

# Science overview and intent



At Colindale Primary there is a commitment to develop all children's science capital. Science enables children to understand the world in which they live. We aim to harness the natural curiosity of all children through purposeful enquiry and an engaging environment. Pupils are given opportunities to question, explore, investigate and be challenged in order to develop their enquiring minds.

As one of the core subjects taught in primary schools, we give the teaching and learning of Science the prominence it requires. At Colindale Primary School, in conjunction with the aims of the National Curriculum, our Science teaching offers opportunities for children to:

- Have engaging and fun science lessons
- Use practical activities to explore and understand scientific things
- Link our science learning to real-life experiences
- Ask questions and have the opportunities to find answers for ourselves
- Work by using a range of scientific methods
- Develop our scientific vocabulary
- Are independent learners
- Share our learning within our school and community

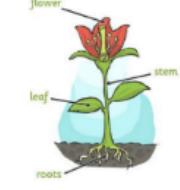
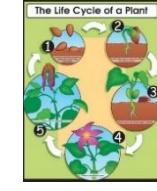
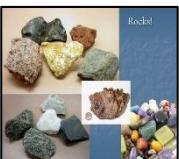
Children have weekly lessons in Science throughout Key Stage 1 and 2, using the programmes of study as set out in The National Curriculum. In the Early Years, Science is taught through the children learning about the world around them in their learning through play and through focussed adult led activities which secure their understanding and development of 'The World'.

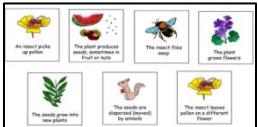
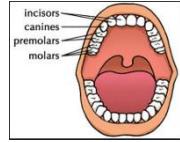
All children are exposed to high quality teaching and learning experiences, which allow children to explore their outdoor environment and locality, thus developing their scientific enquiry and investigative skills. They are immersed in scientific vocabulary, which aids children's knowledge and understanding not only of the topic they are studying, but of the world around them. We endeavour to ensure that the Science curriculum we provide will give children the confidence and motivation to continue to further develop their skills into the next stage of their education and life experiences.

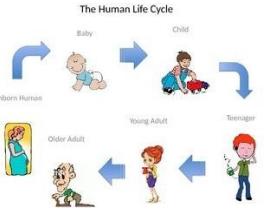
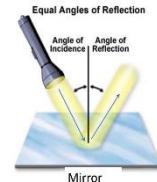
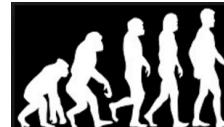
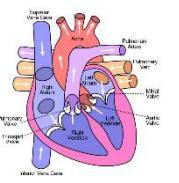
[Linked to Rights Respecting Articles: 17, 24, 28, 29, 31, 33.](#)

[British values: Democracy, Individual Liberty, Mutual respect, Tolerance of different faiths and belief](#)

	Autumn	Spring	Summer
Nursery	<ul style="list-style-type: none"> <li>Understand 'why' questions such as, 'Why do you think the caterpillar got bigger?'</li> <li>Make healthy choices about food, drink, activity and brushing teeth.</li> <li>Use their sense in hands-on exploration of natural materials, e.g. different types of leaves and seeds.</li> <li>Explore collections of materials with similar and/or different properties, e.g. explore materials to find out which are waterproof and which are not</li> <li>Talk about the differences between materials and changes they notice, e.g. how materials change through melting or cooling</li> <li>Talk about what they see, using a wide range of vocabulary.</li> <li>Show an interest in science related occupations, e.g. visiting a farm or talking to a vet</li> <li>Explore how things work, e.g. investigating wind-up toys, pegs and peg boards.</li> <li>Plant seeds and care for growing plants.</li> <li>Understand the key features of the life cycle of a plant and an animal, e.g. observe how caterpillars or tadpoles change over time</li> <li>Begin to understand the need to respect and care for the natural environment and all living things.</li> <li>Explore and talk about different forces they can feel, e.g. how water pushes up when they try to push a plastic boat under it.</li> </ul> <p><a href="#">Unicef articles: 12, 13, 14, 17, 28, 29, 31</a></p>		
Reception	<ul style="list-style-type: none"> <li>Learn new vocabulary.</li> <li>Ask questions to find out more and to check what has been said to them.</li> <li>Articulate their ideas and thoughts in well-formed sentences.</li> <li>Describe events in some detail.</li> <li>Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.</li> <li>Use new vocabulary in different contexts.</li> <li>Know and talk about the different factors that support their overall health and wellbeing: <ul style="list-style-type: none"> <li>regular physical activity</li> <li>healthy eating</li> <li>tooth brushing</li> <li>sensible amounts of 'screen time'</li> <li>having a good sleep routine</li> <li>being a safe pedestrian</li> </ul> </li> <li>Explore the natural world around them.</li> <li>Describe what they see, hear and feel while they are outside.</li> <li>Recognise some environments that are different to the one in which they live.</li> <li>Understand the effect of changing seasons on the natural world around them.</li> </ul> <p><a href="#">Unicef articles: 12, 13, 14, 17, 28, 29, 31</a></p>		

