Science at Upton Heath C of E Primary School

Serve one another in love

Science Curriculum Statement

Subject Leader: Louise Preston

Intent

Topics / themes are informed by the Pathways to Write long term curriculum plan, which is directly linked to the national curriculum. All themes are sensitive to children's interests and linked to the context of our local area and wider. The curriculum at UHPS is carefully planned and structured to encapsulate our curriculum intent of REACH (Relevant, Engaging, Aspirational, Creative and Holistic).

We believe that a high-quality science education provides the foundations for understanding the world. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and explain why things have occurred using scientific vocabulary.

Science in our school is about developing children's ideas and ways of working which enables them to make sense of the world in which they live through investigation, as well as using and applying process skills. The staff at Upton Heath ensure that all children are exposed to high quality teaching and learning experiences, which includes exploring their outdoor environment and locality, thus developing their scientific enquiry and investigative skills. They are immersed in scientific vocabulary, which aids children's knowledge and understanding not only of the topic they are studying, but of the world around them. We intend to provide all children regardless of ethnic origin, gender, class, aptitude or disability, with a broad and balanced science curriculum. We ensure that current learning is linked to previous learning as part of a sequential curriculum, enabling children to achieve the end of year expectations. In line with the national curriculum 2014, the Science curriculum at UHPS aims to ensure that all pupils:

- Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.
- Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.
- Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Click on the links below:

Science Progression of Skills	Science Vocabulary	Science Curriculum Statement

The Science Curriculum

Cohort	Half term	Theme / Topic	Intent	Implementation	Impact
Year 1	Autumn 1	Animals including humans (Plants and seasonal changes to be taught throughout the year)	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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of animals including humans and build upon previous learning in EYFS. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.
Year 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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of animals including humans and built upon previous learning in Year 1. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations and end of Key Stage expectations.
Year 3		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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of animals including humans and built upon previous learning in Year 2. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.
Year 4		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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of animals including humans and built upon previous learning in Year 3. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.
Year 5		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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of forces. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.
Year 6		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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of light and built upon previous learning. Children will be able to confidently talk about the objectives taught.

			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.		Linked to end of year expectations and end of Key Stage expectations.

Cohort	Half term	Theme / Topic	Intent	Implementation	Impact
Year 1	Autumn 2	Animals including humans (Plants and seasonal changes to be taught throughout the year)	Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of seasonal changes. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.
Year 2		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, 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 food chain, and identify and name different sources of food.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of living things and their habitats and built upon previous learning in Year 1. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations and end of Key Stage expectations.
Year 3		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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of rocks. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.
Year 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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of sound. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.
Year 5		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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of forces. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.

			Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.		
Year 6		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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of animals including humans and build upon previous learning in Year 5. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations and end of Key Stage expectations.

Cohort	Half term	Theme / Topic	Intent	Implementation	Impact
Year 1	Spring 1	Everyday Materials (Plants and seasonal changes to be taught throughout the year)	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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of materials. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.
Year 2		Everyday material	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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of materials and build upon previous learning in Year 1. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations and end of Key Stage expectations.
Year 3		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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of rocks. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.
Year 4		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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of living things and their habitats. And build upon previous learning in Year 2 Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.
Year 5		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. Now that some materials will dissolve in liquid to form a solution,	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of materials and build upon previous learning on year 3 and 4 Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.

			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.		
Year 6		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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of living things and their habitats and built upon previous learning in Year 5. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations and the end of Key Stage expectations.

Cohort	Half term	Theme / Topic	Intent	Implementation	Impact
Year 1	Spring 2	Everyday materials (Plants and seasonal changes to be taught throughout the year)	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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of everyday materials. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.
Year 2		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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of everyday materials. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations and end of Key Stage expectations.
Year 3		Forces	Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces can act at a distance.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of forces s and build upon previous learning in key stage 1 Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.

