



Science

at Morton Church of England Primary School

Intent

As scientists, children at Morton CEPS will develop a strong understanding of the world around them whilst acquiring specific skills and knowledge to help them to think scientifically. They will learn to be naturally curious about the world around them, ask questions, and recognise the importance of science in every aspect of daily life. Children will develop an understanding of the uses and implications of science, today and for the future.



Science Implementation Statement

Children at Morton CEPS will enjoy an ambitious science curriculum which ensures that prior knowledge, skills and vocabulary are built upon in subsequent year groups. Children will develop and use a range of working scientifically skills including observations, planning, and investigations. As a school, we will develop a shared science vocabulary; scientific language will be taught and built upon as topics are revisited in different year groups and across key stages. Technical vocabulary will be displayed and used by all learners and science will be included in other areas of learning, such as whole class reading. As a school, we will offer experience days and welcome experts who will enhance the learning experience. Understanding and knowledge will be assessed through informal retrieval practice in every lesson. We require children to organise and communicate their findings at the end of the sequence of learning through an expert outcome.

Science Impact Statement

Our science curriculum will lead pupils to be enthusiastic science learners and understand that science has changed our lives and that it is vital to the world's future prosperity. We want to empower our children, so they understand they can change the world. They will become resilient and creative thinkers who enjoy solving problems. This is evidenced in a range of ways, including pupil voice, their work and their enjoyment of science.



Science at our school





National Curriculum Expectations

By the end of EYFS children will know and be able to...

- Explore the natural world around them, making observations and drawing pictures of animals and plants
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter



By the end of KS1 children will know and be able to ...

Ask Questions

- ask simple questions and recognise that they can be answered in different ways

Measure and Record

- observe closely, using simple equipment
- perform simple tests
- gather and record data to help in answering questions

Conclude

- identify and classify
- use their observations and ideas to suggest answers to questions



By the end of LKS2 children will know and be able to ...

Ask Questions

- ask relevant questions and use different types of scientific enquiries to answer them
- set up simple practical enquiries, comparative and fair tests

Measure and Record

- make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment
- record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- gather, record, classify and present data in a variety of ways

Conclude

- identify differences, similarities or changes related to simple scientific ideas and processes
- report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- use straightforward scientific evidence to answer questions or to support their findings

Evaluate

- use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions



By the end of UKS2 children will know and be able to ...

Ask Questions

- plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary

Measure and Record

- take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs

Conclude

- identify scientific evidence that has been used to support or refute ideas or arguments
- report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results
- present results in oral and written forms such as displays and other presentations

Evaluate

- use test results to make predictions to set up further comparative and fair tests



Our Science Curriculum

Curriculum Map

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery	Seasons -Autumn/ Harvest	Seasons - Winter	Seasons - Spring	Science Week - themed	Seasons – Summer Walk to park behind school	Seasons – Summer
Planting of plants/vegetables throughout year						
Reception	Seasons – Autumn/Harvest	Seasons - Winter	Seasons - Spring	Science Week – themed Spring village walk	Seasons – Summer	Seasons - Summer
Planting of plants/vegetables throughout year						
Year 1	Seasons – Autumn to Winter Materials		Seasons – Spring Farm animals		Seasons – Summer Plants Different types of animals	
Year 2	Everyday materials (making fabrics waterproof)	Everyday materials (bending / squashing)	Habitats	Living things - growing plants and bulbs	Animals including humans	Animals including humans - Healthy minds and bodies
Year 3	Forces and magnets	Rocks and soils	Animals, including humans		Light	Plants



Year 4	Sound	Animals, including humans	Electricity	Living things and their habitats	States of matter
Year 5	Earth and Space	Living Things and their habitats - Coral Oceans	Forces	Properties and changes of materials	Animals, including Humans
Year 6	Evolution and inheritance	Living things and their habitat	Animals, including humans	Light	Electricity



