

St Peter's Church of England Primary School

Science Curriculum: Topics, Coverage and Objectives



		<u>Foundation Stage</u>	<u>Key Stage One</u>	<u>Lower Key Stage Two</u>					
		<p>Science at Foundation Stage is covered in the 'Understanding the World' area of the EYFS Curriculum. It is introduced indirectly through activities that encourage your child to explore, problem solve, observe, predict, think, make decisions and talk about the world around them. During their early learning experiences at school the children will explore creatures, people, plants and objects in their natural environments. They will observe and manipulate objects and materials to identify differences and similarities. Children will learn about similarities and differences in relation to places, objects, materials and living things. They will talk about the features of their own immediate environment and how environments might vary from one another. They will make observations of animals and plants and explain why some things occur, and talk about changes.</p>	<p>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 should be encouraged to be curious and ask questions about what they notice. They should 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 should 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 should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos. 'Working scientifically' is described separately in the programme of study, but must always be taught through and clearly related to the teaching of 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 should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.</p>	<p>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 should 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 should 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 should 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 should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.</p> <p><u>Upper Key Stage Two</u></p> <p>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 should 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 should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should 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 should 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 should read, spell and pronounce scientific vocabulary correctly.</p>					
		Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
A U T U M N T E R M	Topic in Autumn 1	All About Me – How have I changed since I was a baby?	All About Me – How have me and my family changed over time?	Everyday Materials (Chemistry)	Use of Everyday Materials (Chemistry)	Rocks (Chemistry)	States of Matter (Chemistry)	Properties: Changes of Materials (Chemistry)	Evolution & Inheritance: Fossils (Chemistry/Biology)
	Links to Prior and Future Learning:	<i>*Links to Reception coverage – observing and noting features of things in the environment</i>	<i>*Building on Nursery coverage – notice detailed features of animals. *Links to Year 1 and Year 2 coverage – animals including humans</i>	<i>*Building on Reception's coverage of Superheroes and capes they wear. *Links to Year 2 coverage – Use of Everyday Materials</i>	<i>*Building on Year 1 coverage Everyday Materials. *Links to Year 5 coverage – Changes of Materials</i>	<i>*Links to KS3 coverage – Earth and Atmosphere – Rock cycle and the formation of igneous, sedimentary and metamorphic rocks.</i>	<i>*Links to KS3 coverage – The particular nature of matter – exploring particle models.</i>	<i>*Building on Year 2 coverage – Use of Everyday Materials. *Links to KS3 coverage – The particular nature of Matter; Atoms, Elements and Compounds; Pure and Impure Substances; and Chemical reactions.</i>	<i>*Links Y6 coverage – Evolution & Inheritance – Adaptation *Links to KS3 coverage – Genetics and evolution – Inheritance, Chromosomes, DNA and genes.</i>
	Concepts Progression:	<i>Pupils should be taught to: -learn that they have similarities and</i>	<i>Pupils should be taught to: -Comment and ask questions about aspects</i>	<i>Pupils should be taught to:</i>	<i>Pupils should be taught to: - identify and compare the suitability of a</i>	<i>Pupils should be taught to: - compare and group together different kinds</i>	<i>Pupils should be taught to: - compare and group materials together,</i>	<i>Pupils should be taught to: - compare and group together everyday</i>	<i>Pupils should be taught to: - recognise that living things have changed</i>

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		<p>differences that connect them to, and distinguish them from others, including animals</p> <ul style="list-style-type: none"> -notice detailed features of objects/animals in the environment -begin to comment and ask questions about aspects of the familiar world, including themselves and their local area -begin to talk about some of the things they have observed about themselves and others -know how to operate simple equipment such as binoculars and magnifying glasses when looking at their local area and their bodies (e.g. detail in the eye/their hands) <p><u>Pupils might work scientifically by:</u> Observing body parts and the detail on them. Comparing and grouping animals according to size or colour. Identify similarities and differences between people (young/old).</p> <p><u>Compare/contrast a baby owl/adult owl (visit).</u></p>	<p>of their familiar world such as the place where they live or the natural world.