



Science Vision Statement

Our school vision '**Dream, Believe, Achieve**', celebrates aspiration. Our **Science** curriculum is designed to engage children and create curious scientists. We will equip Fairfield Scientists with the skills to work scientifically and the ability to articulate and communicate their findings in a variety of ways. We want them to be interested in scientific processes and be able to apply a range of scientific enquiry techniques. They will be able to understand what they have learned, connect with different curriculum areas and make links with the outside world. We will inspire them for the future by introducing them to a variety of science-related careers.

Science in EYFS

In EYFS, science is taught through a variety of themes:

Animals	Food	Forces	Health and safety	Insects and invertebrates	Machines
Materials	Our body	Plants	Space	The senses	Weather and seasons

The Early Learning Goals (ELGs) that are taught through these themes are shown below:

Strand	Early learning goal (ELG)	Themes
Communication and language	Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions	Food Materials The senses
	Make comments about what they have heard and ask questions to clarify their understanding;	Food Forces Health and safety Materials Our body The senses
	Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary	Our body Plants
	Offer explanations for why things might happen, making use of recently introduced vocabulary from stories, non-fiction, rhymes and poems when appropriate	Food Materials Weather and seasons

Strand	Early learning goal (ELG)	Themes
Personal, social and emotional development	Show an understanding of their own feelings and those of others, and begin to regulate their behaviour accordingly	Our body
	Set and work towards simple goals, being able to wait for what they want and control their immediate impulses when appropriate	Food
	Give focused attention to what the teacher says, responding appropriately even when engaged in activity, and show an ability to follow instructions involving several ideas or actions	Food Plants Weather and seasons
	Be confident to try new activities and show independence, resilience and perseverance in the face of challenge	Food
	Explain the reasons for rules, know right from wrong and try to behave accordingly	Food Health and safety

Strand	Early learning goal (ELG)	Themes
Physical development	Negotiate space and obstacles safely, with consideration for themselves and others	Forces Our body
	Demonstrate strength, balance and coordination when playing	Forces
	Hold a pencil effectively in preparation for fluent writing – using the tripod grip in almost all cases	Health and safety Senses Space
	Use a range of small tools, including scissors, paint brushes and cutlery	Animals Food Forces Health and safety Insects and invertebrates Our body Plants Space Weather and seasons
	Begin to show accuracy and care when drawing	Animals Forces Insects and Invertebrates Machines Our body

Strand	Early learning goal (ELG)	Themes
Literacy	Write recognisable letters, most of which are correctly formed	Health and safety Insects and invertebrates

Strand	Early learning goal (ELG)	Themes
Mathematics	Have a deep understanding of number to 10, including the composition of each number	Food Space
	Subitise (recognise quantities without counting) up to 5	Insects and invertebrates
	Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts	Food
	Compare quantities up to 10 (and beyond) in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity	Food Insects and invertebrates

Strand	Early learning goal (ELG)	Themes
Understanding the world	Know some similarities and differences between things in the past and now, drawing on their experiences and what has been read in class	Our body
	Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps	Health and safety Machines Plants
	Know some similarities and differences between different religious and cultural communities in this country, drawing on their experiences and what has been read in class	Health and safety
	Explore the natural world around them, making observations and drawing pictures of animals and plants	Animals Insects and invertebrates Materials Our body 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	Animals Food Materials Space Weather and seasons
	Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter	Animals Food Materials Our body Plants Weather and seasons

Strand	Early learning goal (ELG)	Themes
Expressive arts and design	Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function	Animals Food Health and safety Insects and invertebrates Machines Our body Plants The senses Weather and seasons
	Share their creations, explaining the process they have used	Animals Health and safety Machines Our body Space
	Make use of props and materials when role playing characters in narratives and stories	Animals Our body Space The senses Weather and seasons
	Invent, adapt and recount narratives and stories with peers and their teacher	Machines
	Perform songs, rhymes, poems and stories with others, and – when appropriate – try to move in time with music	Our body

Science in KS1 and KS2

In KS1 and KS2, learning in science includes both knowledge and scientific enquiry objectives. The knowledge-based objectives cover physics, chemistry and biology and are split into half-termly topics. The scientific enquiry objectives are taught through all topics across the year. These are all shown in the tables below:

		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	Topic	Seasonal changes	Materials and states of matter (Exploring everyday materials)	Animals, including humans (All about animals)	Animals, including humans (All about me)	Plants	Materials and states of matter (Everyday materials – building)
	Knowledge	<ul style="list-style-type: none"> Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies 	<ul style="list-style-type: none"> Distinguish between an object and the material from which it is made Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock 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 	<ul style="list-style-type: none"> Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals Identify and name a variety of common animals that are carnivores, herbivores and omnivores Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) 	<ul style="list-style-type: none"> Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Distinguish between an object and the material from which it is made Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock 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
	Skills	<ul style="list-style-type: none"> Use observations and ideas to suggest answers to question Identify and classify Perform simple tests Gather and record data to help answer questions Observe closely and use simple equipment Group and sort 					

