

## SCIENCE CURRICULUM IN THE OC

<b>ANIMALS AND HUMANS</b>		
<b>Year Group Sequence</b>	<b>Explicitly Taught</b>	<b>Opportunities for Application and Consolidation (Not Explicitly Taught)</b>
Year R	<ul style="list-style-type: none"> <li>- Know similarities and differences in relation to objects, materials and places.</li> <li>- Can discuss their own environment and how environments vary.</li> <li>- Observe plants and animals and discuss changes, similarities and differences.</li> <li>- Know that the environment and living things are influenced by human activity.</li> <li>- Describe some actions of people that influence the environment they live in (positive and negative).</li> </ul>	<ul style="list-style-type: none"> <li>- Know some properties of basic materials and suggest possible uses.</li> </ul>
Year 1	<ul style="list-style-type: none"> <li>- Identify and Name a variety of common fish and amphibians.</li> <li>- Identify and Name a variety of common reptiles, mammals and birds.</li> <li>- Understand the terms: Carnivore, Herbivore and Omnivore</li> <li>- Identify and Name a variety of animals that are carnivores, herbivores and omnivores</li> <li>- Identify shared characteristics of carnivores, herbivores and omnivores.</li> <li>- Describe the structure of a variety of animals (fish, reptiles, birds, amphibians, mammals)</li> <li>- Compare the structure of a variety of animals (fish, reptiles, birds, amphibians, mammals)</li> </ul>	<ul style="list-style-type: none"> <li>- Identify, Name and Label the basic parts of the human body.</li> <li>- Understand which body parts are associated with which of the senses – Understand how sense lead to responses – Give examples of how we respond to our senses.</li> </ul> <p><i>NOTES: Humans will be used as a comparison for children to notice differences between themselves and other animals.</i></p>
Year 2	<ul style="list-style-type: none"> <li>- Be aware that animals, including humans, have offspring that grow into adults</li> <li>- Understand that all living things will eventually die.</li> <li>- Explore and describe the basic needs of animals, including humans, for survival (water, warmth, food (light)</li> <li>- Understand what sources there are for theses necessities.</li> </ul>	<ul style="list-style-type: none"> <li>- Describe the importance for humans of exercise, eating the right amounts of different foods, and hygiene (increases survival chances).</li> </ul> <p><i>NOTES: Humans will be used as a comparison for children to notice differences between themselves and other animals.</i></p>

Year 3	<ul style="list-style-type: none"> <li>- Identify that animals and humans need the right types of nutrition</li> <li>- Identify that they cannot make their own food and that they get nutrition from what they eat.</li> <li>- Identify that some animals and humans have skeletons and muscles for SUPPORT, PROTECTION and MOVEMENT</li> <li>- Describe how skeletons provide SUPPORT, PROTECTION and MOVEMENT.</li> </ul>	
Year 4	<ul style="list-style-type: none"> <li>- Compare the similarities and differences between human and animal teeth.</li> <li>- Understand the terms: predators, prey, producers and consumers</li> <li>- Construct and Interpret a variety of food chains, identifying predators, prey, producers and consumers</li> <li>- Understand that a food chain is a transference of energy - Recognise that different food chains occur in different habitats.</li> </ul>	<ul style="list-style-type: none"> <li>- Describe the simple functions of the basic parts of a human digestive system.</li> <li>- Identify the different types of teeth in humans and their functions</li> </ul> <p><i>NOTES: Humans will be used as a comparison for children to notice differences between themselves and other animals.</i></p>
Year 5	<ul style="list-style-type: none"> <li>- Understand that different animals evolve at different rates and live to different ages.</li> </ul>	<ul style="list-style-type: none"> <li>- Recognise and discuss that humans change throughout their life (birth, puberty, adulthood)</li> <li>- Describe the changes as humans develop to old age.</li> </ul> <p><i>NOTES: Humans will be used as a comparison for children to notice differences between themselves and other animals.</i></p>
Year 6	<ul style="list-style-type: none"> <li>- Describe the way in which nutrients and water are transported in animals including humans (absorbed into the blood stream by the vessels).</li> </ul>	<ul style="list-style-type: none"> <li>- Identify and name the main parts of the human circulatory system – Know that the heart pumps blood through vessels to the muscles; the muscles take oxygen and nutrients from the blood, and oxygen is taken into the blood via the lungs.</li> <li>- Recognise the impact of diets, drugs, exercise and lifestyle on their bodies.</li> </ul> <p><i>NOTES: Humans will be used as a comparison for children to notice differences between themselves and other animals.</i></p>

