

Science



Year A

Intent

We are passionate about science at Longford School and seek to nurture scientific curiosity, and an appreciation of the wonders of our ever-changing world. We want children to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They are encouraged to be curious and ask questions about what they notice. We endeavour 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. STEM activities children develop children's understanding of the links to other subjects particularly maths engineering and technology, providing them the opportunity to develop skills they will use when they are older. We aim for children to build upon their prior knowledge, as this will increase their enthusiasm for the topics whilst embedding this procedural knowledge into the long-term memory. Topics, such as Plants taught from EYFS to Year 6, building on prior learning and developing a deeper understanding, encouraging children to ask questions about what they know and want to find out.

Implementation

At Longford, we use the National Curriculum, supported by other resources such as the Hamilton Education Trust, as basis for planning what we teach. We have adapted the Hamilton scheme to include opportunities in each year group to carry out a scientific enquiry over a period of time, as well as learning about scientists linked to a topic, for example Charles Darwin and Rachel Carson, recognised for their work in key topics. As well as recapping of Science topics that are, being taught, we encourage children to ask questions and bring science to life by setting up simple experiments, observing the world around and trips and workshops. Our medium-term plans follow the National Curriculum and give details of each unit of work for each term. The science subject leader reviews these plans on a regular basis and we ensure that children have complete coverage of the Science Curriculum and that there is plenty of opportunity to build on skills and knowledge previously taught.

Impact

Through our science teaching, we provide learning opportunities that enable all pupils to make progress. We do this by setting suitable learning challenges and responding to each child's different needs and current attainment. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected levels. Most children will achieve age related expectations in Science at the end of their cohort year. For our Foundation children we use the Early Years Statutory Framework as our guide for the child's attainment.

Autumn	Spring	Summer
Explorers: Reception		
<p><u>Animals including Humans</u> <u>Seasonal Changes</u></p> <p>Children will learn to identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. They will identify and name a variety of common animals that are carnivores, herbivores and omnivores. Children will describe and</p>	<p><u>Everyday Materials and their Properties</u> <u>Seasonal Changes</u></p> <p>Children will learn to distinguish between an object and the material from which it is made. They will identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. Children will learn to describe the simple</p>	<p><u>Plants</u> <u>Seasonal Changes</u></p> <p>Children will learn to identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. They will identify and describe the basic structure of a variety of common flowering plants, including trees. Children will learn to observe changes across the four seasons. They will observe</p>

<p>compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). They will identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. The children will also learn about Louis Pasteur and how he discovered that germs are living things and can be spread by touch or through the air.</p>	<p>physical properties of a variety of everyday materials. They will compare and group together a variety of everyday materials on the basis of their simple physical properties. The children will learn about Charles Macintosh and how he invented waterproof material.</p>	<p>and describe weather associated with the seasons and how day length varies. They will learn about Rachel Carson who studied ocean habitats and how she discovered that farms were polluting the oceans and affecting the animals living in them.</p>
<p>Explorer: Key Stage 1</p>		
<p style="text-align: center;"><u>Animals including Humans</u> <u>Seasonal Changes</u></p> <p>Children will learn to identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. They will identify and name a variety of common animals that are carnivores, herbivores and omnivores. Children will describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). They will identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. The children will also learn about Louis Pasteur and how he discovered that germs are living things and can be spread by touch or through the air.</p>	<p style="text-align: center;"><u>Everyday Materials and their Properties</u> <u>Seasonal Changes</u></p> <p>Children will learn to distinguish between an object and the material from which it is made. They will identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. Children will learn to describe the simple physical properties of a variety of everyday materials. They will compare and group together a variety of everyday materials on the basis of their simple physical properties. The children will learn about Charles Macintosh and how he invented waterproof material.</p>	<p style="text-align: center;"><u>Plants</u> <u>Seasonal Changes</u></p> <p>Children will learn to identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. They will identify and describe the basic structure of a variety of common flowering plants, including trees. Children will learn to observe changes across the four seasons. They will observe and describe weather associated with the seasons and how day length varies. They will learn about Rachel Carson who studied ocean habitats and how she discovered that farms were polluting the oceans and affecting the animals living in them.</p>
<p>Astronomers: Year Three/Four</p>		
<p style="text-align: center;"><u>Rocks/States of Matter</u></p> <p><u>Rocks</u>-Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. To describe in simple terms how fossils are formed when things that have lived are trapped within the rock Recognise that soils are made from rocks and organic matter</p> <p><u>States of matter</u>-To build on to knowledge from last year but to</p>	<p style="text-align: center;"><u>Living things and their habitats/Animals including humans</u></p> <p><u>Living things and their habitats-</u> This term we will explore and use classification keys to help group, identify and name a variety of living things in our local and wider environment. Children will recognise that environments can change and this can sometimes pose dangers to living things We will begin to recognise what vertebrate animals and</p>	<p style="text-align: center;"><u>Plants /Electricity</u></p> <p><u>Plants</u> Pupils will be taught to identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. Explore the requirements of plants for life and growth. By setting up experiments and observing the results recognise pattern and uniqueness of plants needs. They will investigate the way in which water is transported within plants and the part that</p>