</p> <ul style="list-style-type: none"> -talk about some of the things they have observed such as plants, animals, natural and found objects. -talk about why things happen and how things work. -develop an understanding of growth, decay and changes over time. -show care and concern for living things and the environment <p><u>Pupils might work scientifically by:</u> Observing closely, and identifying features of their local area and recording their observations. Performing simple tests to explore questions, for example: 'How often does it rain in my local area?'</p> <p><u>Compare/contrast a baby owl/adult owl (visit).</u></p>	<p>-distinguish between an object and the material from which it is made</p> <ul style="list-style-type: none"> -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><u>Pupils might work scientifically by:</u> performing simple tests to explore questions, for example: 'What is the best material for an umbrella? ...for lining a dog basket? ...for curtains? ...for a bookshelf? ...for a gymnast's leotard?'</p>	<p>variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</p> <ul style="list-style-type: none"> - find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. <p><u>Pupils might work scientifically by:</u> comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs); observing closely, identifying and classifying the uses of different materials, and recording their observations.</p>	<p>of rocks on the basis of their appearance and simple physical properties</p> <ul style="list-style-type: none"> - 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><u>Pupils might work scientifically by:</u> observing rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time; using a hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them. Pupils might research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed. Pupils could explore different soils and identify similarities and differences between them and investigate what happens when rocks are rubbed together or what changes occur when they are in water. They can raise and answer questions about the way soils are formed.</p>	<p>according to whether they are solids, liquids or gases</p> <ul style="list-style-type: none"> - 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. <p><u>Pupils might work scientifically by:</u> grouping and classifying a variety of different materials; exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party). They could research the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid. They might observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying or snowmen melting.</p>	<p>materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical 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 kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda. <p><u>Pupils might work scientifically by:</u> carrying out tests to answer questions, for example, 'Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making</p>	<p>over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p>
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							<i>blackout curtains?' They might compare materials in order to make a switch in a circuit. They could observe and compare the changes that take place, for example, when burning different materials or baking bread or cakes. They might research and discuss how chemical changes have an impact on our lives, for example, cooking, and discuss the creative use of new materials such as polymers, super-sticky and super-thin materials.</i>	
Topic in Autumn 2	Animals – What will I see at the zoo?	Animals – Are all animals the same?	Everyday Materials (Chemistry)	Use of Everyday Materials (Chemistry)	Light (Physics)	Electricity (Physics)	Earth & Space (Physics)	Light (Physics)
Links to Prior and Future Learning:	<i>*Links to Reception coverage – observing and noting features of things in the environment</i>	<i>*Building on Nursery coverage – notice detailed features of animals. *Links to Year 1 and Year 2 coverage – animals including humans *Links to Year 2 coverage – Animals and their habitats</i>	<i>*Building on Reception's coverage of Superheroes and capes they wear. *Links to Year 2 coverage – Use of Everyday Materials</i>	<i>*Building on Year 1 coverage Everyday Materials. *Links to Year 5 coverage – Changes of Materials</i>	<i>*Building on Year 1 coverage – Seasonal Changes *Links to KS3 coverage – Light waves</i>	<i>*Links to Y6 coverage – Electricity</i>	<i>*Building on Year 1 coverage – Seasonal Changes *Links to KS3 coverage – Earth and Atmosphere; Forces; Magnetism; and Space Physics</i>	<i>*Building on Year 3 coverage – Light *Links to KS3 coverage – Light Waves and The Light year</i>
Concepts Progression:	<i>Pupils should be taught to: -learn that they have similarities and differences that connect animals -notice detailed features of animals through non-fiction texts and real life experiences (where possible) -begin to comment and ask questions about aspects of the familiar world, including themselves, their local</i>	<i>Pupils should be taught to: -Comment and ask questions about aspects of the world, such as animals from various places -talk about some of the things they have observed such as plants, animals, natural and found objects. -talk about why things happen and how things work. -develop an understanding of</i>	<i>Pupils should be taught to: -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</i>	<i>Pupils should be taught to: - 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.</i>	<i>Pupils should be taught to: - 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</i>	<i>Pupils should be taught to: - 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</i>	<i>Pupils should be taught to: - 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</i>	<i>Pupils should be taught to: - 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</i>