		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
		Topic	Living things and their habitats	Living things and their habitats (Habitats from around the world)	Materials and States of Matter (Uses of everyday materials)	Plants	Animals including humans (Health and survival)
Year 2	Knowledge	<ul style="list-style-type: none"> Explore and compare the differences between things that are living, dead, and things that have never been alive Identify and name a variety of plants and animals in their habitats, including micro-habitats 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 	<ul style="list-style-type: none"> 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 Identify and name a variety of plants and animals in their habitats, including micro-habitats 	<ul style="list-style-type: none"> Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses Describe how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching 	<ul style="list-style-type: none"> Observe and describe how seeds and bulbs grow into mature plants Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy 	<ul style="list-style-type: none"> Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene 	<ul style="list-style-type: none"> Notice that animals, including humans, have offspring which grow into adults
	Skills	<ul style="list-style-type: none"> Use observations and ideas to suggest answers to question Identify and classify Perform simple tests Gather and record data to help answer questions Observe closely and use simple equipment Ask simple questions and recognise that they can be answered in different ways 					

		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
		Topic	Animals, including humans	Forces and magnets	Light	Plants	Rocks
Year 3	Knowledge	<ul style="list-style-type: none"> 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 Identify that humans and some other animals have skeletons and muscles for support, protection and movement 	<ul style="list-style-type: none"> Compare how things move on different surfaces Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance Observe how magnets attract or repel each other and attract some materials and not others 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 Describe magnets as having 2 poles Predict whether 2 magnets will attract or repel each other, depending on which poles are facing 	<ul style="list-style-type: none"> Recognise that they need light in order to see things and that dark is the absence of light Notice that light is reflected from surfaces Recognise that light from the sun can be dangerous and that there are ways to protect their eyes Recognise that shadows are formed when the light from a light source is blocked by an opaque object Find patterns in the way that the size of shadows change 	<ul style="list-style-type: none"> Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers 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 Investigate the way in which water is transported within plants Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal 	<ul style="list-style-type: none"> Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties Describe in simple terms how fossils are formed when things that have lived are trapped within rock Recognise that soils are made from rocks and organic matter 	<ul style="list-style-type: none"> Unit to reinforce enquiry skills as listed below
	Skills	<ul style="list-style-type: none"> Asking relevant questions and using different types of scientific enquiries to answer them Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Identifying differences, similarities or changes related to simple scientific ideas and processes Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions Setting up simple practical enquiries, comparative and fair tests Using straightforward scientific evidence to answer questions or to support their findings Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions 					

		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 4	Topic	Animals, including humans	Electricity	Living things and their habitats	Living things and their habitats - conservation	Sound	States of matter
	Knowledge	<ul style="list-style-type: none"> Describe the simple functions of the basic parts of the digestive system in humans Identify the different types of teeth in humans and their simple functions Construct and interpret a variety of food chains, identifying producers, predators and prey 	<ul style="list-style-type: none"> Identify common appliances that run on electricity Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers 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 Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit Recognise some common conductors and insulators, and associate metals with being good conductors 	<ul style="list-style-type: none"> Recognise that living things can be grouped in a variety of ways Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment 	<ul style="list-style-type: none"> Recognise that environments can change and that this can sometimes pose dangers to living things 	<ul style="list-style-type: none"> Identify how sounds are made, associating some of them with something vibrating Recognise that vibrations from sounds travel through a medium to the ear Find patterns between the pitch of a sound and features of the object that produced it Find patterns between the volume of a sound and the strength of the vibrations that produced it Recognise that sounds get fainter as the distance from the sound source increases 	<ul style="list-style-type: none"> Compare and group materials together, according to whether they are solids, liquids or gases 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) Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature increases
	Skills	<ul style="list-style-type: none"> Asking relevant questions and using different types of scientific enquiries to answer them Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Identifying differences, similarities or changes related to simple scientific ideas and processes Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions Setting up simple practical enquiries, comparative and fair tests Using straightforward scientific evidence to answer questions or to support their findings Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions 					

		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
		Topic	Forces	Earth and space	Animals, including humans	Living things and their habitats	Properties of materials
Year 5	Knowledge	<ul style="list-style-type: none"> Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object Identify the effects of air resistance, water resistance and friction, that act between moving surfaces Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Describe the changes as humans develop to old age 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic Demonstrate that dissolving, mixing and changes of state are reversible changes 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 	
	Skills	<ul style="list-style-type: none"> Identifying scientific evidence that has been used to support or refute ideas or arguments Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations Using test results to make predictions to set up further comparative and fair tests 					

		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
		Topic	Living things and their habitats	Animals, including humans	Evolution and inheritance	Electricity	Light
Year 6	Knowledge	<ul style="list-style-type: none"> 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 Give reasons for classifying plants and animals based on specific characteristics 	<ul style="list-style-type: none"> Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function Describe the ways in which nutrients and water are transported within animals, including humans 	<ul style="list-style-type: none"> Recognise that living things have changed over time and that fossils provide information about living things that inhabited the 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 	<ul style="list-style-type: none"> Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit 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 Use recognised symbols when representing a simple circuit in a diagram 	<ul style="list-style-type: none"> Recognise that light appears to travel in straight lines 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 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 Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them 	<ul style="list-style-type: none"> Unit to reinforce enquiry skills as listed below
	Skills	<ul style="list-style-type: none"> Identifying scientific evidence that has been used to support or refute ideas or arguments Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations Using test results to make predictions to set up further comparative and fair tests 					