

# Science Whole School Overview

Teaching of Science provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Pupils are taught to 'work scientifically' understanding methods, processes and uses of science; 'working scientifically' is not be taught as a separate strand but embedded within the content of biology, chemistry and physics taught. The teaching of science is progressive and linked to other subject disciplines. Retrieval practice and low stakes testing is used during lesson to enable knowledge to be transferred into long-term memory to address know knowledge. Links are made throughout the subject and across subjects to enable revision and progression.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery	<b>Myself</b> Identify and name the parts of the face locate other parts of the body and begin to think of some of the things they are used for.	<b>Colour and Light</b> Identify some common light sources and explore how filters change the colour of the light.  <b>Seasonal Change</b> Observe changes across autumn. Identify signs of autumn found in the environment.	<b>Seasonal Change</b> Observe changes across winter. Identify signs of winter found in the environment.  <b>Materials</b> Understand that ice is frozen water and explore ways to melt it.	<b>Seasonal Change</b> Observe changes across spring. Identify signs of spring found in the environment.  <b>Forces</b> Understand that pushes and pulls are forces which can make objects move or change shape. Explore floating and sinking.  <b>Earth and Space</b> Know Earth is a planet in Space and that the sun is a star.	<b>Plants</b> Know what plants need in order to grow. Begin to name the parts of a plant. Know how to look after plants in the environment.  <b>Life Cycles</b> Understand the main stages of the life cycle of a butterfly. Know how to look after animals in the environment.	<b>Animals including minibeasts</b> Name common minibeasts and know where they are found. Know that different animals live in different habitats.
Reception		<b>Seasonal Change</b> Understand that there are four seasons. Observe changes across autumn. Identify signs of autumn found in the environment such as changes to leaves, daylight hours and temperature.	<b>Seasonal Change</b> Observe changes across winter. Identify signs of winter found in the environment. Observe changes in trees, temperature, weather and daylight and compare to autumn. Be able to explain why animals hibernate.  <b>Materials</b> Understand that ice is water that is frozen and be able to describe what happens to ice as the temperature rises.	<b>Seasonal Change</b> Observe spring changes to temperature, daylight hours and growth. Explain why hibernating animals wake during this season.  <b>Plants</b> Observe and know the names of some springtime flowers. Be able to name the main parts of a flowering plants. Observe seeds germinating and name the parts of the plant as they grow.  <b>Animals</b> Name the offspring of some animals.  <b>Physics: Sound</b> Identify how sounds are made and travel to the ear. Explore		<b>Seasonal Change</b> Observe changes in temperature, weather, daylight and plants in summer.  <b>Materials</b> Understand that as solids melt they change shape and that some solid materials become solid again. Explore the effect of temperature on the rate of melting.  <b>Light</b> Explore how shadows are formed and understand that they are the same shape as the object that cast them. Understand that shadows are an outline of the object. Explore how the length of shadow varies throughout the day.

				changing the loudness of the sound.  <b>Light</b> Identify some common light sources and know that light helps us to see. Explore with transparent and non-transparent materials to create shadows.		
Year 1	<b>Biology: Animals including humans</b> Identify, name, draw and label, the outer parts of the human body and say which parts of the body is associated with each sense.	<b>Physics: Seasonal Change</b> Observe changes across autumn and winter. Observe and describe weather associated with autumn and winter including how day length varies.	<b>Chemistry: Materials</b> Distinguishing between objects and the materials they are made from. Identify and name a variety of everyday materials and describe their simple properties. Compare and group everyday materials based on their properties. (hard/soft, rough/ smooth, shiny/ dull)	<b>Biology: Plants</b> Naming a variety of common wild and garden plants including trees. Naming the parts of a plant and a tree (stem, leaf, root, flower, petal, blossom, bulb, seed, trunk, branch, fruit)	<b>Physics: Seasonal Change</b> Observe changes across spring and summer. Observe and describe weather associated with spring and summer including how day length varies.	<b>Biology: Animals including humans</b> Identify and name a variety of common animals, including amphibian, reptile, mammal, fish and birds. Describe and compare the structure of a variety of common animals, including amphibian, reptile, mammals, fish and birds. Identify and name a variety of common animals that are carnivores, herbivores and omnivores.
Year 2	<b>Chemistry: Materials</b> Identify and compare the suitability of a variety of everyday materials for particular uses. (waterproof/ not waterproof) Find out some materials can be changed by squashing, bending, twisting and stretching. Key Scientist: Charles Macintosh.	<b>Biology: Animals including humans</b> Know 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.	<b>Biology: Animals including humans</b> Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene.	<b>Biology: Living things and their habitats</b> Explore and compare the differences between things that are living, dead and things that have never been alive. (Life processes) Identify that most 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 micro-habitats. 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.		<b>Biology: Plants</b> Observe and describe how seeds and bulbs grow into mature plants. Investigate conditions for plant growth (light, water, suitable temperature)
Year 3	<b>Chemistry: Materials</b> Compare and group rocks based on appearance and physical properties. Describe how fossils are formed. Recognise that soils are made from rocks and organic matter. Key Scientist: Mary Anning	<b>Physics: Forces and Magnets</b> Compare how things on different surfaces. Notice that some forces need contact between two objects but magnetic forces act at distance. Know that magnets act or repel each other and attract some materials and not others. Know magnets have two poles and predict whether	<b>Biology: Animals including humans</b> Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food. (Food groups) Know that animals, including humans, get nutrition from what they eat. (compare and contrast the diet of different animals, including pets) Identify that humans and some other animals have skeletons and muscles for support, protection and movement.		<b>Biology: Plants</b> Identify and describe the functions of different parts of flowering plants: roots, stem/ trunk, leaves and flowers. Explore the requirements for plants for life and growth (air, light, water, nutrients from soil and room to grow) Investigate how water is transported within plants. Explore the part the flower plays in the life cycle of	<b>Physics: Light</b> Recognise that light is needed to see things and know that darkness is the absence of light. Notice that light is reflected from surfaces. Recognise that light from the sun can be dangerous and know how to protect their eyes. Recognise that shadows when a light source is blocked by an opaque object. Identify patterns in the way the size of shadows changes.