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		<p>area and beyond (zoo habitats) -begin to talk about some of the things they have observed about animals -know how to operate simple equipment such as binoculars and magnifying glasses when looking at animals</p> <p><u>Pupils might work scientifically by:</u> Observing animal body parts and the detail on them. Comparing and grouping animals according to size or colour. Identify similarities and differences between animals and sorting these.</p>	<p>growth, decay and changes over time. -show care and concern for living things and the environment</p> <p><u>Pupils might work scientifically by:</u> Observing closely, and identifying features of a variety of animals and recording their observations. Performing simple tests to explore questions, for example: 'Can an elephant live in our school garden?' Making tables and simple displays about what is in the world around them.</p>	<p>the basis of their simple physical properties. <u>Pupils might work scientifically by:</u> performing simple tests to explore questions, for example: 'What is the best material for an umbrella? ...for lining a dog basket? ...for curtains? ...for a bookshelf? ...for a gymnast's leotard?'</p>	<p><u>Pupils might work scientifically by:</u> comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs); observing closely, identifying and classifying the uses of different materials, and recording their observations.</p>	<p>light source is blocked by an opaque object - find patterns in the way that the size of shadows changes. <u>Pupils might work scientifically by:</u> looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.</p>	<p>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. <u>Pupils might work scientifically by:</u> observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.</p>	<p>explain day and night and the apparent movement of the sun across the sky. <u>Pupils might work scientifically by:</u> comparing the time of day at different places on the Earth through internet links and direct communication; creating simple models of the solar system; constructing simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day; finding out why some people think that structures such as Stonehenge might have been used as astronomical clocks.</p>	<p>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. <u>Pupils might work scientifically by:</u> deciding where to place rear-view mirrors on cars; designing and making a periscope and using the idea that light appears to travel in straight lines to explain how it works. They might investigate the relationship between light sources, objects and shadows by using shadow puppets. They could extend their experience of light by looking a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters (they do not need to explain why these phenomena occur).</p>
		Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
S P R I N G T E R M	Topic in Spring 1	The passage of time - What will we do on a Bear Hunt?	The passage of time - What changes happen over time?	Animals, Including Humans (Biology)	Animals, Including Humans (Biology)	Animals, Including Humans (Biology)	Animals, Including Humans (Biology)	Animals, Including Humans (Biology)	Animals, Including Humans (Biology)
	Links to Prior and Future Learning:	*Links to Reception coverage – seasonal changes over time	*Building on Nursery coverage of seasonal changes *Links to Year 1 coverage of seasonal changes.	*Building on Reception units – Animals are they all the same; All about me and How can we look after the sea. *Links to Year 2 coverage – Animals including Humans	*Building on Year 1 coverage – Animals including Humans *Links to Year 3 coverage – Animals including Humans	*Building on Year 2 coverage – Animals including Humans *Links to Year 4 coverage – Animals including Humans	*Building on Year 4 coverage – Animals including Humans *Links to Year 5 coverage – Animals including Humans	*Building on Year 4 coverage – Animals including Humans *Links to Year 6 coverage – Animals including Humans	*Building on Year 5 coverage – Animals including Humans *Links to KS3 coverage – Gas exchange systems; Reproduction; Cellular respiration; The Skeletal and Muscular Systems; and Nutrition and Digestion
	Concepts Progression:	Pupils should be taught to:	Pupils should be taught to:	Pupils should be taught to:	Pupils should be taught to:	Pupils should be taught to:	Pupils should be taught to:	Pupils should be taught to:	Pupils should be taught to:

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	<p>-Comment and ask questions about aspects of the familiar world such as the school grounds (bear hunt). -Talk about some of the things they have observed when exploring their local area/school grounds -Begin to talk about why things happen and how things work (seasonal changes)</p> <p><u>Pupils might work scientifically by:</u> Observing closely, and identifying features of their school grounds, such as the materials used for certain objects. Performing simple tests to explore questions, for example: 'How much rain will we collect on our bear hunt?' Observe changes taking place with the chicks.</p>	<p>-Look closely at similarities, differences pattern and change (seasonal changes/differences)</p> <p><i>Observing closely, and identifying features of a variety of their local area and seasonal changes. Performing simple tests to explore questions, for example: 'Is there more sun or rain in December?' Record findings on a whole class chart Identify, name, draw and label basic parts of a tree.