The Eliot Bank and Gordonbrock Schools Federation

SCIENCE CURRICULUM OVERVIEW

Progression of knowledge and skills

Reception

	Knowledge and skills
	Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension. ● Explore the natural world around them ● Describe what they see, hear and feel whilst outside. ● Recognise some environments that are different from the one in which they live ● Understand the effect of changing seasons on the natural world around them ● **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**

	Knowledge and skills
	[**Bold** indicates ELG.]

Year 1

	Knowledge	Skills (including Working scientifically)
Seasonal changes	• To name the 4 seasons • To observe and describe the changes across the 4 seasons, across the year, looking at: weather, day length, plants and animals	• To make observations • To complete or make tables and charts to record what they have observed over time • To make displays to communicate what they have learnt about what happens in the world around them
Animals, including humans	• To name a variety of common animals including fish, amphibians, reptiles, birds and mammals • To explore animals which are found in our local environment • To identify a variety of common animals that are carnivores, herbivores and omnivores • To describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) • To identify, name, draw and label the basic parts of the human body (including head, neck, arms, elbows, knees, face, ears, eyes, hair, mouth, teeth) • To match body parts to senses	• To observe closely to compare and contrast animals • To identify, sort and group different animals and describe how they grouped the animals • To group animals according to what they eat • To use senses to compare different textures, sounds and smells • To use observations to answer questions

Everyday materials	• To identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock • To describe the simple physical properties of a variety of everyday materials, such as: hard/soft, stretchy/stiff, shiny/dull, rough/smooth, bendy/not bendy, waterproof/not waterproof, absorbent/not absorbent, opaque/transparent • To distinguish between an object and the material from which it is made • To compare and group together everyday materials, thinking about their properties	• To ask simple questions and recognise that they can be answered in different ways. • To perform simple tests to explore questions • To collect and record data to help in answering questions
Plants	• To identify and name a variety of common wild and garden plants • To identify and name a variety of deciduous and evergreen trees • To identify and describe the basic structure of a variety of common flowering plants • To identify and describe the basic structure of a variety of trees • To use the local environment to explore and answer questions about the plants growing in their habitat • To describe how they were able to identify and group plants	• To observe closely, using simple equipment, such as magnifying glasses • To compare and contrast familiar plants • To draw diagrams showing the different parts of the plants, including trees • To keep records of how plants change over time, for example, leaves falling off trees and buds opening

Year 2

	Knowledge	Working scientifically
Uses of everyday materials	• To identify and compare the suitability of a variety of everyday materials for different uses, including: wood, metal, plastic, glass, brick, rock, paper and cardboard • To make comparisons of materials	• To observe closely • To collect and record information

	• To identify and classify uses of materials • To become familiar with how some materials are used for more than one thing (e.g. metal) or how different materials are used for the same thing (e.g. a spoon). • To find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching • To find out about people who have developed useful new materials	
Animals, including humans	• To notice that animals, including humans, have offspring which grow into adults (e.g. chickens, butterflies, frogs, sheep) • To find out about and describe what animals and humans need to survive (food, air, water) • To describe the importance for humans of exercise • To describe the importance for humans of eating the right amounts of different types of food • To describe the importance of hygiene for humans	• To ask simple questions • To observe and measure closely (through first-hand experience) • To observe closely (through video or pictures) • To suggest ways to find out the answers to their questions
Living things and their habitats	• To explore and compare the differences between things that are living, dead, and things that have never been alive • To compare animals in familiar habitats with animals in less familiar habitats — for example: on the seashore, in woodland, in the rainforest, in the ocean • To identify that most living things live in habitats to which they are suited • To describe how different habitats provide for the basic needs of different kinds of animals and plants • To identify and name a variety of plants and animals in their habitats, including microhabitats	• To identify and classify • To compare and contrast • To make links • To ask questions and think about how to answer them • To gather and record data (information) to help in answering questions

	• To describe how animals obtain their food from plants and other animals, using the idea of a simple food chain • To identify and name different sources of food	
Plants	• To build on previous knowledge of identifying and naming a variety of common wild and garden plants, including deciduous and evergreen trees • To find out and describe how plants need water, light and a suitable temperature to grow and stay healthy • To observe and describe how seeds and bulbs grow into mature plants • To observe how different plants grow	• To observe and record, with some accuracy, the growth of a variety of plants as they change over time from a seed or a bulb • To observe similar plants at different stages of growth • To set up a comparative test to show what plants need to stay healthy • To find out the answers to their own questions

Year 3

	Knowledge	**Working scientifically**
Forces and magnets	• To notice that some forces need contact between 2 objects, but magnetic forces can act at a distance • To describe magnets as having 2 poles • To compare how things move on different surfaces • 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 predict whether 2 magnets will attract or repel each other, depending on which poles are facing	• 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 • Use straightforward scientific evidence to answer questions or to support their findings

