Science at Longford

Science is a body of knowledge built up through experimental testing of ideas. It is also a way of finding reliable answers to questions we may ask about the world round us. Science in our school is about developing children's ideas and ways of working that enable them to make sense of the world in which they live.

Intent

At Longford Primary Academy, the aim of our science education is to enable children to understand the world around us. During science lessons, teachers will ask and answer scientific questions, building on children's natural curiosity and developing enthusiasm and excitement about natural phenomena thus fostering concern about and understanding how to actively care for our environment.
Lessons will provide children with an enjoyable experience of science so that they will develop a deep and lasting interest and equip pupils with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Children will develop understanding of how science can be used to explain what is occurring, predict how things will behave, and analyse causes. Teachers will help children to acquire a growing understanding of scientific processes, knowledge and methods. Science lessons will provide opportunities to develop the skills of investigation, including observing, measuring, predicting, questioning, hypothesising, experimenting, communicating, interpreting, explaining and evaluating. Children will learn how to plan and carry out scientific investigations, using equipment, including computers, correctly and safely.

Implementation

Science is taught in blocked units of work. This allows children to build on previous knowledge without any loss of learning between lessons. At the beginning of every unit, teachers will assess children's current ideas and record any misconceptions and areas to be addressed. This ensures that learning opportunities that are provided will meet the needs of all of the children. Lessons will include review time to ensure that children are able to retain knowledge from previous lessons.
Teachers draw from a range of resources in order to teach active and engaging lessons which foster a positive attitude towards science. Working scientifically skills are developed progressively, alongside knowledge and understanding which ensures that pupils have a context for applying the skills that they have learnt.

Impact

Our Science Curriculum is active, engaging, and is planned to demonstrate progression as well as to foster positive attitudes towards science.

We measure the impact of our curriculum through the following methods:

- Tracking of knowledge in end of unit tasks where appropriate.
- Collection and evaluation of evidence throughout taught units through discussion, observation and written work.
- A reflection on standards achieved against the planned outcomes.
- Pupil discussions about their learning, including use of scientific vocabulary.

The impact and measure of this is to ensure children not only acquire the appropriate age-related knowledge linked to the science curriculum, but also that they develop a lasting interest in the subject.

Knowledge, Understanding & Skills

Year group	Working scientifically	Biology	Chemistry	Physics
Years 1 & 2	Ask simple questions and recognise that they can be answered in different ways. Observe closely, using simple equipment. Perform simple tests. Identify and classify. Use their observations and ideas to suggest answers to questions. Gather and record data to help in answering questions.	Animals, including humans (naming animals and body parts) Plants (names & structure) Living things and their habitats (suitable habitats/simple food chains) Plants (growing conditions for seeds and bulbs) Animals, including humans (Health and growth)	Everyday materials (names and properties of simple materials) Uses of everyday materials (suitability and changing shapes of materials)	Seasonal Changes (changes and weather)
Years 3&4	Ask relevant questions and using different types of scientific enquiries to answer them. Set up simple practical enquiries, comparative and fair tests. Make systematic and careful observations and take accurate measurements using standard units, using a range of equipment.	Plants (functions of parts and life cycles) Animals, including humans (skeletons) Living things and their habitats (grouping and simple classifying/changes to habitats can pose dangers)	Rocks (simple properties, fossils, soils) States of matter (solids, liquids, gases, heating & cooling, water cycle) Properties and changes of materials (more properties including thermal and electrical conductivity, mixing	Light (dark is the absence of light, size of shadows) Forces and magnets (friction – how things move on different surfaces, magnets) Sound (fainter sounds further

	Gather, record, classify and present data in a variety of ways to help in answering questions. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Identify differences, similarities or changes related to simple scientific ideas and processes. Use straightforward scientific evidence to answer questions or to support their findings.	Animals, including humans (teeth, eating and digestions)	and separating reversible and irreversible)	away, vibrations, pitch and volume) Electricity (simple circuit, switches, conductors and insulators
Years 5 & 6	Plan different types of scientific enquiries to answer questions, including recognising and controlling variables. Take measurements, using a range of equipment, with increasing precision, taking repeat readings when appropriate. Record data and results of increasing complexity using scientific diagrams. Use test results to make predictions to set up further comparative and fair tests. Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results. Identify scientific evidence that has been used to support or refute ideas or arguments.	Living things and their habitats (life cycles, reproduction) Animals, including humans (changes in humans as they grow) Animals, including humans (circulatory system, functions of heart, blood vessels and blood, health, water transport in animals) Living Things and their habitats (classifying including microorganisms) Evolution and inheritance (more about fossils, adaptation)		Forces (gravity, friction, air resistance, levers, pulleys and gears) Earth and Space (other planets) Light (travels in straight lines, how we see things) Electricity (what affects bulb brightness, buzzer volume, voltage, symbols)