</i></p> <p>Observe changes taking place with the chicks.</p>	<p>-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. <u>Pupils might work scientifically by:</u> using their observations to compare and contrast animals at first hand or through videos and photographs, describing how they identify and group them; grouping animals according to what they eat; and using their senses to compare different textures, sounds and smells.</p>	<p>- 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. <u>Pupils might work scientifically by:</u> observing, through video or first-hand observation and measurement, how different animals, including humans, grow; asking questions about what things animals need for survival and what humans need to stay healthy; and suggesting ways to find answers to their questions.</p>	<p>- 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. <u>Pupils might work scientifically by:</u> identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about what would happen if humans did not have skeletons. They might compare and contrast the diets of different animals (including their pets) and decide ways of grouping them according to what they eat. They might research different food groups and how they keep us healthy and design meals based on what they find out.</p>	<p>- 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. <u>Pupils might work scientifically by:</u> comparing the teeth of carnivores and herbivores, and suggesting reasons for differences; finding out what damages teeth and how to look after them. They might draw and discuss their ideas about the digestive system and compare them with models or images.</p>	<p>- describe the changes as humans develop to old age. <u>Pupils could work scientifically by:</u> researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows.</p>	<p>- 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. <u>Pupils might work scientifically by:</u> exploring the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health.</p>
Topic in Spring 2	Under the Sea – What is it like under the sea?	Under the Sea – How can we look after the sea?	Habitats (Biology)	Living Things and Their Habitats (Biology)	Frog Life Cycle and Pond Life	Living Things and Their Habitats (Biology)	Living Things and Their Habitats (Biology)	Living Things and Their Habitats (Biology)
Links to Prior and Future Learning:	*Links to Reception coverage of sea animals and their habitat	*Builds on nursery coverage of sea animals and their features. *Links to Year 1 coverage of animals including humans *Links to Year 2 learning of living	*Builds on Nursery – Under the Sea * Build on Reception – Under the seas *Link to Year 1 coverage – Season change * Link to Year 2 coverage – Living Things and their Habitats	*Builds on Year 1 coverage – Seasonal Changes. *Links to Year 4 coverage – Living Things and Their Habitats.	*Builds on Reception sea animals and their habitat *Builds on Year 1 coverage - Animals Including Humans *Links to Year 5 coverage - Living Things and Their Habitats	*Builds on Year 2 coverage – Living Things and Their Habitats *Links to Year 5 coverage – Living Things and Their Habitats.	*Builds of observation of Chicks/Ducklings at Easter from all previous years. *Builds on Year 4 coverage – Living Things and Their Habitats	*Builds on Year 6 coverage – Living Things and Their Habitats *Links to KS3 coverage – Structures and Function of Living Organisms – Cells and Organisation.

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		<i>things and their habitats.</i>					<i>*Links to Year 6 coverage – Living Things and Their Habitats.</i>	
Concepts Progression:	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> -Comment and ask questions about aspects of the familiar world such as the sea -Talk about some of the things they have observed when exploring sea habitats through books and technology (fish class pet) -Continue to talk about why things happen and how things work (why does a fish have fins?) <p><u>Pupils might work scientifically by:</u> Observing closely, and identifying features of their sea animals and habitats/things from that environment (shells). Performing simple tests to explore questions, for example: 'Does a fish need fins?'</p> <p>Compare the growth/life cycle of a chick compared with sea animals. Compare their features, needs etc.</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> -Look closely at similarities, differences pattern and change (habitats, sea animals, climates) <p><i>Observing closely, and identifying features of a variety of sea animals and things from their habitats (rocks, sand, seaweed, shells)</i></p> <p><i>Performing simple tests to explore questions, for example: 'Can we clean the ocean?'</i></p> <p><i>Record findings on a whole class chart</i></p> <p><i>Identify, name, draw and label basic sea animals/habitat.</i></p> <p>Compare the growth/life cycle of a chick compared with sea animals. Compare their features, needs et.</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> -Look closely at similarities, differences pattern and changes - begin to 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 <p><u>Pupils might work scientifically by:</u> -making tables and charts about the habitats; and making displays of what happens in the world around them, including habitats, as the seasons change.</p> <p>- beginning to describe the conditions in different habitats and micro-habitats (under log, on stony path, under bushes) and find out how the conditions affect the number and type(s) of plants and animals that live there.