to wash their hands and might know some of their body parts by name, after singing songs such as heads, shoulders, knees and toes. They might be able to identify that a doll is a baby and they are not a baby anymore. They might know that their helpers or teachers are adults. It is inherent in the nature of most small children, to be curious, to want to find out what happens if…, to ask questions and to explore the world around them. Our pupils will be provided with support and encouragement to do these things and to celebrate what they discover.					
Key Stage 1 Cycle A	Everyday materials and Seasonal change Both Y1 Objectives Children will learn to distinguish between objects and the materials they are made from. They will investigate a range of common materials such as wood, glass, plastic, metal and rock, and begin to identify some of their properties. Throughout this topic, and the rest of the year, children will learn about the four seasons, and how the length of the day varies throughout the year. Enquiry type: Observations over time (rainfall/temp)	Uses of everyday Materials Y2 Objectives (and continue Seasonal Changes) Children will explore the twisting, stretching, squashing and bending properties of many common materials such as glass, plastic, wood, metal and rock. They will also explore how different surfaces affect how an object moves across it. Enquiry type: Classifying, identifying and sorting	Science: Animals including humans: (Y2 Objectives) Children will find out about a healthy diet and lifestyle and relate this to the basic needs of humans to survive. They will also be encouraged to notice that animals and humans have 'offspring' which develop into adults. They will learn about basic hygiene. Enquiry type: Pattern Spotting	Science: Living things and their habitats Y2 objectives Children will learn to recognise things that are living, dead or have never lived. They will explore simple food chains and find out about different habitats. They will explore the school grounds to discover how many types of habitats we can boast! Enquiry type: Research using secondary sources	Science: Animals including humans (Year 1 Objectives) Children will discover the types of animals in the world including fish, amphibians, mammals, birds and reptiles. They will research the diets of different animals and learn new words such as omnivore, carnivore and herbivore. They will learn the names of different basic parts of the human body. Enquiry type: Teachers' choice	Science: Plants Y1 and Y2 objectives Children will explore the school grounds to learn about common wild and garden plants, deciduous and evergreen trees and the basic structures of plants. Children will learn about seeds and bulbs and how they develop into plants. They will find out what plants need to grow well, using our outdoor areas. Enquiry: Observations over time
Key Stage 1 Cycle B	Enquiry type: Observations over time (rainfall/temp) Science: Animals including humans Y2 Objectives Children will find out about a healthy diet and lifestyle and relate this to the basic needs of humans to survive. They will also be encouraged to notice that animals and humans have 'offspring' which develop into adults. They will learn about basic hygiene. Enquiry type: Pattern Spotting	Science: Seasonal Changes and Everyday Materials Y1 Objectives Throughout this topic, and the rest of the year, children will learn about the four seasons, and how the length of the day varies throughout the year. Children will learn to distinguish between objects and the materials they are made from. They will investigate a range of common materials such as wood, glass, plastic, metal and rock, and begin to identify some of their properties.	Science: Science: Y2 objectives Living things and their habitats Children will learn to recognise things that are living, dead or have never lived. They will explore simple food chains and find out about different habitats. They will explore the school grounds to discover how many types of habitats we can boast! Enquiry type: Research using secondary sources	Science: Y1 objectives Animals including humans Children will discover the types of animals in the world including fish, amphibians, mammals, birds and reptiles. They will research the diets of different animals and learn new words such as omnivore, carnivore and herbivore. They will learn the names of different basic parts of the human body. Enquiry type: Teachers' choice	Science: Y2 Uses of Everyday Materials Children will progress to explore the twisting, stretching, squashing and bending properties of many common materials. They will also explore how different surfaces affect how an object moves across it. Enquiry type: Classifying, identifying and sorting	Science: Y1 and Y2 objectives Plants Children will learn about seeds and bulbs and how they develop into plants. They will find out what plants need to grow well, using our outdoor areas. Children will explore the school grounds to learn about common wild and garden plants, deciduous and evergreen trees and the basic structures of plants. Enquiry type: Observations over time

Key Stage 1 Cycle C	Science: Y1 Objectives Animals including humans Children will discover the types of animals in the world including fish, amphibians, mammals, birds and reptiles. They will research the	Science: Seasonal Changes Y1 and Animals including humans Y2 objectives Children will find out about a healthy diet and lifestyle and relate this to the basic needs of humans	Science: Y1 Objectives Everyday Materials Children will learn to distinguish between objects and the materials they are made from. They will investigate a range of common	Science:Y2 objectives Everyday Materials Children will progress to explore the twisting, stretching, squashing and bending properties of many common materials. They will also	Science: Y2 Objectives Living things and their habitats Children will learn to recognise things that are living, dead or have never lived. They will explore simple food chains and find out	Science: Y1 and Y2 objectives Plants Children will learn about seeds and bulbs and how they develop into plants. They will find out what plants need to grow well, using our outdoor areas.

