SCIENCE
CURRICULUM INTENT

KNOWLEDGE

To know about **plants** and how they grow
To know about the **human body**, how it functions and how to keep it healthy
To know about the **classification** of **living things** and their **habitats**, and how they have **adapted** to suit their environment
To know about the physical properties of **materials** and how they **change**
To know how **light** travels and how **shadows** are formed
To know about **electricity**, conductors and insulators, and how to construct electrical **circuits** and manipulate their components
To know about different **forces**, including gravity, and the movement of the **planets** in our solar system

SKILLS

Plan, **conduct** and **conclude** investigations
Ask questions and **predict** results
Gather, **analyse** and **interpret** scientific data
Record observations over time and **compare** results
Set up and **use** a range of scientific equipment
Find and **explain** scientific patterns
Identify and **classify** scientific phenomena
Report and **evaluate** our findings

CULTURAL CAPITAL

Studying science helps us to **understand** and **predict** how the world operates. In an **ever-changing globalised society**, a firm understanding of science enables us to make **positive contributions** for a **sustainable** future. Science teaches us the importance of how our bodies work and a **healthy lifestyle**, as well as helping us to understand and celebrate the **diverse world** in which we live. Our participation in and engagement with science give opportunities to **broaden our horizons** for the next stage in our lives.

EXPERIENCES

Global & National Events:
British Science Week, Big Science Event (Science Oxford)
50 Things to do:
Farm to Fork; Fly a Kite; 10 Star Constellations; Eco-friendly; Dr Dolittle
Trips:
Science Oxford, Cotswold Wildlife Park, Cokethorpe Science show
Visitors:
Dentist, Sun Dome, Professional Scientists

CHARACTER

Roots that Strengthen: Our fundamental grasp of how the world works and our position within it.

Branches that Reach: Our asking questions about the world around us and thinking how to answer them scientifically.

Fruit that Flourishes: The excitement that comes from the discovery of new knowledge about the world.

IMPACT

We monitor & support the teaching through:
Developmental Drop Ins
Book Look Feedback
We measure the impact on learning by:
Summative Assessment
Baseline Questions
We record the impact through:
Target tracker

Reception	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Topic theme	**Superheroes/Super Me/Super People**	**Time for Toys**	**Dinosaurs**	**Once upon a Time**	**5,4,3,2,1 Blast Off!**	**On the Farm**
	Use all their senses in hands-on exploration of natural materials Explore collections of materials with similar and/or different properties Talk about what they see, using a wide range of vocabulary	Explore and talk about different forces they can feel Talk about the differences between materials and changes they notice.	Explore and talk about different forces they can feel Talk about the differences between materials and changes they notice.		Begin to understand the need to respect and care for the natural environment and all living things Explore the natural world around them. Describe what they see, hear and feel whilst outside.	Plant seeds and care for growing plants Understand the features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things Explore the natural world around them. Describe what they see, hear and feel whilst outside. Recognise some environments that are different to the tone in which they live. Understand the effect of changing seasons on the natural world around them.
Science Outcomes	**ELG (End of Reception): Past and Present** Children at the expected level of development will: * Explore the natural world around them, making observations and drawing pictures of animals and plants * Know some of the 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 process and changes in the natural world around them, including the seasons and changing states of matter					

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Reception	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Topic theme	**Houses and Homes**	**Fabulous Festivals**	**Transport and Travel**	**Once Upon a Time**	**Marvellous Minibeasts**	**(Think Big)**
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Cycle A

Year 1 & 2	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Topic theme	**Paddington**	**Scientists and Inventors**	**Tin Forest**	**Grow, grow, grow**	**Through the window/ Our Village in the Past**	**Under the sea**
Year 1/2	**Animals Including humans** notice that animals, including humans, have offspring which grow into adults 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	**Everyday materials** 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 how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	**Living things and their habitats** explore and compare the differences between things that are living, dead, and things that have never been alive 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.	**Big Science Event** Chn create, plan and conduct their own investigations in small teams as part of the Science Oxford annual competition. - Ask relevant questions - Set up practical enquiries to answer them - Make systematic and careful observations - Use results to draw conclusions - Present and report on findings	**Plants** 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.	**Living things and their habitats** 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

Year 1 & 2	**Working Scientifically - NB: 'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand.** Can ask simple questions and recognising that they can be answered in different ways Can observe closely, using simple equipment Can perform simple tests Can identify and classify Can use their observations and ideas to suggest answers to questions Can gather and record data to help in answering questions

