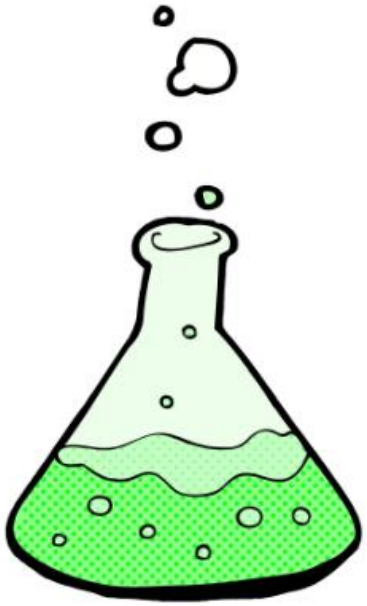
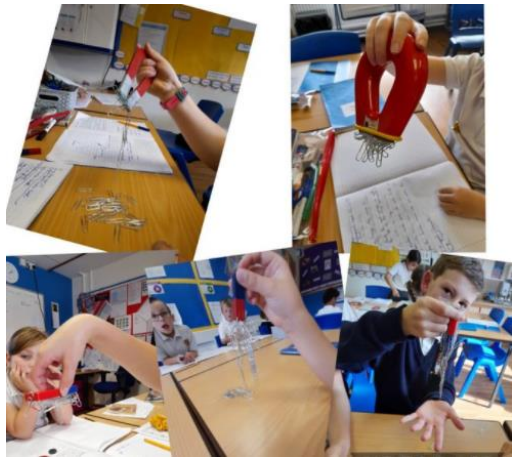
Science



"The more that you read, the more things you will know. The more that you learn, the more places you'll go."

Science Statement of Intent

At Folksworth Church of England Primary School we strive to provide our children with a broad and balanced Science curriculum which enables them to confidently explore and discover what is around them, so that they have a deeper understanding of the world we live in. We do this by providing them with exciting, practical hands on experiences that encourage curiosity and questioning. Throughout our school, children are encouraged to develop and use a range of working scientifically skills including questioning, researching and observing for ourselves. Scientific language is to be taught and built upon as topics are revisited in different year groups and across key stages. We intend to provide all children regardless of ethnic origin, gender, class, aptitude or disability with a broad and balanced science curriculum.



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Science Unit Overview

YEAR A	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	Magical Me	Celebrations	Around the World	Come Outside! Growing	Amazing Animals	Fun at the Seaside/ journeys
	x	Changes of State/ Light and Shadows	Seasonal Changes	Growing and Changing	Animals	Materials/ Magnetism
Years 1 & 2	Paddington at the Tower *Michael Bond*	Toby and the Great Fire of London *Margaret Nash & Jane Cope*	The Jolly Postman *Janet & Allan Ahlberg*	The Magic Faraway Tree *Enid Blyton*	The Lighthouse Keepers' Lunch *Ronda & David Armitage*	George's Marvellous Medicine *Roald Dahl*
	Seasonal Changes (Y1 POS)	X	Animals including humans	Materials	Plants	Living Things & their Habitats (Y2 POS)
Years 3 & 4	Charlie and The Chocolate Factory *Roald Dahl*	Demon Dentist *David Walliams*	Beowulf *Rob Lloyd Jones and Victor Tavares*	The Saga of Erik The Viking *Terry Jones*	Poems to Perform *Julia Donaldson*	The Time Travelling Cat and the Egyptian Goddess *Julia Jarman*
	Light (Y3 POS)	Forces and Magnets (Y3 POS)	X	Animals including humans	Electricity (Y4 POS)	Living Things & their Habitats (Y4 POS)
Years 5 & 6	Cosmic *Frank Cottrell Boyce*	The Nowhere Emporium *Ross MacKenzie*	Rain Player *David Wisniewski*		Goodnight Mr Tom *Michelle Magorian*	Macbeth (A Shakespeare Story) *Andrew Matthews and Tony Ross*
	Earth And Space (Y5 POS)	Living Things & their Habitats	X	Animals Including Humans	Evolution & Genetics (Y6 POS)	Light (Y6 POS)