<p>work scientifically to compare and group material together, according to whether they are solid, liquids or gases.</p> <p>To set up simple practical enquires, comparative and fair tests</p> <p>To gather and record findings on materials change of state when they are heated or cooled.</p> <p>To identify and understand evaporation and condensation</p> <p>To use result to draw up simple conclusions.</p>	<p>invertebrates are, grouping them.</p> <p><u>Animals including humans-</u></p> <p>Children will understand that animals, including humans need the right types and amount of nutrition.</p> <p>We will recognise that they cannot make their own food and that their nutrition they get comes from what they eat.</p> <p>Children will identify that humans and some animals have skeletons and muscles for support, protection and movement.</p> <p>We will explore ideas about what would happen if humans did not have skeletons.</p>	<p>flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p> <p><u>Electricity-</u></p> <p>Children will be able to identify common appliances that run on electricity.</p> <p>We will be able to construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</p> <p>Identify whether or not a lamp will light in a simple circuit, based on whether or not the lamp is part of a complete loop with a battery. Children will recognise that a switch open and closes a circuit.</p> <p>We will learn about some common conductors and insulators.</p>
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Philosophers: Year: Five/ Six

<p><u>Living things and their environment</u></p> <p>Children will learn about the differences in the life cycles of a mammal, an amphibian, an insect and a bird and describe the life process of reproduction in some plants and animals.</p> <p>Children will develop their understanding that living things, classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals.</p> <p>Children will give reasons for classifying plants and animals based on specific characteristics through discussion and group work.</p> <p>We will learn about Carl Linnaeus, and the development of the classification system used today by scientists.</p> <p>Children will use this knowledge of habitats to nurture the nature</p>	<p><u>Earth and Space</u></p> <p>Children will learn to describe the movement of the Earth, and other planets, relative to the Sun in the solar system</p> <p>They will describe the movement of the Moon relative to the Earth and describe the Sun, Earth and Moon as approximately spherical bodies.</p> <p>They will develop the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p> <p>Children will discuss how the earth was formed and where we sit in the universe. We will study the scientist and mathematician Steven Hawking and his theories about how black holes are formed, how they behave and where they can be found in the universe.</p> <p><u>Light (6) Scientist study Thomas Edison</u></p>	<p><u>Animals Including Humans/Evolution and Inheritance</u></p> <p>Pupils will be taught to 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>Children should recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents and identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>
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<p>garden, looking after the environment and how can we maintain/ improve the area.</p>	<p>Children will be taught be taught to recognise that light appears to travel in straight lines and 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. Children will be able to explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. And use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>	
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