Progression in Knowledge

Age Phase	Year Group	Autumn	Spring	Summer
EYFS	N	Range 3 <ul style="list-style-type: none"> • Is curious and interested to explore new and familiar experiences in nature: grass, mud, puddles, plants, animal life • Explores objects by linking together different approaches: shaking, hitting, looking, feeling, tasting, mouthing, pulling, turning and poking • Remembers where objects belong • Matches parts of objects that fit together, e.g. puts lid on teapot 		Range 4 <ul style="list-style-type: none"> • Notices detailed features of objects in their environment • Can talk about some of the things they have observed such as plants, animals, natural and found objects • Enjoys playing with small world reconstructions, building on first-hand experiences, e.g. visiting farms, garages, train tracks, walking by river or lake
	R	Range 5 <ul style="list-style-type: none"> • Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world • Talks about why things happen and how things work • Developing an understanding of growth, decay and changes over time • Shows care and concern for living things and the environment • Begin to understand the effect their behaviour can have on the environment 		Range 6 <ul style="list-style-type: none"> • Looks closely at similarities, differences, patterns and change in nature • Knows about similarities and differences in relation to places, objects, materials and living things • Talks about the features of their own immediate environment and how environments might vary from one another • Makes observations of animals and plants and explains why some things occur, and talks about changes
Why this and why now?				



		Links to prior learning in R about exploring objects, new experiences and the world around them		
	Local links	First-hand experiences, e.g., visiting farms, garages, train tracks, walking by river or lake Scifest workshops Great British Science Week		
KS1	Year 1 Key Knowledge	<p>Autumn to winter</p> <ul style="list-style-type: none"> • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies. <p>Materials</p> <ul style="list-style-type: none"> • 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. 	<p>Spring</p> <ul style="list-style-type: none"> • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies. <p>Farm animals</p> <ul style="list-style-type: none"> • 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. 	<p>Summer</p> <ul style="list-style-type: none"> • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies. <p>Plants</p> <ul style="list-style-type: none"> • 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.



Different types of animals

- 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.
Why this and why now?						
	Links to prior learning in EYFS where children learn about similarities and differences in relation to places, objects, materials and living things	Links to prior learning in EYFS where children make observations of animals and plants and explain why some things occur, and talk about changes Links to prior learning where children plant flowers and plants in different seasons				
Local links	Scifest workshops	Beans and cress planted during Spring Great British Science Week				
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 2 Key Knowledge	Everyday materials (making fabrics waterproof) • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.	Everyday materials (bending / squashing) • 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. • Identify that most living	Plants - growing plants and bulbs • Observe and describe how seeds and bulbs grow into mature plants. • Find out and describe how plants need water, light	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	Animals including humans - Healthy minds and bodies • Notice that animals, including humans, have offspring which grow into adults. • Find out about and describe the basic needs of animals, including humans, for



				<p>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.</p> <ul style="list-style-type: none"> • 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 	<p>and a suitable temperature to grow and stay healthy.</p> <ul style="list-style-type: none"> • Identify and name a variety of plants and animals in their habitats, including microhabitats. (Y2 - Living things and their habitats) 	<p>right amounts of different types of food, and hygiene.</p> <ul style="list-style-type: none"> • 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. (Y2 - Living things and their habitats) 	<p>survival (water, food and air).</p> <ul style="list-style-type: none"> • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. • 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. (Y2 - Living things and their habitats)
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				name different sources of food. • Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals including humans)			
Why this and why now?							
	Links to prior learning in Y1 where children learn to compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials)	Links to prior learning in EYFS where children explore objects by linking together different approaches: shaking, hitting, looking, feeling, tasting, mouthing, pulling, turning and poking	Links to prior learning where children describe and compare a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) and plants (Y1 – Animals, including humans/Plants)	Links to prior learning where children identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense (Y1 - Animals, including humans)			
Local links	Scifest workshops		Great British Science Week				



		Autumn 1	Autumn 2	Spring 1 and 2	Summer 1	Summer 2
Lower KS2	Year 3 Key Knowledge Y3	<p>Forces</p> <ul style="list-style-type: none"> • 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 	<p>Rocks</p> <ul style="list-style-type: none"> • 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. 	<p>Animals, including humans</p> <ul style="list-style-type: none"> • 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. 	<p>Light</p> <ul style="list-style-type: none"> • 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. 	<p>Plants</p> <ul style="list-style-type: none"> • 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,



		attract or repel each other, depending on which poles are facing.				including pollination, seed formation and seed dispersal.
Why this and why now?						
	Links to prior learning where children • Talk about the differences between materials and changes they notice. (Nursery) • Explore the natural world around them. (Reception) • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials)	Links to prior learning where children • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials)	Links to prior learning where children • Describe and compare a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 - Animals, including humans) • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). (Y2 - Animals, including humans) • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Y2 - Animals, including humans)	Links to prior learning where children • Describe what they see, hear and feel whilst outside. (Reception – Light) • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans) • Describe the simple physical properties of a variety of everyday materials. (Y1 - Materials)	Links to prior learning where children • Observe and describe how seeds and bulbs grow into mature plants. (Y2 - Plants) • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. (Y2 - Plants)	
Local links	Scifest workshops Michael Foale - Louth		Great British Science Week			