</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> - 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. <p><u>Pupils might work scientifically by:</u> sorting and classifying things according to whether they are living, dead or were never alive, and recording their findings using charts. They should describe how they decided where to place things, exploring questions for example: 'Is a flame alive? Is a deciduous tree dead in winter?' and talk about ways of answering their questions. They could</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> -identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals -identify the different stages in life that amphibians (frogs) are carnivores, herbivores or omnivores -describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) - Begin to describe the differences in the life cycles of a (mammal,) an amphibian (frog), (an insect and a bird) <p><u>Pupils might work scientifically by:</u> using their observations to compare and contrast animals at first hand (in the pond) or through videos and photographs, describing how they identify and group them; grouping frogs according to what they eat at different stages of their life; and using their senses to compare different textures, sounds and smells of frogs at different stages.</p> <p><i>Begin observing and comparing the life cycles of animals (frogs) in their local environment with other frogs around the</i></p>	<p>Pupils should be taught to:</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. <p><u>Pupils might work scientifically by:</u> using and making simple guides or keys to explore and identify local plants and animals; making a guide to local living things; raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched.</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> - 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. <p><u>Pupils might work scientifically by:</u> <i>observing and comparing the life cycles of plants and animals in their local environment with other plants and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times), asking pertinent questions and suggesting reasons for similarities and differences. They might try to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs. They might observe changes in an animal over a period of time (for example, by hatching and rearing chicks), comparing how different animals reproduce and grow</i></p>	<p>Pupils should be taught to:</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. <p><u>Pupils might work scientifically by:</u> using classification systems and keys to identify some animals and plants in the immediate environment. They could research unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.</p>

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					<i>construct a simple food chain that includes humans (e.g. grass, cow, human). They could describe the conditions in different habitats and micro-habitats (under log, on stony path, under bushes) and find out how the conditions affect the number and type(s) of plants and animals that live there.</i>	<i>world (in the rainforest, in the oceans, in desert areas and in prehistoric times). They might begin to observe changes in an animal over a period of time (for example, tadpoles to frog), comparing how different animals reproduce and grow</i>			
		Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
S U M M E R T E R M	Topic in Summer 1	Superheroes – What special times have I had with my superhero? <i>(Materials link can be made here).</i>	Superheroes - Do all superheroes have the same special times? <i>(Materials link can be made here).</i>	Plants (Biology)	Plants (Biology)	Plants (Biology)	Trees Habitats/ecosystems	Plants Revisit Photosynthesis (KS3) New concepts and solidify prior learning	Evolution & Inheritance: Adaptation (Biology)
	Links to Prior and Future Learning:	<i>*Links to Reception coverage of similarities/differences of materials.</i>	<i>*Builds on nursery coverage of materials. *Links to Year 1 and Year 2 coverage of materials.</i>	<i>*Builds on Reception unit – Who lives in the garden? *Links to Year 2 coverage - Plants</i>	<i>*Builds on Year 1 coverage - Plants *Links to Year 2 coverage - Plants</i>	<i>*Builds on Year 2 coverage - Plants *Links to KS3 coverage – Nutrition and Digestion – Plants making carbohydrates; Gas exchange systems; Reproduction in plants; and Photosynthesis.</i>	<i>*Builds on Year 3 coverage - Plants *Links to KS3 Coverage – Structure and Function of Living organisms</i>	<i>*Builds on Year 3 coverage – Plants *Links to KS3 Coverage- Material cycles and energy-Photosynthesis</i>	<i>*Builds on previous Year 6 coverage – Evolution & Inheritance – Fossils *Links to KS3 coverage – Cells and Organisation – Structural adaptation of some unicellular organisms; Adaptation of the tissues and organs in humans including digestion; Adaptations to the function of gas exchange system in Humans; and Adaption of leaves for photosynthesis.</i>
	Concepts Progression:	<i>Pupils should be taught to: -talk about how things happen and why things work in relation to their</i>	<i>Pupils should be taught to: -know about similarities and differences in relation to places,</i>	<i>Pupils should be taught to: -identify and name a variety of common wild and garden plants,</i>	<i>Pupils should be taught to: - observe and describe how seeds and bulbs grow into mature plants</i>	<i>Pupils should be taught to: - identify and describe the functions of different parts of flowering plants: roots,</i>	<i>Pupils should be taught to: - identify and describe the functions of different parts of trees: roots,</i>	<i>Photosynthesis Chlorophyll Pupils should be taught to:</i>	<i>Pupils should be taught to: - recognise that living things produce offspring of the same kind, but normally offspring</i>