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YEAR B	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	Magical Me	Celebrations	Around the World	Come Outside! Growing	Amazing Animals	Fun at the Seaside/ journeys
	x	Changes of State/ Light and Shadows	Seasonal Changes	Growing and Changing	Animals	Materials/ Magnetism
Years 1 & 2	Dogger *Shirley Hughes*	The Owl Who was Afraid of the Dark *Jill Tomlinson*	The Tiger who came to tea *Judith Kerr*	Handa's Surprise *Eileen Browne*	The Day the Crayons Quit *Drew Daywalt & Oliver Jeffers*	The Owl and the Pussycat *Edward Lear*
	X	Materials	Animals Including Humans	X	Plants	X
Years 3 & 4	Stig of the Dump *Clive King*	The Firework Makers Daughter *Philip Pullman*	The Iron Man *Ted Hughes*	Run Wild *Gill Lewis*	Avoid Being a Roman Soldier *David Stewart*	The Thieves of Ostia *Caroline Lawrence*
	Plants (Y3 POS)	Animals Including Humans	Rocks (Y3 POS)	X	States of Matter (Y4 POS)	Sound (Y4 POS)
Years 5 & 6	Tudor Tales: The Thief, the Fool and the Big Fat King *Terry Deary*	The Spy Master: First Blood *Jan Burchett & Sara Vogler*	The Storm Keeper's Island *Catherine Doyle*	The Highwayman *Alfred Noyes*	Beasts of Olympus: Beastkeeper Lucy Coats & David Roberts	Percy Jackson and the Lightning Thief *Rick Riordan*
	Materials (Y5 POS)	Forces and Magnets (Y5 POS)	X	Living things and their habitats	Animals Including Humans	Electricity Y6 POS)

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Science Progression of Knowledge and Skills

By Year Group

Make Observations | Ask Questions | Gather Data | Perform Tests | Use Equipment | Analyse Data

Year Group	Standardised Objectives
Year R	ELG The Natural World • Explore the natural world around them, making observations and drawing pictures of animals and plants • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. ELG Listening, attention and understanding • 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 • Make comments about what they have heard and ask questions to clarify their understanding ELG Speaking • Offer explanations for why things might happen, making use of recently introduced vocabulary ELG Self Regulation • Set and work towards simple goals, being able to wait for what they want and control their immediate impulses when appropriate ELG The Natural World • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter ELG The Natural World • Explore the natural world around them, making observations and drawing pictures of animals and plants

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Year 1	• Start to observe closely • Start to ask and suggest answers to simple scientific questions • Use first-hand practical experiences to find answers • Begin to gather and record data simply using words and pictures • Perform simple tests with support • Begin to use simple equipment • Start to discuss what they have found out
Year 2	• Observe closely • Ask and raise their own scientific questions • Use first-hand practical experiences to find answers • Gather and record data using diagrams, words and charts • Perform simple tests • Use simple equipment • Discuss what they have found out
Year 3	• Develop skills of systematic observation • Ask relevant scientific questions and suggest how to answer eg *practical test v secondary source* • Develop different types of scientific enquiry • Gather, record and present data in a variety of ways eg *drawings, labelled diagrams, charts* • Report on findings orally and in writing using scientific language • Set up simple, practical enquiries • Understand comparative and fair tests • Use range of equipment to measure accurately • Use results to draw simple conclusions, make predictions and raise further questions • Identify similarities, differences and changes related to scientific processes and ideas

Year 4	• Make systematic observations • Generate and answer scientific questions using evidence • Select most appropriate type of scientific enquiry • Gather, record, classify and present data in a variety of ways • Report on findings orally and in writing using accurate scientific language • Suggest, set up and carry out simple practical enquiries • Understand comparative and fair tests • Confidently use a range of equipment to measure accurately • Use results to draw simple conclusions, make predictions and raise further questions • Identify similarities, differences and changes related to scientific processes and ideas
Year 5	• Independently decide which observations to make • Use science experiences to plan different types of enquiry • Record data/results of increasing complexity using diagrams, classifications keys, tables, bar and line graphs • Report and present findings from enquiries examining causal relationships and reliability of results • Recognise and control variables where necessary • Take measurements using a range of scientific equipment with accuracy and precision • Use test results to make predictions to set up further tests • Identify scientific evidence that has been used to support/refute arguments
Year 6	• Independently decide which observations to make • Use science experiences to explore ideas and raise different types of question • Plan different types of scientific enquiry to answer questions • Decide how to record data/results of increasing complexity • Report and present findings from enquiries examining causal relationships and reliability of results • Recognise and control variables where necessary • Explain which variables need to be controlled and why • Take measurements using a range of scientific • equipment with accuracy and precision, taking repeat readings where appropriate • Use test results to make predictions to set up further tests (comparative/fair) and explain reasoning • Identify scientific evidence that has been used to support/refute arguments