	diets of different animals and learn new words such as omnivore, carnivore and herbivore. They will learn the names of different basic parts of the human body. Enquiry type: Teachers' choice	to survive. They will also be encouraged to notice that animals and humans have 'offspring' which develop into adults. They will learn about basic hygiene. Enquiry type: Observations over time (rainfall/temp)	materials such as wood, glass, plastic, metal and rock, and begin to identify some of their properties. Enquiry type: Pattern Spotting	explore how different surfaces affect how an object moves across it. Enquiry type: Classifying, identifying and sorting	about different habitats. They will explore the school grounds to discover how many types of habitats we can boast! Enquiry type: Research using secondary sources	Children will explore the school grounds to learn about common wild and garden plants, deciduous and evergreen trees and the basic structures of plants. Enquiry type: Observations over time
Key Stage 2 Cycle A Each unit has a designated enquiry type, but this is to be supplemented with further enquiries where appropriate.	Plants –Children will learn to understand the different parts of plants, the jobs they do and how they grow well. Enquiry type:Pattern spotting	Nutrition and Skeleton-to understand the importance of good nutrition. To understand the function of muscles and the skeleton. Enquiry type:Research using secondary sources	Rocks -differentiate between different types of rocks and understand how they are formed. Enquiry type:Classifying, identifying and sorting	Research Scientist/Inventor Enquiry type:using secondary sources Michael Faraday (1791-1867) Electromagnetics	Forces and magnets-to understand about forces friction and magnetic attraction. Enquiry type:Comparative and fair testing	Light- to have a clear understanding of light, reflections and shadows. To understand that there are many sources of light and that we need light to see Enquiry type:Observations over time
	Life cycles – know the process of reproduction and the life cycles of different plants and animals. Enquiry type:Observations over time	Properties and Changes of Materials - uses and properties inc. reversible and irreversible, dissolving and separating. Enquiry type:Classifying, identifying and sorting.	Earth and Space – have a basic overview of Earth and its place in our solar system. Enquiry type:Research using secondary sources	Forces – know about balanced and unbalanced forces. Know about levers, pulleys and gears Enquiry type:Comparative and fair testing	Research Scientist/Inventor Enquiry type:using secondary sources Isaac Newton (1643-1727) Gravity +	Animals – changes in humans – understand the change humans undergo as they become old. Enquiry type:Pattern spotting
Key Stage 2 Cycle B	Animals inc humans- to understand function of digestive system, identify types of teeth, interpret food chains. Enquiry type:Observation over time	Properties of materials-compare and group solids, liquids and gasses, understand they can change state, know condensation and evaporation as part of the water cycle. Enquiry type:Comparative and fair testing	Electricity –make circuits, understand conductors and insulators Enquiry type:Pattern spotting	Research Scientist/Inventor Enquiry type: using secondary sources Alessandro Volta (1745-1827) Electricity or Garrett Morgan (1877-1963) Traffic Lights	Living things and their habitats – group and use classification keys, understand changes to environment can cause dangers to living things Enquiry type:Identifying sorting and classifying	Sound- explore and identify how sound is made through vibration in different instruments from around the world; find out how the pitch and volume of sounds can be changed in a variety of ways Enquiry type:Research using secondary sources