			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.		
Year 4		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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of living things and their habitats. And build upon previous learning in Year 2 Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.
Year 5		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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of Earth and Space. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.
Year 6		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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of living things and their habitats and built upon previous learning in Year 5. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations and the end of Key Stage expectations.

Cohort	Half term	Theme / Topic	Intent	Implementation	Impact
Year 1	Summer 1	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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of plants. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.
Year 2		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	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of plants and build upon previous learning in Year 1. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations and end of Key Stage expectations.
Year 3		Plants	Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of plants and build upon previous learning in Year 2

			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.		Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.
Year 4		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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of states of matter from year 3. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.
Year 5		Animals including humans	Describe the changes as humans develop to old age.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of animals including humans and built upon previous learning in Year 4. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.
Year 6		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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of electricity. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations and end of Key Stage expectations.

Cohort	Half term	Theme / Topic	Intent	Implementation	Impact
Year 1	Summer 2	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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of plants. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.
Year 2		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	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of plants and build upon previous learning in Year 1. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations and end of Key Stage expectations.
Year 3		Light	Recognise that they need light in order to see things and that dark is the absence of light.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge 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.		Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.
Year 4		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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of electricity. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations.
Year 5		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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of living things and their habitats and build upon previous learning in Year 4. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations..
Year 6		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.	Knowledge Organisers Weekly lessons Home learning links to Topic where appropriate.	Children will have developed their understanding and knowledge of evolution and inheritance. Children will be able to confidently talk about the objectives taught. Linked to end of year expectations and end of Key Stage expectations.

Implementation

Science is taught in weekly lessons, as identified in the long-term curriculum plan with working scientifically objectives implemented in every lesson where appropriate. Aspects of science are taught with a link to the central text that is being studied by the cohort where appropriate, to enable pupils to achieve depth in their learning. Science is taught throughout Key Stage 1 and Key Stage 2, to ensure that all pupils receive a quality and focused Science curriculum.

In ensuring high standards of teaching and learning in science, we implement a curriculum that is progressive throughout the whole school. Planning for science is a process in which all teachers are involved to ensure that the school gives full coverage of, 'The National Curriculum programmes of study for Science 2014' and, 'Understanding of the World' in the Early Years

Foundation Stage. Teachers use this to plan and deliver relevant and engaging lessons. We are developing mid term planning and science progression documents for each science strand to help ensure clear progression in our teaching and learning.

Where possible, we link our Rights Respecting Schools focus with our themes, as well as our Christian focus for the term, such as Friendship, Compassion, etc. By the end of each key stage, pupils will be able to describe associated processes and key characteristics in common language, but they will also be familiar with, and use, technical terminology accurately and precisely. They will build up an extended specialist vocabulary. They will also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data.

Science teaching at Upton Heath involves adapting and extending the curriculum to match all pupils' needs. Teachers plan using the National Curriculum, ASE Documents (examples of good practice and examples of what Working At looks like). When planning, they consider children's interests, current events, their own teaching style, the use of any support staff and the resources available. At Upton Heath, we ensure that all children are provided with rich learning experiences that aim to:

• Prepare our children for life in an increasingly scientific and technological world today and in the future.

• Help our children acquire a growing understanding of the nature, processes and methods of scientific ideas.

• Help develop and extend our children's scientific concept of their world.

• Build on our children's natural curiosity and developing a scientific approach to problems.

• Encouraging open-mindedness, self-assessment, perseverance and developing the skills of investigation – including: observing, measuring, predicting, hypothesising, experimenting, communicating, interpreting, explaining and evaluating.

• Develop the use of scientific language, recording and techniques.

• Develop the use of computing in investigating and recording.

• Make links between science and other subjects.

Science is taught consistently, according to our curriculum map and is discretely taught in many different contexts throughout all areas of the curriculum.

Impact

The impact and measure of this is to ensure children not only acquire the appropriate age-related knowledge linked to the science curriculum, but also skills which equip them to progress from their starting points, and within their everyday lives. Outcomes in Science books, Twitter, Seesaw and Tapestry posts, evidence a broad and balanced science curriculum and demonstrates the pupils' acquisition of key knowledge. Science will also be evident in Topic and English books where the Topic blends itself.