	Issac Newton - Woolsthorpe					
	Autumn 1	Autumn 2	Spring 1 and 2	Summer 1	Summer 2	
Key Knowledge Y4	<p>Sound</p> <ul style="list-style-type: none"> • 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 	<p>Animals, including humans</p> <ul style="list-style-type: none"> • 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. 	<p>Electricity</p> <ul style="list-style-type: none"> • 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. 	<p>Living things and their habitats</p> <ul style="list-style-type: none"> • 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. • Construct and interpret a variety of food chains, identifying producers, predators and prey. (Y4 - Animals, including humans) 	<p>States of Matter</p> <ul style="list-style-type: none"> • 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 	



		from the sound source increases.				evaporation with temperature. • Recognise some common conductors and insulators, and associate metals with being good conductors. (Y4 - Electricity)
Why this and why now?						
	Link to prior learning where children: • Explore how things work. (Nursery – Sound) • Describe what they see, hear and feel whilst outside. (Reception – Sound) • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 -	Link to prior learning where children: • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals, including humans) • Find out about and describe the basic needs of animals, including humans, for	Link to prior learning where children: • Explore how things work. (Nursery - Electricity)	Link to prior learning where children: • Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants) • Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants) • Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1	Link to prior learning where children: • Distinguish between an object and the material from which it is made. (Y1 - Everyday materials) • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 -	



		Animals, including humans)	<p>survival (water, food and air). (Y2 - Animals, including humans)</p> <ul style="list-style-type: none"> • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Y2 - 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. (Y3 - Animals, 		<p>- Animals including humans)</p> <ul style="list-style-type: none"> • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 – Animals, including humans) • Identify and name a variety of plants and animals in their habitats, including microhabitats. (Y2 - Living things and their habitats) 	<p>Everyday materials)</p> <ul style="list-style-type: none"> • Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials) • Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials) • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for
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			including humans)			particular uses. (Y2 - Uses of everyday materials) • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials)
	Local links	Scifest workshops		Great British Science Week		
		Autumn 1	Autumn 2	Spring 1 and Spring 2	Summer 1	Summer 2
Upper KS2	Key Knowledge Y5	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.	Living things and their habitats • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. • Describe	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	Properties and changes of materials • Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical	Animals, including Humans • Describe the changes as humans develop to old age. • Describe the differences in the life cycles of a



		<ul style="list-style-type: none"> • 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. 	<p>the life process of reproduction in some plants and animals</p>	<p>mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>	<p>and thermal), and response to magnets.</p> <ul style="list-style-type: none"> • 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. • 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 	<p>mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats)</p> <ul style="list-style-type: none"> • Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats)
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					kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	
Why this and why now?						
	<p>Links to prior learning where children:</p> <ul style="list-style-type: none"> • Observe changes across the four seasons. (Y1 - Seasonal changes) • Observe and describe weather associated with the seasons and how day length varies. (Y1 - Seasonal changes) 	<p>Links to prior learning where children:</p> <ul style="list-style-type: none"> • Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans) • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed 	<p>Links to prior learning where children:</p> <ul style="list-style-type: none"> • Compare how things move on different surfaces. (Y3 - Forces and magnets) • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. (Y3 - Forces and magnets) • Observe how magnets attract or repel each other and attract some materials and not others. (Y3 - Forces and magnets) • 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. (Y3 - Forces and magnets) • Describe magnets as having two poles. (Y3 - Forces and 	<p>Links to prior learning where children:</p> <ul style="list-style-type: none"> • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials) • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials) • Compare and group together a variety of everyday materials on 	<p>Links to prior learning where children:</p> <ul style="list-style-type: none"> • Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans) 	



			dispersal. (Y3 - Plants)	magnets) <ul style="list-style-type: none"> • Predict whether two magnets will attract or repel each other, depending on which poles are facing. (Y3 - Forces and magnets) 	the basis of whether they are attracted to a magnet, and identify some magnetic materials. (Y3 - Forces and magnets) <ul style="list-style-type: none"> • Compare and group materials together, according to whether they are solids, liquids or gases. (Y4 - States of matter) • 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). (Y4 - States of matter) • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. (Y4 - States of matter) 	
	Local links	Scifest workshops		BRM Racing Team Great British Science Week		