**PLANTS – LIVING THINGS AND HABITATS**

<b>Year Group Sequence</b>	<b>Explicitly Taught</b>	<b>Opportunities for Application and Consolidation (Not Explicitly Taught)</b>
Year R	<ul style="list-style-type: none"> <li>- Know similarities and differences in relation to objects, materials and places.</li> <li>- Can discuss their own environment and how environments vary.</li> <li>- Observe plants and animals and discuss changes, similarities and differences.</li> <li>- Know that the environment and living things are influenced by human activity.</li> <li>- Describe some actions of people that influence the environment they live in (positive and negative).</li> </ul>	<ul style="list-style-type: none"> <li>- Know some properties of basic materials and suggest possible uses.</li> </ul>
Year 1	<ul style="list-style-type: none"> <li>- Identify (recognise) a variety of common, garden plants</li> <li>- Name a variety of common garden plants.</li> <li>- Identify (recognise) a variety of common, wild plants</li> <li>- Name a variety of common, wild plants.</li> <li>- Understand the terms deciduous and evergreen - Identify (recognise) common, deciduous and evergreen trees</li> <li>- Name common, deciduous and evergreen trees.</li> <li>- Identify the basic structure of common flowering plants and trees (leaves, flowers, petals, stem, root, truck, seed, branches, fruit)</li> <li>- Describe the basic structure of common flowering plants and trees (Roots are at the bottom. Roots feed the plant)</li> </ul>	

Year 2	<ul style="list-style-type: none"> <li>- Observe and describe how seeds and bulbs grow into mature plants.</li> <li>- Explore how plants need water, light and a suitable temperature to grow and stay healthy - Describe how plants need water, light and a suitable temperature to grow and stay healthy.</li> <li>- Understand that environmental change can affect the living things that live there.</li> <li>- Understand that things are either living, dead or have never been alive - Explore and compare the difference between things that are living, dead, and have never been alive.</li> <li>- Understand that different animals live in different places</li> <li>- Describe how different habitats provide the basic needs for different kinds of animals.</li> <li>- Understand and give examples of the fact that animals and their habitats depend on each other</li> <li>- Recognise that living things are adapted to survive.</li> <li>- Identify and name a variety of plants and animals in their habitats, including micro-habitats.</li> <li>- Describe how animals obtain their food from plants and other animals using a simple food chain</li> <li>- Identify and name different food sources.</li> </ul>	
Year 3	<ul style="list-style-type: none"> <li>- Identify and describe the functions of different parts of flowering plants (roots, stem/trunk, leaves, flowers)</li> <li>- Investigate the way in which water is transported within plants.</li> <li>- Explore the requirements of plants for life and growth (air, light, water, nutrients and room to grow)</li> <li>- Describe how the plants obtains these necessities and the adaptations they go through.</li> <li>- Explore the role of the flower in the life cycle of flowering plants</li> <li>- Know that plants normally grow from seeds or bulbs</li> <li>- Relates seeds with reproduction.</li> </ul>	

Year 4	<ul style="list-style-type: none"> <li>- Recognise that living things can be grouped in a number of ways, using their characteristics.</li> <li>- Explore and use classification keys to help group, identify and name a variety of living things in the local and wider environment.</li> <li>- Recognise that environments can change naturally or via human impact and the dangers this can pose</li> <li>- Observe how change affects different living things in different ways.</li> </ul>	
Year 5	<ul style="list-style-type: none"> <li>- Understand the terms: mammal, amphibian, insect, bird and reptile</li> <li>- Identify animals that fall into the categories based on their appearance and make-up.</li> <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> <li>- Compare and contrast the similarities and differences in reproduction between a human and a selected animal.</li> </ul>	
Year 6	<ul style="list-style-type: none"> <li>- Describe how living things are classified into broad groups based on observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.</li> <li>- Classify animals using characteristics and keys</li> <li>- Give reasons for classifying plants and animals based on specific characteristics.</li> </ul>	