		<p>they will attract or repel depending on which poles are facing each other.</p> <p>Compare and group materials according to whether they are attracted to a magnet or not. Name magnetic materials.</p>			<p>flowering plants (pollination, seed formation and dispersal)</p>	
Year 4	<p><b>Physics: Sound</b> Identify how sounds are made. Recognise that vibrations from sounds travel through a medium to the ear. Find patterns between the pitch of the sound and features of the object that produced it. Find patterns between the volume of the sound and the strength of the vibrations that produced it. Recognise that sounds get fainter as the distance from the sound source increases.</p>	<p><b>Biology: Animals including humans</b> 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. (Carnivores, herbivores and omnivores)</p>	<p><b>Physics: Electricity</b> Identify appliances that run on electricity Construct a simple series electrical circuit, identifying and naming its basic parts (cells, wires, bulbs, switches, motor and buzzers). Identify whether or not a lamp will light in a simple series circuit. 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>	<p><b>Biology: Living things and their habitats</b> Recognise that living things can be grouped in a variety of ways. (Explore a wide selection of living things that include animals, flowering plants and non-flowering plants). 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>	<p><b>Chemistry: Materials (States of Matter)</b> Compare and group materials according to whether they are solids, liquids or gases. Observe that some materials change state when they are heated and cooled and at what temperature that this happens (Celsius) Understand the parts played by evaporation and condensation in the Water Cycle and link this with temperature.</p> <p>Key Scientists: Anders Celsius and Daniel Fahrenheit</p>	
Year 5	<p><b>Physics: Forces</b> Explain that unsupported objects fall towards the earth because of gravity. Identify the effects of air resistance, water resistance and friction that act between moving surfaces. Understand that levers, pulleys and gears allow smaller forces to have greater effect.</p> <p>Key Scientists: Isaac Newton, Galileo Galilei</p>	<p><b>Biology: Animals including humans</b> Describe the changes as humans develop to old age. Learn about the changes experienced in puberty. Comparing the gestation periods of other animals with humans.</p>	<p><b>Physics: Earth and Space</b> 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. (A moon is a celestial body that orbits a planet. Earth has one moon and Jupiter has 4 large moons and numerous small ones) 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</p>	<p><b>Biology: Living things and their habitats</b> 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. (Sexual and asexual reproduction in plants and sexual reproduction in animals)</p> <p>Key Scientists: Jane Goodall and David Attenborough</p>	<p><b>Chemistry: Materials</b> Compare and group everyday materials on their basis of their properties (solubility, hardness, transparency, electrical and thermal conductivity and response to magnets) Dissolving to form solutions and understand how to recover substances from a solution. Separate mixtures using sieving, filtering and evaporating. Use evidence from comparative and fair tests to explain uses of everyday materials. Demonstrate that dissolving, mixing and changes of state are reversible changes. Know that irreversible changes for new materials.</p> <p>Key Scientist: Spencer Silver</p>	

			movement of the Sun across the sky.		
Year 6	<p>Physics: <b>Light</b></p> <p>Know that light appears to travel in straight lines.</p> <p>Know that objects are seen because they give out or reflect light into the eye.</p> <p>Explain that we see things because light travels from a light source to our eyes or from light sources to objects and then to our eyes.</p> <p>Use the idea that light travels in straight lines to explain why shadows have the same shape as the object that cast them.</p> <p>Key Scientist: Isaac Newton</p>	<p>Physics: <b>Electricity</b></p> <p>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</p> <p>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</p> <p>Use recognised symbols when representing a simple circuit in a diagram.</p>	<p>Biology: <b>Living things and their habitats</b></p> <p>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</p> <p>Give reasons for classifying plants and animals based on specific characteristics</p> <p>Key Scientist: Carl Linnaeus</p>	<p>Biology: <b>Animals including humans</b></p> <p>Identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p> <p>Describe the ways in which nutrients and water are transported within animals, including humans.</p>	<p>Biology: <b>Evolution and Inheritance</b></p> <p>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p>Key Scientist: Charles Darwin</p>