

Science Curriculum Overview



Flexibility in the science curriculum – at Great Waldingfield, we expect all aspects of the science curriculum covered over the year, but are not constrained by half terms or end of terms. Investigations and observations can therefore take place over several weeks, or even across the year (this especially relevant for Year 1 and 2)

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	Science within EYFS is linked primarily to 'Understanding of the World' and 'Physical Development'. Children in EYFS have opportunities throughout the year to be able to observe, play and question scientific phenomena through activities instigated by teachers or provided as part of provision. Questions are modelled and encouraged using scientific vocabulary and stimulated through practical experiences as well as literary and mathematical ones. Examples include, but are not limited to: growing their own fruit and vegetables, observing the lifecycle of a butterfly and observing the incubation and birth of baby chicks.					
Inquiry question:		How have I grown and changed?	How can we free the beans? What should a postman bear use to keep dry?	How do chickens grow and change? What is the of cycle of a butterfly?	What are the lifecycles of some minibeasts?	Where did Incy Wincy's puddles go?
Scientists:	Various visitors depending on topic – farmer, nurse, doctor, vet, dentist or parent with baby					

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	<p>Plants</p> <p><i>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</i></p> <p><i>Planting winter vegetables</i></p> <p>Seasonal Changes</p> <p><i>Observe changes across the four seasons – focussing on Autumn</i></p> <p><i>Observe and describe weather associated with the seasons and how day length varies</i></p>	<p>Materials</p> <p><i>Distinguish between an object and the material from which it is made</i></p> <p><i>Identify, name and describe simple properties of a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</i></p> <p><i>Compare and group together a variety of everyday materials on the basis of their simple physical properties</i></p> <p>Seasonal Changes</p> <p><i>-focussing on Autumn into Winter</i></p>	<p>Seasonal Changes</p> <p><i>- focussing on Winter and then Winter into Spring</i></p> <p>Animals including Humans</p> <p><i>Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</i></p>	<p>Animals including Humans</p> <p><i>Identify and name common carnivores, herbivores and omnivores</i></p> <p>Seasonal Changes</p> <p><i>- focussing on Spring</i></p>	<p>Animals including Humans</p> <p><i>Identify, name describe and compare a variety of common animals including fish, amphibians, reptiles, birds and mammals including pets and farm animals)</i></p> <p>Plants</p> <p><i>Planting fruit and vegetables</i></p> <p>Seasonal Changes</p> <p><i>focussing on Spring into Summer</i></p>	<p>Plants</p> <p><i>Identify and describe the basic structure of a variety of common flowering plants, including trees.</i></p> <p><i>Planting fruit and vegetables</i></p> <p>Seasonal Changes</p> <p><i>focussing on Summer</i></p>
Inquiry type and question:	<p>Pattern seeking</p> <p>Do trees with bigger leaves lose their leaves first in autumn?</p> <p>Observation over time. How does the environment change through the seasons? (ongoing)</p>	<p>Comparative and fair testing</p> <p>Which materials are the most flexible?</p> <p>Which materials are the most absorbent?</p>	<p>Identifying and classifying</p> <p>What are the names for all the parts of our bodies?</p>	<p>Ideas over time</p> <p>What strange ideas did Italian scientist Luigi Galvani have about animals in 1780? Why did he think that?</p>	<p>Research using a secondary source</p> <p>How are the animals in Australia different to the ones that we find in Britain?</p>	
Scientists:	Monty Don (horticulturalist)	Elijah McCoy (engineer)	Chris Packham (naturalist)	Bill Oddie (ornithologist)	Joan Beauchamp Proctor (herpetologist)	María Teresa Pino (plant biologist)