	Autumn 1	Autumn 2	Spring 1 and 2	Summer 1	Summer 2
Key Knowledge Y6	<p>Evolution and inheritance</p> <ul style="list-style-type: none"> • 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. 	<p>Living things and their habitats</p> <ul style="list-style-type: none"> • 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. • Recognise that living things produce offspring of the same kind, but 	<p>Animals, including humans</p> <ul style="list-style-type: none"> • 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. • 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. (Y6 - Living things and their habitats) • Give reasons for classifying plants and animals based on specific characteristics. (Y6 - Living things and their habitats) 	<p>Light</p> <ul style="list-style-type: none"> • 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. 	<p>Electricity</p> <ul style="list-style-type: none"> • 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.



			<p>normally offspring vary and are not identical to their parents. (Y6 - Evolution and inheritance)</p> <ul style="list-style-type: none"> • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. (Y6 - Evolution and inheritance) 			
Why this and why now?						
	<p>Links to prior learning where children:</p> <ul style="list-style-type: none"> • Identify that most living things live in habitats to which they are suited (Y2 - Living things and their habitats) 	<p>Links to prior learning where children:</p> <ul style="list-style-type: none"> • Recognise that living things can be grouped in a variety of ways. (Y4 - Living things and their 	<p>Links to prior learning where children:</p> <ul style="list-style-type: none"> • 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. (Y3 - Animals, including humans) 	<p>Links to prior learning where children:</p> <ul style="list-style-type: none"> • Recognise that they need light in order to see things and that dark is the absence of light. (Y3 - Light) • Notice that light is reflected from surfaces. 	<p>Links to prior learning where children:</p> <ul style="list-style-type: none"> • Identify common appliances that run on electricity. (Y4 - Electricity) 	



		<ul style="list-style-type: none"> • Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans) • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants) • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) • Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats) 	<p>habitats)</p> <ul style="list-style-type: none"> • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Y4 - Living things and their habitats) • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats) • Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats) 	<ul style="list-style-type: none"> • Describe the simple functions of the basic parts of the digestive system in humans. (Y4 - Animals, including humans) • Identify the different types of teeth in humans and their simple functions. (Y4 - Animals, including humans) 	<p>(Y3 - Light)</p> <ul style="list-style-type: none"> • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 - Light) • Recognise that shadows are formed when the light from a light source is blocked by an opaque object. (Y3 - Light) • Find patterns in the way that the size of shadows change. (Y3 - Light) • 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. (Y5 - Properties and changes of materials) 	<ul style="list-style-type: none"> • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. (Y4 - Electricity) • 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. (Y4 - Electricity) • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. (Y4 - Electricity)
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		<ul style="list-style-type: none"> Describe the life process of reproduction in some plants and animals. (Living things and their habitats - Y5) 				<ul style="list-style-type: none"> Recognise some common conductors and insulators, and associate metals with being good conductors. (Y4 - Electricity)
	Local links	Scifest workshops		Great British Science Week Science Fair	Isaac Newton - Woolsthorpe	



Progression in working scientifically skills

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Asking questions and recognising that they can be answered in different ways	Asking simple questions	Asking simple questions and recognising that they can be answered in different ways		Asking relevant questions and using different types of scientific enquiries to answer them		Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	
Making observations and taking measurements	Observing and commenting	Observing closely, using simple equipment		Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers		Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	
Engaging in practical enquiry to answer questions	Identifying similarities, differences and change	Performing simple tests Identifying and classifying		Setting up simple practical enquiries, comparative and fair tests		Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	
Recording and presenting evidence	Collecting/drawing and labelling	Gathering and recording data to help in answering questions		Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific language, drawings,		Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	



			labelled diagrams, keys, bar charts, and tables	
Answering questions and concluding	Answering questions	Using their observations and ideas to suggest answers to questions Using their observations and ideas to suggest answers to questions	Using straightforward scientific evidence to answer questions or to support their findings. Identifying differences, similarities or changes related to simple scientific ideas and processes	Identifying scientific evidence that has been used to support or refute ideas or arguments 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
Evaluating and raising further questions and predictions			Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	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 Using test results to make predictions to set up further comparative and fair tests
Communicating their findings			Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	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