By Theme

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Make Observations						
(The Natural World) Explore the natural world around them, making observations and drawing pictures of animals and plants - Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter	Start to observe closely	Observe closely	Develop skills of systematic observation	Make systematic observations	Independently decide which observations to make	Independently decide which observations to make
Perform Tests						
(Self Regulation) Set and work towards simple goals, being able to wait for what they want and control their immediate impulses when appropriate; **(The Natural World)** Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	Perform simple tests with support	Perform simple tests	Set up simple practical enquiries Understand comparative and fair tests	Suggest, set up and carry out simple practical enquires Understand comparative and fair tests	Recognise and control variables where necessary	Recognise and control variables where necessary Explain which variables need to be controlled and why
Ask Questions						
(Listening, Attention and Understanding) Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to a - Make comments about what they have heard and ask questions to clarify their understanding **(Speaking)** Offer explanations for why things might happen, making use of recently introduced vocabulary	Start to ask and suggest answers to simple scientific questions Use first-hand practical experiences to find answers	Ask and raise their own scientific questions Use first-hand practical experiences to find answers	Ask relevant scientific questions and suggest how to answer eg *practical test vs secondary sources* Develop different types of scientific enquiry	Generate and answer scientific questions using evidence Select most appropriate type of scientific enquiry	Use science experiences to plan different types of enquiry	Plan different types of scientific enquiry in order to answer questions Use science experiences to explore ideas and raise different types of question

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EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Gather Data						
	Begin to gather and record data simply using pictures and words	Gather and record data using diagrams, words and charts	Gather, record and present data in variety of ways eg drawings, labelled diagrams, charts Report on findings orally and in writing using scientific language	Gather, record, classify and present data in a wide variety of ways eg *drawings, labelled diagrams, charts* Report on findings orally and in writing using scientific language to answer questions	Record data/results of increasing complexity using diagrams, classification keys, tables, bar and line graphs Report and present findings from enquiries, examining causal relationships and reliability of results	Decide how to record data/results of increasing complexity using diagrams, classification keys, tables, scatter graphs, bar and line graphs Report and present findings from enquiries, examining causal relationships and reliability of results
Analyse Data						
	Start to discuss what they have found out	Discuss what they have found out	Use results to draw simple conclusions and make predictions Identify similarities, differences, changes related to scientific processes and ideas	Use results to draw simple conclusions, make predictions, suggest improvements and raise further questions Explain similarities, differences, changes related to scientific processes and ideas	Use test results to make predictions to set up further tests (comparative/fair) Identify scientific evidence that has been used to support/refute arguments	Use test results to make predictions to set up further tests (comparative/fair) and explain reasoning Interpret scientific evidence that has been used to support/refute arguments
Use Equipment						
(The Natural World) Explore the natural world around them, making observations and drawing pictures of animals and plants	Begin to use simple equipment eg *egg timers, hand lenses*	Use simple equipment eg *hand lenses, egg timers*	Use range of equipment to measure accurately eg *dataloggers, thermometers*	Confidently use range of equipment to measure accurately eg *dataloggers, thermometers*	Take measurements using a range of scientific equipment with accuracy and precision	Take measurements using a range of scientific equipment with accuracy and precision, taking repeat readings where appropriate

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants	*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.	*Observe and describe how seeds and bulbs grow into mature plants. *Find and describe how plants need water, light and suitable temperature to grow and stay healthy.	*Identify and describe the functions of different parts of flowing plants: roots, stem/trunk leaves and flowers.			
Animals Including Humans	*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). *Identify, name, draw and label the basic parts of the human body and say which part of the body is associate with each sense.	*Understand that animals, including humans, have offspring, which grow into adults. *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.	*Identify that animals, including humans, need the right types and amount of nutrition, ant 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.	*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.	*Describe the changes as humans develop to old age.	*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.
Living Things and their habitats		*Explore and compare the differences between things that are living, dead and things that have never been alive. *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,		*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. *Recognise that environments can change and that this can sometimes pose dangers and have an impact on living things.	*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.	*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.

		and how they depend on each other. *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.				
Materials	*Distinguish between an object and 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.	*Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. *Find out and describe how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.			*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 through filtering, sieving and evaporating. *Give reasons, based on evidence, for comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.	
Seasonal Changes	*Observe changes across the four seasons. *Observe and describe weather associated with the seasons and how day length varies.					
Rocks			*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.			
Light			*Recognise that we 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 eyes. *Recognise that shadows are formed when the light from a source is blocked by a solid object. *Find patterns in the way that the size of shadows change.			*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 the 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.
Forces and Magnets			*Notice that some forces need contact between two 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 two poles. *Predict whether two magnets will attract or repel each other, depending on which poles they are facing.		*Explain that unsupported objects fall towards 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 the moving surfaces. *Recognise that some mechanisms, including levers, pulleys and gears allow a smaller force to have a greater effect.	

States of Matter				*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 masure or research the temperature at which this happens in degresss Celcius. *Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.		
Sound				*Identify how sounds are made, associating some of them with something vibrating. *Recongise 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 asound and the strength of the vibrations that produced it. *Recognise that sounds get fainter at the distance from the sound source increases.		
Electricity				*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 loom 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 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.

				associate metals with being good conductors.		
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.	
Evolution and Inheritance						*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.