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 2	<p>Plants</p> <p><i>Observe and describe how seeds and bulbs grow into mature plants</i></p> <p><i>Planting Spring bulbs</i></p> <p><i>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</i></p>	<p>Uses of everyday materials</p> <p><i>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</i></p> <p><i>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</i></p>	<p>Animals including Humans</p> <p><i>Notice that animals, including humans, have offspring which grow into adults</i></p> <p><i>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</i></p> <p><i>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</i></p>	<p>Plants</p> <p><i>Observe and describe how seeds and bulbs grow into mature plants</i></p> <p><i>Planting vegetable and flower seeds.</i></p> <p><i>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</i></p>	<p>Living things and their Habitats</p> <p><i>Explore and compare the differences between things that are living, dead, and things that have never been alive</i></p> <p><i>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</i></p> <p><i>Identify and name a variety of plants and animals in their habitats, including microhabitats</i></p> <p><i>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.</i></p>	
Inquiry type and question:	<p>Pattern Seeking</p> <p>Do bigger seeds grow into bigger plants?</p>	<p>Comparative testing</p> <p>Investigating Waterproofing and Insulating</p> <p>Scientific ideas that change over time</p> <p>Invention of more advanced materials</p>	<p>Identify and classify</p> <p>Matching offspring and animals.</p>	<p>Research</p> <p>What do plants need to survive?</p>	<p>Identifying and classifying</p> <p>Plants, animals and their habitats.</p>	
Scientists:	<p>Mary Agnes Chase (plant biologist)</p>	<p>John Dunlop (inventor)</p>		<p>Beth Chatto (horticulturalist)</p>	<p>Amy 'Acorn' Ward (ecologist) Rachel Carson (marine biologist)</p>	

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 3	<p>Rocks</p> <p><i>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</i></p> <p><i>Describe in simple terms how fossils are formed when things that have lived are trapped within rock</i> <i>Recognise that soils are made from rocks and organic matter.</i></p>	<p>Forces and Magnets</p> <p><i>Compare how things move on different surfaces</i></p> <p><i>Notice that some forces need contact between two objects, but magnetic forces can act at a distance</i></p> <p><i>Observe how magnets attract or repel each other and attract some materials and not others</i></p> <p><i>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</i></p> <p><i>Describe magnets as having two poles</i></p> <p><i>Predict whether two magnets will attract or repel each other, depending on which poles are facing.</i></p>	<p>Light</p> <p><i>Recognise that they need light in order to see things and that dark is the absence of light</i></p> <p><i>Notice that light is reflected from surfaces</i></p> <p><i>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes</i></p> <p><i>Recognise that shadows are formed when the light from a light source is blocked by an opaque object</i></p> <p><i>Find patterns in the way that the size of shadows change.</i></p>	<p>Plants</p> <p><i>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</i></p> <p><i>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</i></p> <p><i>Investigate the way in which water is transported within plants</i></p> <p><i>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</i></p>	<p>Animals including humans</p> <p><i>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</i></p> <p><i>Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</i></p> <p>This unit is supplemented and extended by use of a camera trap and activities supplied by Colchester Zoo.</p>	
Inquiry type and question:	<p>Research using a secondary source Which rocks are fossils and crystals found in?</p>	<p>Comparative & Fair testing Do bigger magnets have greater strength?</p>	<p>Observation over time Do shadows change over the day?</p>	<p>Identifying, classifying and grouping Which seed dispersal method is used by each plant?</p>	<p>Pattern seeking Do boys have bigger skulls than girls?</p>	
Scientist and field:	<p>Mary Anning (palaeontologist) Anjana Khatwa (geologist)</p>	<p>Andre Marie Ampere (physicist)</p>	<p>Patricia E. Bath (ophthalmologist)</p>	<p>George Washington Carver (agricultural scientist)</p>	<p>Joan Beauchamp Proctor (herpetologist)</p>	

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 4	<p>Animals including humans</p> <p><i>Describe the simple functions of the basic parts of the digestive system in humans</i></p> <p><i>Identify the different types of teeth in humans and their simple functions</i></p> <p><i>Construct and interpret a variety of food chains, identifying producers, predators and prey</i></p>	<p>Electricity</p> <p><i>Identify common appliances that run on electricity</i></p> <p><i>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</i></p> <p><i>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</i></p> <p><i>recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</i></p> <p><i>Recognise some common conductors and insulators, and associate metals with being good conductors.</i></p>	<p>States of Matter</p> <p><i>Compare and group materials together, according to whether they are solids, liquids or gases</i></p> <p><i>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)</i></p> <p><i>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</i></p>	<p>Sound</p> <p><i>Identify how sounds are made, associating some of them with something vibrating</i></p> <p><i>Recognise that vibrations from sounds travel through a medium to the ear</i></p> <p><i>Find patterns between the pitch of a sound and features of the object that produced it</i></p> <p><i>Find patterns between the volume of a sound and the strength of the vibrations that produced it</i></p> <p><i>Recognise that sounds get fainter as the distance from the sound source increases.</i></p>	<p>Living things and their habitats</p> <p><i>Recognise that living things can be grouped in a variety of ways</i></p> <p><i>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</i></p> <p><i>Recognise that environments can change and that this can sometimes pose dangers to living things.</i></p>	
Inquiry type and question:	<p>Observation over time</p> <p>How do adult and children's teeth differ?</p>	<p>Comparative and fair testing</p> <p>What makes a good conductor? Children kept their circuits the same and just</p>	<p>Research using a secondary source</p> <p>What will melt faster chocolate butter or ice cream? Researched the</p>	<p>Pattern seeking</p> <p>Is there a link between the volume of a sound and the strength of its vibrations?</p>	<p>Identifying and classifying</p> <p>Group living things by their habitat.</p>	

