

Science at Cotford St Luke:

Science education at Cotford St Luke Primary School aims to spark curiosity and develop critical thinking skills through hands-on, inquiry-based learning. The curriculum covers biology, chemistry, physics, and earth sciences, focusing on living things and their habitats, materials and their properties, and forces and motion. The children participate in experiments that encourage them to ask questions, make predictions, and draw conclusions, all while combining aspects from other subjects like mathematics and geography.

At Cotford St Luke School, we link science education to global awareness and sustainability through our summer projects. These initiatives address key issues such as renewable energy, conservation, climate change, and pollution, fostering a sense of responsibility among students. By exploring the interconnectedness of our world, students learn the importance of collective action and develop eco-friendly habits.

Our approach prepares students to think like a scientist and to become informed and responsible citizens.

EYFS Science Overview:

In EYFS, Science is woven into the overarching EYFS topics of ‘Here I Am,’ ‘Once Upon a Time,’ and ‘Our Wonderful World.’ These themes provide a natural framework for exploring the world and nurturing children's innate curiosity about how things work.

Science appeals to the inquisitive minds of young children as they try to make sense of their surroundings. Through hands-on, playful activities, children are encouraged to explore, experiment, and ask questions. Play is central to all learning in the EYFS, and during play, children may express their thoughts and ideas out loud or engage quietly, reflecting as they discover. With the right support in a secure yet stimulating environment, children can experiment and investigate, helping them better understand the world around them.

The EYFS strand ‘Understanding the World’ indirectly introduces scientific concepts, setting the foundation for more structured science learning in Key Stage 1 (KS1) and Key Stage 2 (KS2). By fostering natural curiosity and a love for exploration, we aim to create a positive learning environment where children can build on their interests and develop a deeper understanding of new ideas.

Cross-curricular links with science are made wherever possible, helping children see how their learning fits into a broader context and contributing to their overall holistic development.

	Autumn	Spring	Summer
	Here I am	Once upon a time	Our wonderful world
Nursery	Questioning (Q) Ask questions and show that they are curious. Grouping and Classifying (GC) Find things that are similar or different. Use senses to sort things in their own way (objects/living things) Observing (O) Talk about and draw pictures of what they have seen. Use senses and simple equipment to make observations. Observe changes. Testing (T) Talk about things they are testing and what they find out.		

	Animals including Humans -Learning the importance of good hygiene: (O) Hand washing. Dental care. Naming body parts. Healthy snacks.	Animals including Humans -Naming woodland animals and birds. (O) - Sorting animals (size, features, colours, legs etc.) (GC) Investigating Light - Shadows. (Q) - Materials that let light through. (T) - Torches. (O) Seasonal Changes Autumn walk in school grounds. Observing changes. (O)(GC)	Materials -Exploring collections of natural materials: - Shells, sticks, pebbles etc. (O) - Sensory bottles. (O) - Making porridge. (O) - Freezing water and melting ice naturally. (T) - Cooking. (O) Seasonal Changes Winter walk in school grounds. Observing changes. (O)(GC)	Forces -Exploring how things work: - Windup toys. (Q) - Magnets. (O) Materials - Floating and sinking. (T) - Stretching and bending. (GC)(T) Seasonal Changes Spring walk in school grounds. - Observing changes. (O)(GC) Naming some Spring flowers. (Daffodil, Crocus) (O)(GC)	Animals including Humans - Naming common pets and their young. (O)(GC) Sorting pets: Identifying similarities and differences. (GC)	Plants - Planting beans and caring for them. (O) - Decay over time (fruits). (T)(O) Animals including Humans - Naming common minibeasts. (O)(GC) - Caring for living things. (Q)
Reception	Questioning (Q) Ask questions and show that they are curious. Grouping and Classifying (GC) Find things that are similar or different. Use senses to sort things in their own way (objects/living things) Observing (O) Talk about and draw pictures of what they have seen. Use senses and simple equipment to make observations. Observe changes. Testing (T) Talk about things they are testing and what they find out.					
	Animals Including Humans -Learning the importance of good hygiene: (Q)(O) Importance of washing hands. Identifying parts of the body. Identifying senses. Importance of dental care. Making healthy food choices. Importance of drinking water.	Animals including Humans - Identify names of farm animals and their young and drawing them. (O) - Sorting animals (GC) Seasonal change Autumn - Autumn painting. (O)(GC) - Discussing weather (Q)(O) - Observing Autumn changes. (O) - Making art with Autumn leaves. (O) - Observing animal/bird behaviours. (O)(Q)	Materials - Exploring changing states of matter. (O) - Ice/snow. (T) - Gloop. (O) - Water beads. (O) - Testing materials to see if they sink or float. (T) Seasonal change Winter - Winter painting. (O)(GC) - Discussing weather. (Q)(O) - Observing changes. (O) Observing animal/bird behaviours. (O)(Q)	Materials - Identifying wood, metal and plastic. (O)(GC) - Comparing and sorting materials (soft and hard, shiny and dull). (GC) - Exploring with magnets. (O) Plants - Naming and drawing spring flowers. (Daffodil, Crocus, Tulips) (O)(GC) Seasonal change Spring - Spring painting. (O)(GC) - Discussing Weather. (Q)(O) - Observing changes. (O) Observing animal/bird behaviours. (Q)(O)	Plants - Planting and growing sunflowers. (O) - Observing changes over time including decay. (O)(T) - Recognise that plants grow and should be treated with care. (Q)(O)(A) Drawing sunflowers after close observation. (O)	Animals including Humans - Identify common minibeasts. (O) - Explore habitats (Wild Garden). (Q) - Drawing minibeasts. (O) - Caring for the natural world around us and outdoor rules. (Q) - Butterfly lifecycle. (Q)(O) Seasonal change Summer - Summer painting. (O)(GC) - Discussing weather. (Q)(O) - Observing changes. (O) - Exploring shadows at different times of the day. (T)(Q) Observing animal/bird behaviours. (Q)(O)