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		<p>familiar world (materials) -develop an understanding of growth, decay and changes over time (seasonal changes) -show care and concern for living things and the environment (continued)</p> <p><u>Pupils might work scientifically by:</u> observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants/objects/materials; describing how they were able to identify and group them, and drawing diagrams. Pupils might keep whole class records/photos of how plants have changed over time, for example the leaves falling off trees and buds opening.</p>	<p>objects, materials and living things. (Materials for superhero cape, etc.) -talk about the features of their own immediate environment and how environments may vary from one to another. -Make observations of materials and explain why some things occur, and talk about changes.</p> <p><u>Pupils might work scientifically by:</u> Carry out simple investigations to test the strength, durability of materials for a superhero cave. Observe what materials would be best for certain special event. Observe and raise questions.</p>	<p>including deciduous and evergreen trees -identify and describe the basic structure of a variety of common flowering plants, including trees. <u>Pupils might work scientifically by:</u> observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants; describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants including trees. Pupils might keep records of how plants have changed over time, for example the leaves falling off trees and buds opening; and compare and contrast what they have found out about different plants.</p>	<p>- find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. <u>Pupils might work scientifically by:</u> observing and recording, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb, or observing similar plants at different stages of growth; setting up a comparative test to show that plants need light and water to stay healthy.</p>	<p>stem/trunk, leaves and flowers - explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant - investigate the way in which water is transported within plants - explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal <u>Pupils might work scientifically by:</u> discovering how seeds are formed by observing the different stages of plant life cycles over a period of time; looking for patterns in the structure of fruits that relate to how the seeds are dispersed. They might observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels would travel up the trunk from the roots to the leaves/flowers</p>	<p>stem/trunk, leaves and flowers - explore the requirements of trees for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from tree to tree - investigate the way in which water is transported within trees - explore the part that flowers play in the life cycle of trees, including pollination, seed formation and seed dispersal <u>Pupils might work scientifically by:</u> comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser; discovering how seeds are formed by observing the different stages of plant life cycles over a period of time; looking for patterns in the structure of fruits that relate to how the seeds are dispersed. They might observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.</p>	<p>- identify and describe in detail the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers - explore the requirements of plant for life and growth (air, light, water, nutrients from soil, and room to grow); how they vary from plant to plant and how they are able to adapt to remain living in different habitats/as conditions change. - explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal -Begin to understand that plants make food (carbohydrates) in the leaves by a process called photosynthesis and as a result gain mineral nutrients and water from the soil via their roots. (KS3) -Begin to know that leaves adapt for photosynthesis (KS3) -Begin to know that almost all life on earth depends on the ability of plants to use sunlight to create the process of photosynthesis.</p> <p><u>Pupils might work scientifically by:</u> discovering how seeds are formed by observing the different stages of plant life cycles over a period of time and how they have</p>	<p>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. <u>Pupils might work scientifically by:</u> observing and raising questions about local animals and how they are adapted to their environment; comparing how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and camels. They might analyse the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers.</p>
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							<i>adapted over time; looking for patterns in the structure of fruits that relate to how the seeds are dispersed. They might observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels would travel up the trunk from the roots to the leaves/flowers</i>	
Topic in Summer 2	In the Garden – What can we grow in the garden?	In the Garden – Who lives in the garden?	Seasonal Changes (Physics)	Bees Lifecycle Pollination purpose	Forces & Magnets (Physics)	Sound (Physics)	Forces (Physics)	Electricity (Physics)