## SCIENTIFIC ENQUIRY

Year Group	Opportunities for Application and Consolidation (Not Explicitly Taught)	Working Scientifically
Year 1	<p><b>SEASONAL CHANGES</b></p> <ul style="list-style-type: none"> <li>- Observe changes across all four seasons.</li> <li>- Observe and describe weather associated with the four seasons.</li> <li>- Describe how day length varies (Summer = Longer and Winter = Shorter)</li> </ul> <p><b>EVERYDAY MATERIALS</b></p> <ul style="list-style-type: none"> <li>- Distinguish between an object and the material from which it is made (bench/wood).</li> <li>- Identify and Name a variety of everyday materials (wood, plastic, glass, metal, rock, water)</li> <li>- Describe the simple physical properties of everyday materials (wood, plastic, glass, metal, rock, water) – Establish materials that may be good for certain jobs based on their properties.</li> </ul>	<ul style="list-style-type: none"> <li>- Gather evidence to describe the similarities and differences between organisms, habitats and objects.</li> <li>- Gather evidence to describe how things change over time or as a result of something happening (eg: how some things spring back when bent and others don't, or plants wilt when lacking water).</li> <li>- Begin to gather evidence to describe the relationship between patterns and variables (cause and effect) by identifying and seeking to quantify what must be changed and what must be measured (what to change and what to measure)</li> </ul>
Year 2	<p><b>EVERYDAY MATERIALS</b></p> <ul style="list-style-type: none"> <li>- Identify and compare a variety of everyday materials for practical uses (wood, plastic, cardboard, metal, brick, glass, paper).</li> <li>- Explore how the shapes of some solid objects can be changed by squashing, stretching, twisting and bending.</li> </ul>	
Year 3	<p><b>LIGHT</b></p> <ul style="list-style-type: none"> <li>- Recognise that they need light to be able to see and that darkness is the absence of light</li> <li>- Notice that light is reflected from surfaces and suggest materials that are excellent reflectors – Know that light travels in straight lines, from the object to the eye.</li> <li>- Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</li> <li>- Recognise that shadows are formed when the light from a source is blocked by an opaque object</li> <li>- Find and explore patterns in the way that the size of shadows change.</li> </ul>	<ul style="list-style-type: none"> <li>- Recognise that factors other than that which we are changing may have an effect and seek to control these factors (what to change, what to measure and what to keep the same).</li> <li>- Gather evidence to describe and classify patterns of behaviour, characteristics and properties of materials and make generalisations from data samples.</li> </ul>

Year 4	<p><b>STATES OF MATTER</b></p> <ul style="list-style-type: none"> <li>- Compare and group materials according to whether or not they are solids, liquids or gases – Identify the properties of solids, liquids and gases.</li> <li>- Observe that some materials change state when heated or cooled - Measure/record the temperature that this change occurs – Begin to question if the change can be reversed – Understand that the temperature a substance changes state at is always the same.</li> <li>- Understand and give examples of the terms: EVAPORATION and CONDENSATION - Identify the part played by evaporation and condensation in the water cycle.</li> </ul>	
Year 5	<p><b>FORCES</b></p> <ul style="list-style-type: none"> <li>- Understand the terms: air resistance, friction and water resistance</li> <li>- Identify the effects of air resistance, friction and water resistance that act between objects or moving surfaces.</li> </ul> <p><b>PROPERTIES + MATERIAL CHANGES</b></p> <ul style="list-style-type: none"> <li>- Use knowledge of solids, liquids and gases to decide how mixtures may be separated, including sieving, filtering and evaporating.</li> </ul> <p><b>EARTH AND SPACE</b></p> <ul style="list-style-type: none"> <li>- Understand that larger objects have a greater gravitational pull</li> <li>- Describe the movement of the Moon in relation to the Earth.</li> <li>- Use the idea of the Earth's rotation to explain day and night and the apparent movement across the sky.</li> </ul>	<ul style="list-style-type: none"> <li>- Recognise that conclusions may be uncertain due to difficulties controlling and measuring variables accurately and that measurement always introduces some error.</li> <li>- Understand that repeated experimenting helps to identify what the true value is and that data points far from the mean are likely to be inaccurate and should be discounted when averaging.</li> <li>- Adapt experiments to produce more precise conclusions when the question requires it, especially when seeking to find maximum, minimum or specific values.</li> </ul>

Year 6	<p><b>EVOLUTION AND INHERITANCE</b></p> <ul style="list-style-type: none"><li>- Recognise and give examples that living things have changed over time – Know and explore how fossils provide evidence that living things inhabited Earth many years ago.</li><li>- Recognise that living things produce offspring of the same kind but they can vary and are not identical to their parents.</li><li>- Identify how different plants and animals are adapted to suit their environment in different ways - Recognise that adaptation may lead to evolution and provide examples.</li><li>- Recognise that competition exists for resources and mates – Understand that the living things that are best suited/adapted are most likely to reproduce.</li></ul> <p><b>LIGHT</b></p> <ul style="list-style-type: none"><li>- Recognise that light appears to travel in straight lines - Use the idea that light travels in straight lines to explain how objects are seen by reflecting light into our eye.</li><li>- Understand that we see things because light travels from a light source to eyes or from a light source to an object and then into our eye – Describe the difference between a smooth material and a rough material regarding its light reflection.</li><li>- Using the idea of light travelling in straight lines, understand why shadows have the same shape as the object that cast them.</li></ul>	
--------	--	--