Children are involved in reviewing their learning after each session. Through this study, pupils learn to ask perceptive questions, think critically, consider evidence and arguments and develop their own opinions. They will also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. Children will be able to make links to the everyday world around them. All children will have:

• A wider variety of skills linked to both scientific knowledge and understanding, and scientific enquiry/investigative skills.

• A richer vocabulary which will enable to articulate their understanding of taught concepts.

• High aspirations, which will see them through to further study, work and a successful adult life.

British Values and our Christian Distinctiveness.

As a school, we value the diverse ethnic backgrounds of all pupils and families and undertake a variety of events and lessons to celebrate these. We have found this approach to be enriching for all parties, as it teaches tolerance, compassion and respect for the differences in our community and the wider world. Our teaching of the British Values of tolerance, individual liberty, mutual

respect, the rule of law and democracy are underpinned by our Science curriculum themes, which have strong links to British Science where appropriate.

Throughout the Key Stages British Science is taught where it naturally fits.

UHPS is Rights Respecting School and the teaching of Science can enhance the children's understanding of the importance of living a healthy lifestyle .

The distinct aims ("serving one another in love") and Christian values of UHPS (Resilience, Respect, Compassion and Together) underpin every aspect of school life. We embrace the Church of England's vision for education, and that is, "deeply Christian, serving the common good", encompassing our values of Respect, Resilience, Compassion and Together

Early Years:

IN EYFS we explore scientific themes through the Understanding of the World strand of the Early Years curriculum. This involves guiding children to make sense of the physical world and their community through opportunities to explore, observe and find out about people, places and time.

Cohort	Half term	Theme / Topic	Intent	Implementation	Impact
Reception	Autumn 1	Transition How do we feel?	Self portraits- Who am I? How do I feel? How do I fit int the world around me? What makes me special?	Understanding the world- Understanding how they have grown from a baby. Understanding how they are similar/different to other children and animals around them by making observations and drawing pictures of animals and plants	In Eyfs children will build a solid foundation of learning of which to build upon in Key Stage 1. Engaging child led topics will help build upon children's natural curiosity about the world around them and help develop children who are keen and interested to learn more about the natural world around them. Through weekly visits to the forest school area the children will have developed in their understanding of hat seasons are and how the world changes throughout the year giving examples. They will have also developed the important skill of caring for the world around them through carefully planned learning opportunities. By the end of EYFS children will have been engaged in topics and will be becoming question askers about things in the natural science world that interest them.
	Autumn 2	Winter is coming	Van Gogh Starry Night How does it change as it gets dark? What happens when the season changes? What signs are there that it is winter?	Understanding the world- understanding some important processes and changes in the natural world around them including the seasons and processes in the natural world.	
	Spring 1	Living in the past	Dinosaurs Sculpture What do some people think happened a long time ago? What do different types of animals eat? What do I need to eat to stay healthy?	Understanding the world- past and present- Know some similarities and differences between things in the past and now, drawing on their experiences and what has been read in class	
	Spring 2	What a wonderful world	Farm animals/ spring art What happens when the seasons change? What signs are there that it is spring? What is the differences between adult and baby animals? Where do babies come from? Simple life cycles	Understanding the world- understanding some important processes and changes in the natural world around them including the seasons Similarities and differences in the natural world around them. Contrasting environments Exploring the natural world- animal life cycles	
	Summer 1	Stepping into the unknown	Beanstalk/plants How do things grow? What happens to seeds? What do seeds need to grow?	Understanding the world- the natural world Similarities and differences between the natural worlds. Making observations and drawing pictures of animals and plants	
	Summer 2	Where will we go?	Henry Matise	Understanding the world- the natural world Similarities and differences between the natural worlds	

Key Stage 1:

The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They will be encouraged to be curious and ask questions about what they notice. They will be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They will begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science will be done through the use of first-hand practical experiences, but there will also be some use of appropriate secondary sources, such as books, photographs and videos.