	Evolution – know living things have changed over time and adapted to environments. Enquiry type:Research using secondary sources	Classification –describe how living things (plants, animals & microorganisms) can be grouped Enquiry type:Sorting identifying and classifying	Electricity – know how voltage affects components, use recognised symbols Enquiry type:Pattern spotting	Light – explore the way light behaves inc. light sources, reflection and shadows Enquiry type:Comparative testing	Research Scientist/Inventor Enquiry type:using secondary sources **Vivian Wing-Wah Yam Light emitting chemistry and solar energy**	Animals inc humans – name circulation system, know how drugs affect the body, know how nutrients are transported. Enquiry type:Observations over time
Key Stage 2 Cycle C	Rocks -differentiate between different types of rocks and understand how they are formed. Enquiry type:Identifying, sorting and classifying.	Light- to have a clear understanding of light, reflections and shadows. To understand that there are many sources of light and that we need light to see Enquiry type:Observations over time	Forces and magnets-to understand about forces friction and magnetic attraction. Enquiry type:Comparative and Fair testing	Research Scientist/Inventor Enquiry type: using secondary sources James Hutton (1726-1797) Geologist Elizabeth Philpott Fossils	Nutrition and Skeleton-to understand the importance of good nutrition. To understand the function of muscles and the skeleton. Enquiry type:Research using secondary sources	Plants –Children will learn to understand the different parts of plants, the jobs they do and how they grow well. Enquiry type:Pattern spotting

	Properties and Changes of Materials - uses and properties inc. reversible and irreversible, dissolving and separating. Enquiry type:Classifying, sorting and identifying	Forces – know about balanced and unbalanced forces. Know about levers, pulleys and gears Enquiry type:Comparative and fair testing	Animals – changes in humans – understand the change humans undergo as they become old. Enquiry type:Pattern spotting	Earth and Space – have a basic overview of Earth and its place in our solar system. Enquiry type:Research using secondary sources	Life cycles – know the process of reproduction and the life cycles of different plants and animals. Enquiry type:Observations over time	Research Scientist/Inventor Enquiry type:using secondary sources Archimedes (287BCE – 212BCE) Archmedes Screw lever and fulcrum Dame Anne Maclaren IVF
Key Stage 2 Cycle D	Animals inc humans- to understand function of digestive system, identify types of teeth, interpret food chains. Enquiry type:Observation over time	Sound- explore and identify how sound is made through vibration in different instruments from around the world; find out how the pitch and volume of sounds can be changed in a variety of ways	Living things and their habitats – group and use classification keys, understand changes to environment can cause dangers to living things	Research Scientist/Inventor Enquiry type: using secondary sources Sir Charles Kao (1933-2018) Fibre Optics	Electricity –make circuits, understand conductors and insulators Enquiry type: Pattern spotting	Properties of materials-compare and group solids, liquids and gasses, understand they can change state, know condensation and evaporation as part of the water cycle.
		Enquiry type:Research using secondary sources	Enquiry type:Identifying sorting and classifying	Elizabeth Garrett Anderson Surgeon		Enquiry type:Comparative and fair testing
	Evolution – know living things have changed over time and adapted to environments. Enquiry type:Research using secondary sources	Classification –describe how living things (plants, animals & microorganisms) can be grouped Enquiry type:Sorting identifying and classifying	Light – explore the way light behaves inc. light sources, reflection and shadows Enquiry type:Comparative testing	Electricity – know how voltage affects components, use recognised symbols Enquiry type:Pattern spotting	Animals inc humans – name circulation system, know how drugs affect the body, know how nutrients are transported. Enquiry type:Observations over time	Research Scientist/Inventor Enquiry type:using secondary sources Marie Curie (1867 – 1964) Radioactivity, xrays and gamma rays Shinya Yamanaka Stem Cells