KS1 Science Overview:

In Key Stage One, children engage in observing, exploring, and asking questions about living things, materials, and their environment. They work together to gather evidence, identify patterns, classify objects, and conduct research from various sources. They also monitor environmental changes and perform fair tests to draw conclusions.

To deepen their understanding, children use reference materials and communicate their findings using scientific terminology, along with drawings, charts, and tables. Science is taught for at least one hour per week, with a focus on creativity and exploration. Lessons include hands-on investigations, recording results, and using outdoor spaces to enhance learning. Where possible, science is linked to other areas of the curriculum.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	Seasonal Changes To be completed throughout the year Observe changes across the four seasons. Observe and describe the weather associated with the seasons and how day length varies.					
	Animals inc. 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 associated with each sense		Everyday materials 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.		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.	Summer Project: Water - Our World Our Future
Year 2	Animals inc. humans Notice that animals, including humans, have offspring which grow into adults.		Uses of everyday materials Identify and compare the suitability of a variety of everyday materials, including wood, metal,	Living things and their habitats Explore and compare the differences between things that are living, dead, and	Plants Observe and describe how seeds and bulbs grow into mature plants.	Summer Project: Buzzing for Bees – Nature's Little Helpers

	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.		plastic, glass, brick, rock, paper and cardboard for particular uses. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	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, and how they depend on each other. Identify and name a variety of plants and animals in their habitats, including microhabitats. Describe how animals obtain their food from plants and other animals, using the idea of a simple	Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	
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KS2 Science overview:

In Key Stage 2, children are motivated to broaden the scientific questions they pose and to explore about their environment. They engage in various scientific investigations, including conducting observations over time, identifying patterns, classifying and grouping items, and using diverse research sources, including digital tools.

Students in this stage learn how to design their own science experiments and understand the necessary steps to ensure fair testing. They make use of outdoor spaces to enhance their scientific learning experiences. Communication is key, as pupils are encouraged to express their thoughts using topic-specific scientific vocabulary, along with diagrams, charts, tables, and computer-generated graphs.

Teachers allocate one afternoon each week to science lessons, ensuring that these sessions include hands-on scientific inquiries and concentrate on essential skills, such as interpreting results to draw basic conclusions. The outdoor environment, including gardens and forest school area, can be incorporated into their science activities to provide practical, real-world applications of their learning.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
LKS2 A (Yr4)	Animals inc. humans 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.	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 loop with a battery. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp	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 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.	Sound 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.	Living things and their habitats 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 to living things.	Summer Project: Green Energy for a Brighter Future

		lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors.		Recognise that sounds get fainter as the distance from the sound source increases. predators and prey. 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 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.		
LKS1 B (Yr3)	Animals inc. humans 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	Forces and magnets Compare how things move on different surfaces. 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.	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 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.	Plants 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	Summer Project: Plastic Planet – Reducing Waste for a Sustainable Future.

		Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing.			formation and seed dispersal.	
UKS2 A	Forces 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.	Animals inc. Humans Describe the changes as humans develop into old age	Light 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.	Evolution 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 adaptations may lead to evolution.	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.	Summer Project: Sustainable Fashion – Dressing for a Greener Future
UKS2 B (Yr6)	Animals inc. humans 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.	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.	Properties and changes of materials 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.	Electricity 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.	Living things and their habitats 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. Give reasons for classifying plants and animals based on specific characteristics.	Summer Project: Sustainable Cities – Building a Greener Tomorrow

			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.			
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Biology Chemistry Physics Environmental Sciences

Summer Science Project with Global Development Links