Links to Prior and Future Learning:	<i>*Links to Reception coverage of plants.</i>	<i>*Builds on nursery coverage of plants. *Links to coverage of plants in Years 1,2, and 3. *Links to coverage of animals and their habitats in Years 2,4,5, and 6.</i>	<i>*Links to Year 2 coverage – Living Things and Their Habitats. *Building on Reception unit 'The passage of time – What changes happen over time?' *Links to Year 3 coverage - Light</i>	<i>*Builds on to Reception coverage- In the Garden- Who Lives In The Garden * Builds on Early Years – What will I see at the Zoo *Links to Year Five coverage – Life Cycles</i>	<i>*Links to Year 5 coverage – Forces</i>	<i>*Links to KS3 coverage – Sound Waves.</i>	<i>*Builds on Year 3 coverage – Forces *Links to KS3 coverage – Motion and Forces; Static Electricity; and Space Physics – Gravity</i>	<i>*Builds on Year 4 coverage – Electricity *Links to KS3 coverage – Forces – Static electricity and Electromagnetism</i>
Concepts Progression:	<i>Pupils should be taught to: -talk about how things happen and why things work – growing of plants, seeds, etc. -develop an understanding of growth, decay and changes over time (plants) -show care and concern for living things and the environment. <u>Pupils might work scientifically by:</u> observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants</i>	<i>Pupils should be taught to: -know about similarities and differences in relation to places, objects, materials and living things. (minibeasts/plants) -talk about the features of their own immediate environment and how environments may vary from one to another. -Make observations of animals and plants and explain why some things occur, and talk about changes in the school garden.</i>	<i>Pupils should be taught to: - observe changes across the four seasons -observe and describe weather associated with the seasons and how day length varies. <u>Pupils might work scientifically by:</u> making tables and charts about the weather; and making displays of what happens in the world around them, including day length, as the seasons change.</i>	<i>Pupils should be taught to: -talk about the features of their own immediate environment and how environments may vary from one to another. -Make observations of animals (bees) and plants and explain why some things occur, and talk about changes in the school garden. -identify and describe the basic structure of a variety of common flowering plants (in relation pollination), including trees. -Begin to identify and describe the functions of</i>	<i>Pupils should be taught to: - 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</i>	<i>Pupils should be taught to: - 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</i>	<i>Pupils should be taught to: - 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.</i>	<i>Pupils should be taught to: - 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.</i>

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		<p>describing how they were able to identify and group them, and drawing diagrams. Pupils might keep whole class records/photos of how plants have changed over time, for example the leaves falling off trees and buds opening.</p>	<p><u>Pupils might work scientifically by:</u> Carry out simple investigations to test the strength, durability of materials for an umbrella, plant pot, gardening gloves, etc. Observe and pose questions about where plants grow best.</p>	<p>different parts of flowering plants: (roots, stem/trunk, leaves and) flowers - Begin to explore the part that flowers play in the life cycle of flowering plants, including pollination, (seed formation and seed dispersal)</p> <p><u>Pupils might work scientifically by:</u> -Observe and pose questions about where plants grow best. -observing closely, perhaps using magnifying glasses, bees and plants after bees have been around. -Observing and recording which plants bees are attracted to.</p>	<p>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. <u>Pupils might work scientifically by:</u> comparing how different things move and grouping them; raising questions and carrying out tests to find out how far things move on different surfaces and gathering and recording data to find answers their questions; exploring the strengths of different magnets and finding a fair way to compare them; sorting materials into those that are magnetic and those that are not; looking for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another; identifying how these properties make magnets useful in everyday items and suggesting creative uses for different magnets.</p>	<p>distance from the sound source increases. <u>Pupils might work scientifically by:</u> finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. They might make earmuffs from a variety of different materials to investigate which provides the best insulation against sound. They could make and play their own instruments by using what they have found out about pitch and volume.</p>	<p><u>Pupils might work scientifically by:</u> exploring falling paper cones or cup-cake cases, and designing and making a variety of parachutes and carrying out fair tests to determine which designs are the most effective. They might explore resistance in water by making and testing boats of different shapes. They might design and make products that use levers, pulleys, gears and/or springs and explore their effects.</p>	<p><u>Pupils might work scientifically by:</u> systematically identifying the effect of changing one component at a time in a circuit; designing and making a set of traffic lights, a burglar alarm or some other useful circuit.</p>
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