




# Whitstable Junior School

## Progression in Scientific Knowledge

	Where the children have come from. (KS1)	Years 3 & 4	Years 5 & 6
<p style="text-align: center;">Plants</p>  <p style="text-align: center;">(Biology)</p>	<ul style="list-style-type: none"> <li>Children will learn about and be able to identify a variety of trees, including deciduous and evergreen trees. They will also learn about the basic structure of common flowering plants including trees</li> <li>Children will observe and describe how seeds and bulbs grow into mature plants and find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</li> </ul>	<ul style="list-style-type: none"> <li>Children will identify and describe the functions of different parts of flowering plants (roots, stem/trunk, leaves and flowers). They will explore the requirements of plants for life and growth and how they vary from plant to plant. Children will investigate the way in which water is transported within plants and explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> </ul>	

Animals, including Humans



(Biology)

- Children will learn how to identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. Children will be introduced to the different animal groups and begin identifying and naming common animals (fish, amphibians, reptiles, birds and mammals including pets).
  - Children will notice that animals, including humans, have offspring which grow into adults. They will find out about the basic needs for survival and describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.
  - Children will describe and compare the structure of a variety of common animals and name those that are carnivores, herbivores and omnivores.
- Children identify that animals, including humans, need the right types and amounts of nutrition and that this comes from what they eat. Children will explain which parts of the skeleton provide support and protection and how they allow for movement.
  - Children will discover the role of the digestive system in the human body and identify the role of the different types of teeth in humans and their simple functions for carnivores, omnivores and herbivores. They will construct and interpret a variety of food chains, identifying producers, predators and prey.
- Building on learning from animal life cycles, students will be able to describe the changes in humans as they develop from birth to old age
  - Children will identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. They will also recognise the impact of diet, exercise and lifestyle on the way their bodies function. As well as this, they will also describe the ways in which nutrients and water are transported within animals, including humans.

Living things and




their habitats



(Biology)

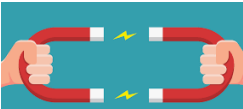

- Children will explore and compare the differences between things that are living, dead and things that have never been alive. They will identify that most living things live in habitats to which they are suited, name animals and their habitats, describe how different habitats provide for basic needs of living things and how they depend on each other. They will describe how animals obtain their food from plants and other animals, using the idea of a simple food chain.

- Children will recognise that living things can be grouped in a variety of ways. They will explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. They will recognise that environments can change and that this can sometimes pose dangers to living things

- Children will build on their knowledge of plants to learn about the different life processes of reproduction in some plants and animals. They will also be able to explain the differences between the life cycles of mammals, amphibians, insects and birds.
- Children will describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. They will also give reasons for classifying plants and animals based on specific characteristics.