Progression in Vocabulary

Introduction

- Bullet points denote statements from [Science Programme of Study: Key Stage 3: National Curriculum in England](#) or [Development Matters](#).
- The vocabulary included for Nursery and Reception are words that children should be exposed to. They should use some correctly in a scientific context.
- The vocabulary included from Year 1 onwards are the words that children should know and use correctly in a scientific context. They should be able to define the specialist scientific vocabulary included.
- The vocabulary in **red** is from other linked topics. The topic they come from is indicated.
- The working scientifically vocabulary identified in the first table of this document should be taught through the topics in each year-group during practical work or scientific enquiry.

Working scientifically

Year-group(s)	Vocabulary/Statement(s)
Nursery & Reception	look closely, observe, watch, touch, feel, smell, listen, same, different, compare, ask questions, record, sort, group
Years 1 & 2	observe, changes, patterns, grouping, sorting, compare, same, different, identify (name), measure, data, record results, drawing, picture, table, tally chart, present, pictogram, block chart, Venn diagram, ask questions, test, investigate, explore, equipment, resources, magnifying glass, hand lens, ruler, tape measure, metre stick, pipette, syringe, spoon, teaspoon, answer questions, interpret results, scientific enquiry, pattern seeking, comparative testing, observing over time, classifying, researching using secondary sources
Years 3 & 4	practical work, fair testing, relationships, accurate, thermometer, data logger, stopwatch, timer, estimate, data, diagram, identification key, chart, bar chart, prediction, similarity, difference, evidence, information, findings, criteria, values, properties, characteristics, conclusion, explanation, reason, evaluate, improve
Years 5 & 6	variables, independent variable, dependent variable, control variable, evidence, justify, argument (science), causal relationship, accuracy, precision, scatter graphs, bar graphs, line graphs, force meter



Plants

Year-group(s)	Vocabulary/Statement(s)
Birth to 3	<ul style="list-style-type: none"> Explore natural materials, indoors and outside.
Nursery	plant, leaf, stem, branch, root, bark, flower, petal, seed, berry, fruit, vegetable, bulb, plant, hole, dig, water, weed, grow, shoot, die, dead, soil, names of plants they grow
Reception	tree, bush, herb, names of plants they see (Reception - Living things and their habitats)
Year 1	leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud, names of trees in the local area, names of garden and wild flowering plants in the local area
Year 2	light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling names of plants in local habitats and micro-habitats (Y2 - Living things and their habitats)
Year 3	photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal), air, nutrients, minerals, soil, absorb, transport
Year 4	classification, classification keys (Y4 - Living things and their habitats)
Year 5	life cycle, reproduce, sexual, fertilises, asexual, plantlets, runners, tubers, cuttings (Y5 - Living things and their habitats)
Year 6	flowering, non-flowering, mosses, ferns, conifers (Y6 - Living things and their habitats)
Key Stage 3	<ul style="list-style-type: none"> Reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms



Living things and their habitats

Year-group(s)	Vocabulary/Statement(s)
Birth to 3	<ul style="list-style-type: none"> Explore natural materials, indoors and outside.
Nursery	<p>natural, plant, animal, leaves, seeds, conkers, acorns, twigs, bark, shells, feathers, pebbles, stones, same, different, pattern</p> <p>plant, leaf, stem, branch, root, bark, flower, petal, seed, berry, fruit, vegetable, bulb, plant, hole, dig, water, weed, grow, shoot, die, dead, soil (Nursery - Plants)</p>
Reception	<p>plant, tree, bush, flower, vegetable, herb, weed, animal, names of plants and animals they see, name of a contrasting environment (e.g. beach, forest)</p>
Year 1	<p>names of garden and wild flowering plants in the local area (Y1 - Plants)</p> <p>head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, names of animals experienced first-hand from each vertebrate group (Y1 - Animals, including humans)</p> <p>weather, sunny, rainy, raining, shower, windy, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, winter, summer, spring, autumn, Sun, sunrise, sunset, day length (Y1 - Seasonal changes)</p>
Year 2	<p>living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival, names of local habitats (e.g. pond, woodland etc.), names of micro-habitats (e.g. under logs, in bushes etc.), conditions, light, dark, shady, sunny, wet, damp, dry, hot, cold, names of living things in the habitats and micro-habitats studied</p> <p>light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling (Y2 - Plants)</p> <p>offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (e.g. chick/chicken, cat/kitten, caterpillar/butterfly) (Y2 - Animals, including humans)</p>
Year 3	<p>photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal (e.g. wind dispersal, animal dispersal, water dispersal), air, nutrients, minerals, soil, absorb, transport</p>
Year 4	<p>classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate</p> <p>herbivore, carnivore, omnivore, producer, predator, prey (Y4 - Animals, including humans)</p>
Year 5	<p>life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, cuttings</p>
Year 6	<p>vertebrates, fish, amphibians, reptiles, birds, mammals, warm-blooded, cold-blooded, invertebrates, insects, spiders, snails, worms, flowering, non-flowering, mosses, ferns, conifers</p>