Light	• 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 a solid object • To find patterns in the way that the size of shadows change	• 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
Rocks	• To recognise that soils are made from rocks and organic matter • To describe in simple terms how fossils are formed when things that have lived are trapped within rock • To compare and group together different kinds of rocks on the basis of their appearance and simple physical properties	• To make systematic and careful observations and, where appropriate, take 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
Plants	• 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 explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal • To investigate the way in which water is transported within	• To set up simple practical enquiries, comparative and fair tests • 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 identify differences, similarities or changes related to simple

	plants	scientific ideas and processes
Animals, including humans	• 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	• To ask relevant questions and using different types of scientific enquiries to answer them • To make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • 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

Year 4

	Knowledge	Working scientifically
Electricity	• To identify common appliances that run on electricity • To construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • To 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 • To recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • To recognise some common conductors and insulators, and associate metals with being good conductors	• 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 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

Sound	• To identify how sounds are made, associating some of them with something vibrating • To recognise that vibrations from sounds travel through a medium to the ear • To find patterns between the pitch of a sound and features of the object that produced it • To find patterns between the volume of a sound and the strength of the vibrations that produced it. • To recognise that sounds get fainter as the distance from the sound source increases	• 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 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 use straightforward scientific evidence to answer questions or to support their findings
States of matter	• Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature • To compare and group materials together, according to whether they are solids, liquids or gases • To 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)	• To make systematic and careful observations and, where appropriate, take 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 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
Animals, including	• To describe the simple functions of the basic parts of the digestive system in humans	• To ask relevant questions and using different types of scientific enquiries to answer them

humans	• To identify the different types of teeth in humans and their simple functions • To construct and interpret a variety of food chains, identifying producers, predators and prey	• To set up simple practical enquiries, comparative and fair tests • To make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • To record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • 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
All living things	• To recognise that living things can be grouped in a variety of ways • To recognise that environments can change and that this can sometimes pose dangers to living things	• To explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • To ask relevant questions and using different types of scientific enquiries to answer them • To make systematic and careful observations and, where appropriate, take 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 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

Year 5

	Knowledge	Working scientifically
Earth and space	• Describe the movement of the Earth, and other planets, relative to the Sun in the solar system • Describe the movement of the Moon relative to the Earth • Describe the Sun, Earth and Moon as approximately spherical bodies • Use the idea of the Earth's rotation to explain day and night, and the apparent movement of the sun across the sky • To identify scientific evidence that has been used to support or refute ideas or arguments	• To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • To take measurements, using a range of scientific equipment, with increasing accuracy and precision • To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs • To use test results to make predictions to set up further comparative and fair tests • To report and present findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations
Forces	• To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • To identify the effects of air resistance, water resistance and friction, that act between moving surfaces	• To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • To take measurements, using a range of scientific equipment, with increasing accuracy and precision

	• To recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect • To identify scientific evidence that has been used to support or refute ideas or arguments	• To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs • To use test results to make predictions to set up further comparative and fair tests • To report and present findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations
Properties and changes of materials	• To know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • To 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 • To identify scientific evidence that has been used to support or refute ideas or arguments • To use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • To give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • To demonstrate that dissolving, mixing and changes of state are reversible changes • To 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	• To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • To take measurements, using a range of scientific equipment, with increasing accuracy and precision • To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs • To use test results to make predictions to set up further comparative and fair tests • To report and present findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations

Living things and their habitats	• Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • Describe the life process of reproduction in some plants and animals • To identify scientific evidence that has been used to support or refute ideas or arguments	• To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • To take measurements, using a range of scientific equipment, with increasing accuracy and precision • To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs • To use test results to make predictions to set up further comparative and fair tests • To report and present findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations
Animals, including humans	• To describe the changes as humans develop to old age. • To recognise stages in the growth and development of humans • To describe differences in capabilities of newly born humans e.g. in movement, feeding • To recognise the length of time humans are dependent upon parents • To identify scientific evidence that has been used to support or refute ideas or arguments	• To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • To take measurements, using a range of scientific equipment, with increasing accuracy and precision • To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs • To use test results to make predictions to set up further comparative and fair tests • To report and present findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations

Year 6

	Knowledge	Working scientifically
Light and electricity	• To recognise that light appears to travel in straight lines • To 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 • To 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 • To use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them • To associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • To 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 • To use recognised symbols when representing a simple circuit in a diagram	• To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs • To use test results to make predictions to set up further comparative and fair tests • To use simple models to describe scientific ideas • To report and present findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations • To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • To take measurements, using a range of scientific equipment, with increasing accuracy and precision • To use test results to make predictions to set up further comparative and fair tests
Evolution	• To recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago • To recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • To identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution	• To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs • To use simple models to describe scientific ideas • To report and present findings from enquiries, including conclusions, causal relationships and explanations of results, in

		oral and written forms such as displays and other presentations • To identify scientific evidence that has been used to support or refute ideas or arguments
Living things and their habitats	• To describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals • To give reasons for classifying plants and animals based on specific characteristics	• To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs • To use simple models to describe scientific ideas • To report and present findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations
Animals, including humans	• To identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • To recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • To describe the ways in which nutrients and water are transported within animals, including humans	• To take measurements, using a range of scientific equipment, with increasing accuracy and precision • To use simple models to describe scientific ideas • To report and present findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations • To identify scientific evidence that has been used to support or refute ideas or arguments