Cycle B

Year 1 & 2	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Topic theme	**When I grow up**	**Explorers**	**Great Fire of London**	**The Little Gardener**	**Chocolate**	**Wild and wonderful creatures**
Year 1/2	**Animals including humans** identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. notice that animals, including humans, have offspring which grow into adults	**Plants and Seasonal changes** Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. They should become familiar with common names of flowers, examples of deciduous and evergreen trees, and plant structures Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies.	**Uses of Everyday materials** 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 how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	**Big Science Event** Children create, plan and conduct their own investigations in small teams as part of the Science Oxford annual competition. - Ask relevant questions - Set up practical enquiries to answer them - Make systematic and careful observations - Use results to draw conclusions - Present and report on findings	**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	**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)

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Year 3 & 4	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Topic theme	**Groovy Greeks**	**The Fiery Earth**	**Frozen Planet**	**Anglo-Saxons**	**Egyptians**	**Local Area Study**
Year 3/4	**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 recognise that sounds get fainter as the distance from the sound source increases.	**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.	**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.	**Big Science Event** Chn create, plan and conduct their own investigations in small teams as part of the Science Oxford annual competition. - Ask relevant questions - Set up practical enquiries to answer them - Make systematic and careful observations - Use results to draw conclusions - Present and report on findings	**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.	**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.
Year 3/4	**Working Scientifically- NB: 'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand.** Can ask relevant questions and use different types of scientific enquiries to answer them. Can set up simple practical enquiries, comparative and fair tests. Can make systematic and careful observations and, where appropriate, take accurate measurements using standard units. Can gather, record, classify and present data in a variety of ways to help in answering questions. Can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. Can report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Can use results to draw simple conclusions, make predictions and suggest improvements. Can identify differences, similarities or changes related to simple scientific ideas and processes. Can use scientific evidence to answer questions or to support their findings.					

Year 3 & 4	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Topic theme	**Planet Earth**	**Flintstones**	**Romans**	**Europe**	**Baghdad**	**Rainforests**
Year 3/4	**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 describe magnets as having two poles predict whether two magnets will attract or repel each other, depending on which poles are facing.	**Animals, including 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.	**Animals including 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 and movement.	**Big Science Event** Chn create, plan and conduct their own investigations in small teams as part of the Science Oxford annual competition. - Ask relevant questions - Set up practical enquiries to answer them - Make systematic and careful observations - Use results to draw conclusions - Present and report on findings	**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.	**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 formation and seed dispersal.
Year 3/4	**Working Scientifically- NB: 'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand.** Can ask relevant questions and use different types of scientific enquiries to answer them. Can set up simple practical enquiries, comparative and fair tests. Can make systematic and careful observations and, where appropriate, take accurate measurements using standard units. Can gather, record, classify and present data in a variety of ways to help in answering questions. Can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. Can report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Can use results to draw simple conclusions, make predictions and suggest improvements. Can identify differences, similarities or changes related to simple scientific ideas and processes. Can use scientific evidence to answer questions or to support their findings.					

Year 5 & 6	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Topic theme	**Crime and Punishment**	**World War II**	**Is Britain still Great?**	**River low, mountain high!**	**Amazing Mayans**	**Lands End to John O'Groats**
Year 5/6	**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.	**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	**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.	**Big Science Event** Chn create, plan and conduct their own investigations in small teams as part of the Science Oxford annual competition. - Ask relevant questions - Set up practical enquiries to answer them - Make systematic and careful observations - Use results to draw conclusions - Present and report on findings	**Properties and changes of materials** 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 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.	**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 adaptation may lead to evolution

Year 5 & 6	**Working Scientifically - NB: 'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand.** Can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. Can take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. Can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Can use tests results to make predictions to set up further comparative and fair tests. Can report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. Can identify scientific evidence that has been used to support or refute ideas or arguments.

Year 5 & 6	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Topic theme	**Adventures in Space**	**Blood, Bones and Body**	**Saxons and Vikings**	**Shang Dynasty**	**Natural Resources**	**Think Global, Act Local**
Year 5/6	**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.	**Animals including 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.	**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 Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic	**Big Science Event** Chn create, plan and conduct their own investigations in small teams as part of the Science Oxford annual competition. - Ask relevant questions - Set up practical enquiries to answer them - Make systematic and careful observations - Use results to draw conclusions - Present and report on findings	**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 micro-organisms, plants and animals give reasons for classifying plants and animals based on specific characteristics	**Animals including humans** 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 the changes as humans develop to old age.

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Useful websites: https://edu.rsc.org/primary-science/science-ideas-webs/4013259.article It is free to register and provides comprehensive cross-curricular links to Science. https://pstt.org.uk/resources/curriculum-materials/cross-curricular-science-and-history