Animals, including humans

Year-group(s)	Vocabulary/Statement(s)
Birth to 3	<ul style="list-style-type: none"> • Explore natural materials, indoors and outside. • Make connections between the features of their family and other families. • Notice differences between people.
Nursery	egg, chick, bird, caterpillar, cocoon, chrysalis, butterfly, frog spawn, tadpole, froglet, frog, grow, change, die, names of animals and their young, fur, feathers, scales, tail, wings, beak, claws, paws, hooves, swim, walk, run, jump, fly, patterns, spots, stripes, grow, change, baby, toddler, child, adult, old person, smell, taste, touch, feel, hear, see, blind, deaf
Reception	names of animals, live, on land, in water, jungle, desert, North Pole, South Pole, sea, hot, cold, wet, dry, snow, ice, hair (e.g. black, brown, dark, light, blonde, ginger, grey, white, long, short, straight, curly), eyes (e.g. blue, brown, green, grey), skin (e.g. black, brown, white), big/tall, small/short, bigger/smaller, baby, toddler, child, adult, old person, old, young, brother, sister, mother, father, aunt, uncle, grandmother, grandfather, cousin, friend, family, boy, girl, man, woman
Year 1	head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, names of animals experienced first-hand from each vertebrate group, parts of the human body including those within the school's RSE policy, senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ears, tongue
Year 2	<p>offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (e.g. chick/chicken, kitten/cat, caterpillar/butterfly), survive, survival, water, food, air, exercise, heartbeat, breathing, hygiene, germs, disease, food types (e.g. meat, fish, vegetables, bread, rice, pasta, dairy)</p> <p>living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival (Y2 - Living things and their habitats)</p>
Year 3	nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine
Year 4	digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, large intestine, rectum, anus, incisor, canine, molar, premolar, herbivore, carnivore, omnivore, producer, predator, prey
Year 5	<p>puberty, the vocabulary to describe sexual characteristics in line with the school's RSE policy</p> <p>life cycle, foetus, baby, child, adolescent, adult, reproduce, sexual, sperm, fertilises, egg, live young (Y5 - Living things and their habitats)</p>
Year 6	heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, cycle, circulatory system, diet, drugs, lifestyle



Evolution and inheritance

Year-group(s)	Vocabulary/Statement(s)
Birth to 3	<ul style="list-style-type: none"> • Make connections between the features of their family and other families. • Notice differences between people.
Nursery	natural, plant, animal, leaves, seeds, conkers, acorns, twigs, bark, shells, feathers, pebbles, stones, same, different, pattern (Nursery - Living things and their habitats)
Reception	plant, tree, bush, flower, vegetable, herb, weed, animal, names of plants and animals they see, name of a contrasting environment (e.g. beach, forest) (Reception - Living things and their habitats)
Year 1	leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud (Y1 - Plants)
Year 2	light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling (Y2 - Plants) living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival, conditions, light, dark, shady, sunny, wet, damp, dry, hot, cold (Y2 - Living things and their habitats)
Year 3	photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal (e.g. wind dispersal, animal dispersal, water dispersal), air, nutrients, minerals, soil (Y3 - Plants) soil, fossil, bone, flesh, minerals (Y3 - Rocks)
Year 4	environment, habitat, human impact, positive, negative, migrate, hibernate (Y4 - Living things and their habitats) herbivore, carnivore, omnivore, producer, predator, prey (Y4 - Animals, including humans)
Year 5	life cycle, reproduce, sexual, fertilises, asexual, plantlets, runners, tubers, cuttings (Y5 - Living things and their habitats)
Year 6	offspring, sexual reproduction, vary, characteristics, adapted, inherited, species, evolve, evolution