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- Asking simple questions and recognising that they can be answered in different ways.
- Observing closely, using simple equipment.
- Performing simple tests.
- Identifying and classifying.
- Using their observations and ideas to suggest answers to questions.
- Gathering and recording data to help in answering questions.

Pupils in years 1 and 2 will explore the world around them and raise their own questions. They will experience different types of scientific enquiries, including practical activities, and begin to recognise ways in which they might answer scientific questions. They will use simple features to compare objects, materials and living things and, with help, decide how to sort and group them, observe changes over time, and, with guidance, they will begin to notice patterns and relationships. They will ask people questions and use simple secondary sources to find answers. They will use simple measurements and equipment (for example, hand lenses, egg timers) to gather data, carry out simple tests, record simple data, and talk about what they have found out and how they found it out. With help, they will record and communicate their findings in a range of ways and begin to use simple scientific language. These opportunities for working scientifically will be provided across years 1 and 2 so that the expectations in the programme of study can be met by the end of year 2.

Lower Key Stage 2:

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They will do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They will ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They will draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. 'Working scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils will read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

During years 3 and 4, pupils will be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- Asking relevant questions and using different types of scientific enquiries to answer them.
- Setting up simple practical enquiries, comparative and fair tests.
- Aking systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.
- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.
- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.

- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
- Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
- Identifying differences, similarities or changes related to simple scientific ideas and processes.
- Using straightforward scientific evidence to answer questions or to support their findings.

Pupils in years 3 and 4 will be given a range of scientific experiences to enable them to raise their own questions about the world around them. They will start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions; recognise when a simple fair test is necessary and help to decide how to set it up; talk about criteria for grouping, sorting and classifying; and use simple keys. They will begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them. They will help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used.

They will learn how to use new equipment, such as data loggers, appropriately. They will collect data from their own observations and measurements, using notes, simple tables and standard units, and help to make decisions about how to record and analyse this data. With help, pupils will look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions. With support, they will identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done. They will also recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations. Pupils will use relevant scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences. These opportunities for working scientifically will be provided across years 3 and 4 so that the expectations in the programme of study can be met by the end of year 4.

Upper Key Stage 2:

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They will do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they will encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They will also begin to recognise that scientific ideas change and develop over time. They will select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils will draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings. 'Working and thinking scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils will read, spell and pronounce scientific vocabulary correctly.

During years 5 and 6, pupils will be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Using test results to make predictions to set up further comparative and fair tests.
- Reporting and presenting 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.
- Identifying scientific evidence that has been used to support or refute ideas or arguments.

Pupils in years 5 and 6 will use their science experiences to: explore ideas and raise different kinds of questions; select and plan the most appropriate type of scientific enquiry to use to answer scientific questions; recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why. They will use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment. They will make their own decisions about what observations to make, what measurements to use and how long to make them for, and whether to repeat them; choose the most appropriate equipment to make measurements and explain how to use it accurately. They will decide how to record data from a choice of familiar approaches; look for different causal relationships in their data and identify evidence that refutes or supports their ideas. They will use their results to identify when further tests and observations might be needed; recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact. They will use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas and should talk about how scientific ideas have developed over time.

These opportunities for working scientifically will be provided across years 5 and 6 so that the expectations in the programme of study can be met by the end of year 6.

Assessment

Assessment for learning is continuous throughout the planning, teaching and learning cycle. Key scientific knowledge is taught to enable and promote the development of children's scientific enquiry skills. Assessment is supported by the use of the following strategies:

- Observing children at work, individually, in pairs, small groups and in class during whole class teaching.
- Using differentiated, open-ended questions that require children to explain and unpick their understanding.
- The use of Knowledge Organisers in every lesson to enable the children to guide their own learning and use them to quiz the children and to use scientific vocabulary appropriately.
- Providing effective feedback to learning, to support learning moving forward and to provide opportunities to self-assess, consolidate and study in-depth.
- Use of pupil self- assessments on unit topic grids in books.
- Moderation of work and books will be used to inform teacher assessment and reflect on achievements and outcomes against agreed success criteria and learning objectives.
- From September 2021 Science will be assessed using the whole school assessment system INSIGHT,
- We used TAPS focused tasks to help aid teacher science assessments.