		changed materials to see which ones conducted electricity.	different melting points to make a conclusion.		
Scientists:	William Beaumont (gastroenterologist)	Edith Clarke (electrical engineer)	Joseph Priestley (chemist)	James Edward Maceo West (acoustian)	Maria Merian (entomologist)

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 5	<p>Living things and their habitats</p> <p><i>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</i></p>	<p>Forces</p> <p><i>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</i></p> <p><i>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces</i></p> <p><i>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</i></p>	<p>Earth and space</p> <p><i>Describe the movement of the Earth, and other planets, relative to the Sun in the solar system</i></p> <p><i>Describe the movement of the Moon relative to the Earth</i></p> <p><i>Describe the Sun, Earth and Moon as approximately spherical bodies</i></p> <p><i>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</i></p>	<p>Properties and changes of materials</p> <p><i>Compare and group together everyday materials on the basis of their properties.</i></p> <p><i>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</i></p> <p><i>Use knowledge of solids, liquids and gases to decide how mixtures might be separated.</i></p> <p><i>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials.</i></p> <p><i>Demonstrate that dissolving, mixing and changes of state are reversible changes</i></p> <p><i>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.</i></p>	<p>Animals including humans</p> <p><i>Describe the changes as humans develop to old age.</i></p>	<p>Living things and their habitats</p> <p><i>Revisit lifecycles</i></p> <p><i>Describe the life process of reproduction in some plants and animals.</i></p>
Inquiry type and question:	<p>Observation over time</p> <p>Who grows the fastest, girls or boys?</p>	<p>Comparative and fair testing</p> <p>Which shape parachute takes the longest to fall?</p>	<p>Research using a secondary source</p> <p>How have our ideas about the solar system changed over time?</p>	<p>Identifying and classifying</p> <p>Can you group these materials based on whether they are transparent or not?</p>	<p>Pattern seeking</p> <p>Is there a relationship between a mammal's size and its gestation period?</p>	<p>Observation over time</p> <p>Revisit - Who grows the fastest, girls or boys?</p>

Scientists:	David Attenborough (biologist)	Isaac Newton (physicist)	Katherine Johnson (mathematician)	Nettie Stevens (geneticist)	Miriam Rothschild (zoologist)
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Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	
Year 6	<p>Living things and their habitats</p> <p><i>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</i></p> <p><i>Give reasons for classifying plants and animals based on specific characteristics.</i></p>	<p>Evolution and inheritance</p> <p><i>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</i></p> <p><i>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</i></p> <p><i>Describe the ways in which nutrients and water are transported within animals, including humans.</i></p>	<p>Electricity</p> <p><i>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</i></p> <p><i>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</i></p> <p><i>Use recognised symbols when representing a simple circuit in a diagram.</i></p>	<p>Light</p> <p><i>Recognise that light appears to travel in straight lines</i></p> <p><i>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</i></p> <p><i>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</i></p> <p><i>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</i></p>	<p>Animals including Humans</p> <p><i>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</i></p> <p><i>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</i></p> <p><i>Describe the ways in which nutrients and water are transported within animals, including humans.</i></p>		
Inquiry type and question:	<p>Identifying and classifying</p> <p>How would you make a classification key for vertebrates/invertebrates or microorganisms?</p>	<p>Research using a secondary source</p> <p>What happened when Charles Darwin visited the Galapagos islands?</p>	<p>Observation over time</p> <p>How would you group electrical components and appliances based on</p>	<p>Pattern seeking</p> <p>Does the temperature of a light bulb go up the longer it is on?</p>	<p>Comparative and fair testing</p> <p>Which type of exercise has the greatest effect on our heart rate?</p>		

			what electricity makes them do?		
Scientists:	Jane Goodall (primatologist)	Charles Darwin (naturalist and genealogist)	Thomas Edison (inventor)	Willebrord Snel van Royen (astronomer)	Marie M. Daly (biochemist)