Seasonal changes

Year-group(s)	Vocabulary/Statement(s)
Birth to 3	<ul style="list-style-type: none"> Explore natural materials, indoors and outside.
Nursery	<p>grow, shoot, die, dead (Nursery - Plants)</p> <p>egg, chick, bird, caterpillar, cocoon, chrysalis, butterfly, frog spawn, tadpole, froglet, frog, grow, change, die, names of animals and their young (Nursery - Animals, excluding humans)</p>
Reception	spring, summer, autumn, winter, seasons, sunny, cloudy, hot, warm, cold, shower, raining, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, windy, rainbow, animals, young, plants, flowers
Year 1	weather, sunny, rainy, raining, shower, windy, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, winter, summer, spring, autumn, Sun, sunrise, sunset, day length
Year 2	
Year 3	
Year 4	
Year 5	
Year 6	



Materials

Year-group(s)	Vocabulary/Statement(s)
Birth to 3	<ul style="list-style-type: none"> Explore materials with different properties. Explore natural materials, indoors and outside.
Nursery	mix, stir, cook, hot, oven, microwave, change, burn, melt, hard, runny, set, freeze, freezer, cold, blended, hard, soft, bendy, stiff, wobbly, wood, plastic, paper, card, fabric
Reception	ice, water, frozen, icicle, snow, melt, wet, cold, slippery, smooth, big, bigger, biggest, smaller, smaller, smallest, hard, soft, bendy, rigid, wood, plastic, paper, card, metal, strong, weak, hot, apply heat, waterproof, soggy, not waterproof, best, change, change back
Year 1	object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through
Year 2	opaque, transparent, translucent, reflective, non-reflective, flexible, rigid, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching
Year 3	<p>rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorbs water, fossil, bone, flesh, minerals, marble, chalk, granite, sandstone, slate, types of soil (e.g. peaty, sandy, chalky, clay) (Y3 - Rocks)</p> <p>magnetic force, magnet, attract, magnetic material, metal, iron, steel (Y3 - Forces and magnets)</p>
Year 4	<p>solid, liquid, gas, heating, cooling, state change, melting, freezing, melting point, boiling, boiling point, evaporation, condensation, temperature, water cycle</p> <p>electrical conductor, electrical insulator, metal, non-metal (Y4 - Electricity)</p>
Year 5	thermal insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material
Year 6	



Rocks

Year-group(s)	Vocabulary/Statement(s)
Birth to 3	<ul style="list-style-type: none"> • Explore materials with different properties. • Explore natural materials, indoors and outside.
Nursery	natural, shells, pebbles, stones
Reception	
Year 1	object, material, rock, brick, clay, hard, soft, waterproof, absorbent, rough, smooth, shiny, dull, see-through, not see-through (Y1 - Everyday materials)
Year 2	opaque, transparent, translucent, reflective, non-reflective (Y2 - Uses of everyday materials)
Year 3	rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorbs water, fossil, bone, flesh, minerals, marble, chalk, granite, sandstone, slate, types of soil (e.g. peaty, sandy, chalky, clay)
Year 4	
Year 5	
Year 6	evolution



Light

Year-group(s)	Vocabulary/Statement(s)
Birth to 3	<ul style="list-style-type: none"> Repeat actions that have an effect.
Nursery	light, torch, bulb, lamp, spotlight, shiny, bright, brighter, brightest, Sun, shine, glow, mirror
Reception	Sun, sunny, light, shadow, shady, clouds, torch, see-through, not see-through, source, light source
Year 1	<p>senses, see, eyes (Y1 - Animals, including humans)</p> <p>shiny, dull, see-through, not see-through (Y1 - Materials)</p>
Year 2	opaque, transparent, translucent, reflective, non-reflective (Y2 - Uses of everyday materials)
Year 3	light, light source, dark, absence of light, surface, shadow, reflect, mirror, Sun, sunlight, dangerous
Year 4	
Year 5	
Year 6	straight lines, light rays