<p>Uses of everyday materials / Materials and    their properties  (Chemistry)</p>	<ul style="list-style-type: none"> <li>• Children will begin this unit by learning to distinguish between an object and the material it is made out of. Children will then learn about a variety of materials, beginning to understand and describe their physical properties.</li> <li>• Children will compare and group materials according to their simple physical properties.</li> <li>• Children will learn how to identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.</li> <li>• Children will learn about identifying and comparing the suitability of different materials.</li> <li>• They will also learn how materials can be changed by squashing, bending, twisting and stretching.</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Children will compare and group together everyday materials based on their properties, including hardness, solubility, transparency and conductivity.</li> <li>• They will know that some materials dissolve and describe how to recover a substance from a solution. They will use knowledge of states of matter (Y4) to decide how to separate mixtures including filtering, sieving and evaporating. <ul style="list-style-type: none"> <li>• Children will give reasons, based on fair tests, for the uses of everyday materials including metals, woods and plastics. They will demonstrate that dissolving, mixing and changes of state are reversible changes, but that some changes form a new material and are irreversible, such as burning.</li> </ul> </li> </ul>
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<p>States of matter/ Seasonal changes</p> <p>(Chemistry)</p> 	<ul style="list-style-type: none"> <li>• Children will observe, measure and record how materials change when heated and cooled. They will compare how materials change over time and in different conditions.</li> <li>• Children will play and explore outside in all seasons and in different weather. They will observe living things and how they change throughout the year.</li> </ul>	<ul style="list-style-type: none"> <li>• Children will compare and group materials together, according to whether they are solids, liquids or gases. They will observe that some materials change state when they are heated or cooled and measure or research the temperature at which this happens in °C.</li> <li>• Children will identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>
<p>Light</p>  <p>(Physics)</p>	<ul style="list-style-type: none"> <li>• Children will explore light sources and shine light on or through different materials.</li> <li>• Children will explore shadows and rainbows.</li> </ul>	<ul style="list-style-type: none"> <li>• Children will recognise that they need light to see and dark is the absence of light. They will notice that light is reflected from surfaces and can be dangerous. They will learn how to protect their eyes from the light. When exploring shadows, children will recognise that they are formed when light is blocked and find patterns in the way the sizes of shadows change.</li> </ul>	<ul style="list-style-type: none"> <li>• Children will recognise that light appears to travel in straight lines. They will use this idea to explain that objects are seen because they give out or reflect light into the eye and that shadows have the same shape as the object that cast them. Children will explain that we see things because light travels from the light source to our eyes.</li> </ul>

<p>Forces &amp; Magnets (Physics)</p> 	<ul style="list-style-type: none"> <li>• Children will feel forces. They will explore how things work and explore how objects and materials are affected by forces.</li> <li>• Children will explore how to change how things work. They will explore how the wind can move objects and how objects move in water.</li> </ul>	<ul style="list-style-type: none"> <li>• Children will be able to compare how objects move on different surfaces and recognise the difference between contact and non contact forces.</li> <li>• Children will observe how magnets attract or repel each other and attract some materials but not others. They will investigate the two poles on the magnet and categorise materials into magnetic and non-magnetic materials.</li> </ul>	<ul style="list-style-type: none"> <li>• Children will be taught to explain that unsupported objects fall towards the Earth due to gravity. They will identify the effects of air resistance, water resistance and friction that act between moving surfaces. They will recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect</li> </ul>
<p>Electricity (Physics)</p> 	<ul style="list-style-type: none"> <li>• Children will identify electrical devices. They will use battery-powered devices.</li> </ul>	<ul style="list-style-type: none"> <li>• Children will identify common appliances that run on electricity. They will construct simple series electrical circuits, identifying and naming basic parts (including cells, wires, bulbs, switches and buzzers). They will identify whether or not a lamp will light be based on whether it is in a loop, recognise that switches open and close circuits and associate this with the light turning on. They will recognise some common conductors and insulators.</li> </ul>	<ul style="list-style-type: none"> <li>• Children will be able to 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>• They will compare and give reasons for variations in how components function, including the brightness of bulbs, loudness of buzzers and the on/off position of switches. Children will be able to use recognised symbols when representing a simple circuit in a diagram.</li> </ul>

Other	<ul style="list-style-type: none"> <li>• Sound: Children will listen to sounds outside and identify the source. They will also make sounds. Earth and Space Children will learn about the sun, moon and stars. They will learn about space travel.</li> </ul>	<ul style="list-style-type: none"> <li>• Rocks: Children will compare and group different rocks on the basis of their appearance and simple physical properties. They will describe, in simple terms, how fossils are formed when things that have lived are trapped within a rock. Children will recognise that soils are made from rocks and organic matter.</li> <li>• Sound: Children will identify how sounds are made, associating some of them with vibrations and recognise that these vibrations travel through a medium to the ear.</li> </ul>	<ul style="list-style-type: none"> <li>• Space: Children will describe the movement of the Earth and other planets relative to the sun in the solar system. They will use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. They will describe the movement of the moon relative to the Earth. They will describe the sun, Earth and moon as approximately spherical bodies.</li> <li>• Evolution and Inheritance: Children will recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. They will recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Children will be able to identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</li> </ul>
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