We are committed to providing a teaching and learning environment which ensures that all children are able to progress with their learning, regardless of social class, gender, culture, race, or SEND. Teachers will use a range of strategies to ensure that all learners are included within a classroom ethos that is Relevant, Engaging, Aspirational, Creative and Holistic. (REACH)

Science Vocabulary Key Stage 1

Scientific Language	
Deciduous	Habitat
Evergreen trees	Micro-habitat
Leaves	Hard
Flowers	Soft
Petals	Stretchy
Fruit	Stiff
Roots	Shiny
Bulb	Dull
Seed	Rough
Trunk	Smooth
Branches	Bendy
Stem	Waterproof

Water	Absorbent
Light	Opaque
Temperature	Transparent
Growth	Brick
Fish	Paper
Amphibians	Fabrics
Reptiles	Elastic
Birds	Foil
Mammals	Head
Herbivore	Neck
Omnivore	Arms
Carnivore	Elbows
Survival	Legs
Water	Knees
Air	Face
Food	Ears
Adult	Eyes
Baby	Hair
Offspring	Mouth
Exercise	Teeth
Hygiene	Summer
Living	Spring
Dead	Autumn
Energy	Winter
Foodchain	Sun
Predator	Day
Prey	Moon
Woodland	Night
Dessert	Dark
Pond	

Science Vocabulary Lower Key Stage 2

Scientific Language	
Roots	Particles
Stem	Temperature
Trunk	Freezing
Leaves	Heating
Flowers	Vertebrates
Air	Fish
Light	Amphibians
Water nutrients	Reptiles
Soil	Birds
Pollination	Mammals
Reproduction	Insects
Transportation	Environment
Formation	Habitats
Dispersal	Fossils
Nutrition	Soils
Skeleton	Sandstone
Muscle	Granite
Skull	Marble
Movement	Pumice
Bones	Crystals
Mouth	Absorbent
Tongue	Shadows

Teeth	Mirror
Oesophagus	Reflective
Stomach	Dark
Intestine	Reflection
Canine	Volume
Incisor	Vibration
Molar	Wave
Magnetic	Pitch
Force	Tone
Contact	Speaker
Attract	Cells
Repel	Wires
Friction	Bulbs
Poles	Switches
Push	Buzzer
Pull	Battery
Solid	Circuit
Liquid	Series
Gas	Conductors
Evaporation	Insulators
Condensation	

Science Vocabulary Upper Key Stage 2

Scientific Language	
Foetus	Conductivity
Embryo	Magnetic
Womb	Filter
Gestation	Evaporation
Baby	Dissolving
Toddler	Mixing
Teenager	Earth
Elderly	Sun
Growth	Moon
Development	Axis
Puberty	Rotation
Circulation	Day
Heart	Night
Blood	Phases
Vessels	Star
Veins	Constellation
Arteries	Air resistance
Oxygenated	Water
Deoxygenated	Resistance
Valve	Friction
Exercise	Gravity
Respiration	Newton
Mammal	Pulleys
Reproduction	Refraction
Insect	Reflection
Amphibian	Light
Bird	Spectrum
Offspring	Rainbow
Classification	Colour
Vertebrate	Cells
Invertebrate	Wires
Micro-organisms	Bulbs
Fossils	Switches
Adaptation	Buzzers

Evolution	Battery
Characteristics	Circuit
Reproduction	Series
Genetics	Conductors
Hardness	Insulators
Solubility	Amps
Transparency	Volts
	Cells

See Knowledge Organisers for topic specific related scientific vocabulary.