

## LANGLEY SCHOOL SCIENCE POLICY

“A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world’s future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.”

DfE Science Programmes of Study Sept 2013

### Aims

Science is about exploring, discovering and investigating the world around us. We need to encourage the children at Langley to be curious and try to develop an interest in their environment, their bodies, raw and synthetic materials, structures, changes and the natural world.

To ensure this, we need to provide a range of learning and teaching activities which:

- develop **scientific knowledge and conceptual understanding** through the specific disciplines of biology, chemistry and physics
- develop understanding of the **nature, processes and methods of science** through different types of science enquiries that help them to answer scientific questions about the world around them
- equip pupils with the scientific knowledge required to understand the **uses and implications** of science, today and for the future.

We must ensure that the scientific knowledge and conceptual understanding is at an appropriate level for each child, while providing opportunities to develop scientific enquiry when teaching science in the classroom:

These types of scientific enquiry should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should be guided to seek answers to questions through collecting, analysing and presenting data, with the appropriate level of support.

Tracking sheets are provided on the p-drive which should aid teachers in the differentiation of both the subject knowledge and scientific enquiry skills. (Staff – Langley – Curriculum – Curriculum planning – Current topic and Science Planning – Science)

## Organisation

In Foundation classes, science is covered in the area of understanding and development known as 'Understanding the world', as part of a 2 year rolling programme.

This involves guiding children to make sense of their physical world and their community through opportunities to explore, observe and find out about people, places, technology and the environment. The children will be encouraged to use simple scientific words and use simple scientific equipment appropriately and handle other resources linked to the different topic areas.

The programmes of study for science are set out year-by-year for key stages 1 and 2.

At Langley there is a 2 year rolling programme of study to cover KS1, Lower KS2 and Upper KS2.

KS1			
Year A	<b>Biology</b> Identify and compare common animals (fish, amphibians, reptiles, birds, mammals) Identify and name basic body parts  Mini topic - Autumn	<b>Chemistry</b> Distinguish between objects and materials Identify & name common materials Describe simple properties of some materials Compare and classify materials Mini topic - Winter	<b>Biology</b> Identify basic plants Identify basic plant parts Growing plants (water, warmth, light)  Mini topic – Spring & Summer
Year B	<b>Biology</b> Differentiate living, dead and non-living Basic needs of animals and offspring Exercise, nutrition, hygiene  Mini topic - Autumn	<b>Chemistry</b> Identify and compare uses of different materials Find out how solid objects can change shape  Mini topic - Winter	<b>Biology</b> Simple food chains and habitats  Mini topic – Spring & Summer

Lower KS2			
Year A	<b>Biology</b> Plants: parts, lifecycle and requirements for life Animals: skeletons and nutrition	<b>Chemistry</b> Classification of rock types Simple understanding of fossilisation	<b>Physics</b> Sources of light, shadows, reflections Simple forces, including magnetism Compare how things move on different surfaces
Year B	<b>Biology</b> Classify living things Digestive system and teeth Food chains	<b>Chemistry</b> Changes of state The water cycle	<b>Physics</b> Sound as vibrations Electricity, simple circuits and conductors

Upper KS2			
Year A	<b>Chemistry</b> Classify materials according to a variety of properties Uses of everyday materials	<b>Physics</b> Understand location & interaction of Sun, Earth & Moon Introduce gravity, resistance & mechanical forces	<b>Biology</b> Life cycle of plants & animals (inc mammal, insect, bird, amphibian) Describe changes as humans develop & mature Evolution and adaption inc fossils
Year B	<b>Biology</b> Classification; plants & animals inc micro-organisms Health & lifestyles, inc circulatory systems	<b>Chemistry</b> Understand mixtures & solutions Know about reversible changes; identify irreversible	<b>Physics</b> Light and shadows, the eye Forces inc gravity Electricity; investigating circuits

Children at KS1 will be encouraged to observe, explore and communicate by talking or signing about living things, materials and phenomena. They will start work on collecting evidence and to link this to simple scientific ideas. Children are encouraged to use scientific vocabulary and handle various resources and to record their work. Where possible drawings can be annotated and photographs can be taken and pupils' comments recorded.

Children at KS2 will learn about a wider range of living things, materials and phenomena through practical activities. They will be encouraged to make links between ideas and be given opportunities to explain things using scientific vocabulary. The pupils will be introduced to different aspects of scientific investigations and will be helped to plan, obtain evidence and evaluate, where appropriate.

The children will record their work in a wide variety of ways, where appropriate by using drawings, completing tables, charts and graphs. Opportunities will be given to pupils who can offer written evidence.

During practical activities pupils will be given opportunities to work individually in pairs or in small groups. Support will be available to ensure children experience success.

The teaching of investigative skills (working scientifically) will be developed progressively as the pupils move through the school with an appropriate level of challenge dependent on the pupil's ability. Throughout each year, different aspects of investigative skills will be covered to ensure a balance of delivery and structured acquisition. On occasions whole- class investigations may be carried out.

### Safety

Science is a practical subject and it is important that pupils should be taught to handle equipment and tools correctly and with respect for their own and others' safety. All pupils must wash their hands after handling animals, plants, soil and food.

### Resources

A comprehensive range of science resources are located in the Science Resource Room.

The library has a number of “Big Books” related to scientific topics and other information books.

### ICT

ICT is used effectively to support the teaching of science. There are computer microscopes available to help children to observe materials and minibeasts. Interactive whiteboards are available in each classroom and can be used effectively to help pupils understand scientific concepts and to take part in assessment activities.

Digital cameras and i-pads can be used to record habitats, materials and stages of growth and to record pupils’ work.

There are websites available, which pupils can use to access information for science topics. As a school, we subscribe to Educationcity and Purplemash which both have appropriate science activities for our pupils.

### Entitlement

All the children at Langley School have access to the Science National Curriculum. Their individual needs will be taken into account when departments and class teachers are planning and delivering the curriculum.

### Assessment

Class teachers will assess pupil’s knowledge and understanding as topics are completed at the end of each term and then input the data on the assessment software ‘Onwards and Upwards’.

They will also make an annual assessment of ‘working scientifically’ and record the progress on the assessment software ‘Onwards and Upwards’.

There is a copy of the science progress statements from ‘Onwards and Upwards’ on the p-drive for class teachers to use if needed.

### RRSA

All the schemes of work at Langley are underpinned by the human rights of everyone under 18 years of age as outlined in the United Nations Convention on the Rights of the Child. The relevant articles from the Convention will be referred to as appropriate during planning sessions and lessons.

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