<b>Year 1</b>	<p><b>Seasonal changes</b></p> <ul style="list-style-type: none"> <li>- weather</li> <li>- clothing</li> <li>- day length</li> </ul> <p><b>Animals including humans</b></p> <ul style="list-style-type: none"> <li>- identify, name, draw and label parts of the human body including senses</li> </ul> <p><b>Everyday materials</b></p> <ul style="list-style-type: none"> <li>- name and identify everyday materials</li> <li>- describe and compare materials</li> <li>- compare and group materials</li> </ul> <p><b>Unicef articles:</b> 17, 17, 24, 28, 29</p> 	<p><b>Seasonal changes</b></p> <ul style="list-style-type: none"> <li>- weather</li> <li>- clothing</li> <li>- day length</li> </ul> <p><b>Animals including humans</b></p> <ul style="list-style-type: none"> <li>- identify and name common animals</li> <li>- describe and compare animals</li> <li>- understand what carnivores, herbivores and omnivores are</li> </ul> <p><b>Unicef articles:</b> 17, 28, 29</p> 	<p><b>Seasonal changes</b></p> <ul style="list-style-type: none"> <li>- weather</li> <li>- clothing</li> <li>- day length</li> </ul> <p><b>Plants</b></p> <ul style="list-style-type: none"> <li>- identify and name common plants</li> <li>- identify and describe the structure of common flowering plants</li> </ul> <p><b>Unicef articles:</b> 17, 6, 28, 29</p> 
<b>Year 2</b>	<p><b>Use of everyday materials</b></p> <ul style="list-style-type: none"> <li>- identify and compare the suitability of different materials</li> <li>- investigating how objects can be changed by bending, squashing, twisting and stretching</li> </ul> <p><b>Unicef articles:</b> 17, 28, 29</p> 	<p><b>Plants</b></p> <ul style="list-style-type: none"> <li>- observe and describe how seeds and bulbs grow into mature plants</li> <li>- investigate what plants need to grow and stay healthy</li> </ul> <p><b>Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>- explore and compare difference between things that are living, dead and never lived</li> <li>- identify how habitats provide needs of different animals and plants</li> <li>- identify and name a variety of plants and animals in local habitats</li> <li>- basic food chains</li> </ul> <p><b>Unicef articles:</b> 6, 17, 24, 28, 29</p>  	<p><b>Animals including humans</b></p> <ul style="list-style-type: none"> <li>- lifecycles of animals and humans</li> <li>- find out about and describe the basic needs of animals, including humans, for survival</li> <li>- describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</li> </ul> <p><b>Unicef articles:</b> 17, 28, 29</p> 
<b>Year 3</b>	<p><b>Rocks</b></p> <ul style="list-style-type: none"> <li>- compare and group rocks based on appearance and physical properties</li> <li>- describe how fossils are</li> </ul> <p><b>Unicef articles:</b> 17, 28, 29</p> 	<p><b>Light</b></p> <ul style="list-style-type: none"> <li>- recognise how light is needed to see things</li> <li>- identify sources of light and surfaces that reflect light</li> </ul>	<p><b>Plants</b></p> <ul style="list-style-type: none"> <li>- identify and describe the functions of different parts of flowering plants</li> <li>- explore the requirements of plants for life and growth and how they vary from plant to</li> </ul>

	<p>formed</p> <ul style="list-style-type: none"> <li>- recognise what soils are made from</li> </ul> <p><b>Forces and magnets</b></p> <ul style="list-style-type: none"> <li>- compare how things move</li> <li>- describe how magnetic forces work</li> <li>- understand attraction and repulsion</li> <li>- identify materials/ objects that are magnetic</li> </ul> <p><b>Unicef articles:</b> 17, 28, 29</p> 	<ul style="list-style-type: none"> <li>- understand how shadows are formed, how and why shadows change size</li> </ul>  <p><b>Animals including humans</b></p> <ul style="list-style-type: none"> <li>- identify what animals, including humans need to stay alive</li> <li>- identify that humans and some other animals have skeletons and muscles for support, protection and movement</li> </ul> <p><b>Unicef articles:</b> 6, 17, 24, 27, 28, 29, 31</p> 	<p>plant</p> <ul style="list-style-type: none"> <li>- investigate the way in which water is transported within plants</li> <li>- explore the part that flowers play in the life cycle of flowering plants</li> </ul>  <p><b>Unicef articles:</b> 17, 28, 29</p>
<p>Year 4</p>	<p><b>Sound</b></p> <ul style="list-style-type: none"> <li>- identify how sounds are made</li> <li>- recognise that vibrations from sounds travel through a medium to the ear</li> <li>- find patterns between the pitch of a sound and features of the object that produced it</li> <li>- find patterns between the volume of a sound and the strength of the vibrations that produced it</li> </ul> <p><b>Electricity</b></p> <ul style="list-style-type: none"> <li>- identify appliances that run-on electricity</li> <li>- construct a simple series electrical circuit, identifying and naming its basic parts</li> <li>- investigate ways in which a bulb will light up in different circuits</li> <li>- recognise some common conductors and insulators, and associate metals with being good conductors</li> </ul> <p><b>Unicef articles:</b> 17, 28, 29</p>	<p><b>Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>- recognise that living things can be grouped in a variety of ways</li> <li>- explore and use classification keys</li> <li>- recognise that environments can change and that this can sometimes pose dangers to living things</li> </ul>  <p><b>Unicef articles:</b> 17, 28, 29</p>	<p><b>Animals including humans</b></p> <ul style="list-style-type: none"> <li>- describe the simple functions of the basic parts of the digestive system in humans</li> <li>- identify the different types of teeth in humans and their simple functions</li> <li>- construct and interpret a variety of food chains, identifying producers, predators and prey</li> </ul>  <p><b>States of matter</b></p> <ul style="list-style-type: none"> <li>- compare and group materials, identify whether they are solids, liquids or gases</li> <li>- observe that some materials change state when they are heated or cooled</li> <li>- measure or research the temperature at which this happens in degrees Celsius (°C)</li> <li>- identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</li> </ul> <p><b>Unicef articles:</b> 17, 24, 28, 29,</p>

Year 5	<p><b>Earth and space</b></p> <ul style="list-style-type: none"> <li>- describe the movement of the Earth, and other planets, relative to the Sun in the solar system</li> <li>- describe the movement of the Moon relative to the Earth</li> <li>- use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</li> </ul> <p><b>Forces</b></p> <ul style="list-style-type: none"> <li>- develop an understanding of gravity and its effects</li> <li>- identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> <li>- recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect</li> </ul> <p><b>Unicef articles:</b> 17, 28, 29</p>	<p><b>Properties and changes of materials</b></p> <ul style="list-style-type: none"> <li>- know that some materials will dissolve and describe how to recover a substance from a solution</li> <li>- use knowledge of solids, liquids and gases to decide how mixtures might be separated</li> <li>- give reasons for the uses of everyday materials</li> <li>- understand reversible and irreversible changes</li> </ul> <p><b>Unicef articles:</b> 17, 28, 29</p>	<p><b>Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>- describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</li> <li>- describe the life process of reproduction in some plants and animals</li> </ul> <p><b>Animals including humans</b></p> <ul style="list-style-type: none"> <li>- describe the changes as humans develop to old age.</li> </ul> <p><b>Unicef articles:</b> 6, 17, 27, 28, 29</p>  
	<p><b>Electricity</b></p> <ul style="list-style-type: none"> <li>- associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</li> <li>- compare and give reasons for variations in how components function</li> <li>- use recognised symbols when representing a simple circuit in a diagram</li> </ul> <p><b>Light</b></p> <ul style="list-style-type: none"> <li>- recognise that light appears to travel in straight lines and use this to explain that objects are seen because they give out or reflect light into the eye</li> <li>- explain how we see things</li> </ul> 	<p><b>Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>- describe how living things are according to common observable characteristics and based on similarities and differences</li> <li>- give reasons for classifying plants and animals based on specific characteristics</li> </ul> <p><b>Evolution and inheritance</b></p> <ul style="list-style-type: none"> <li>- recognise that living things have changed over time and that fossils provide information about living things</li> <li>- recognise that living things produce offspring, but normally offspring vary and are</li> </ul> 	<p><b>Animals including humans</b></p> <ul style="list-style-type: none"> <li>- identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</li> <li>- recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</li> <li>- Sex Education</li> </ul> <p><b>Animals including humans</b></p> <ul style="list-style-type: none"> <li>- describe the ways in which nutrients and water are transported within animals, including humans</li> </ul> 

	<ul style="list-style-type: none"><li>- use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</li></ul> <p><b>Unicef articles:</b> 17, 28, 29</p>	<ul style="list-style-type: none"><li>- not identical to their parents</li><li>- identify how animals and plants are adapted to suit their environment and that adaptation may lead to evolution</li></ul> <p><b>Unicef articles:</b> 6, 17, 24, 27, 28, 29,</p>	<p><b>Unicef articles:</b> 6, 17, 24, 27, 28, 29, 33, 34</p>
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