



Welcome to the Science

Southmead.

page at St. Leo's and

“Science has changed our lives and is vital to the world’s future prosperity, and all pupil’s should be taught essential aspects of the knowledge, methods, uses and processes of science.”

National Curriculum 2014

The children in St.Leo’s and Southmead enjoy participating in all aspects of the science primary curriculum from starting in Nursery until they leave us in Year 6.

In line with theNational curriculum 2014, the children in each year group cover the topics that link to the Learning Objectives for their year.

Years 1 and 2

The principal focus of science teaching is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped 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. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.

Years 3 and 4

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple

comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

Years 5 and 6

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

Science in St. Leos and Southmead.

Nursery

In the Autumn term, Nursery children learn all about the effects of exercise on their bodies through their topic – **Myself**. They learn about the differences and similarities between themselves and other and what makes them unique.

In the Spring term, the Nursery children explore **My Friends and Family** topic. They begin to ask questions about where they live and things within their world. They also begin to develop an understanding of growth and changes over time.

In the summer the Nursery children do a topic about '**My Environment**'. They begin to comment and ask questions about where they live and show care and concern for living things. They talk about some things they have observed and show an understanding of growth, change, decay and changes over time.

Reception

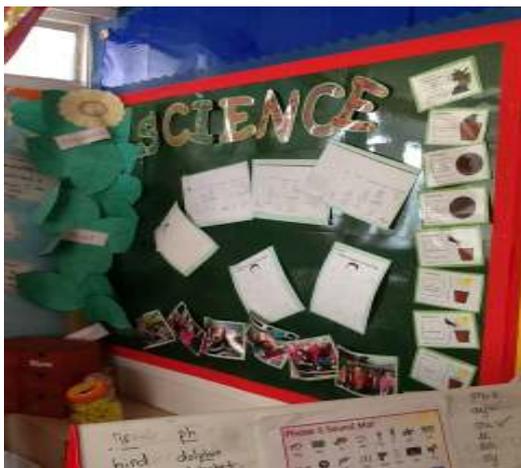


In autumn, the reception children learn about **Healthy lifestyles** and begin to understand the importance of good practice in regards to exercise, eating, sleeping and hygiene and that these can contribute to good health. In their topic, **Toys and Games**, they learn to ask questions about aspects of their world and to investigate using all of their senses. They talk about materials, similarities and differences and begin to question why things happen and how things work.

In spring, the children explore outside in the **Secret garden** and look closely at similarities, differences and change. They talk about features in their own environment and why things happen and how they can change. They look at habitats and make observations of plants and animals and explain why some things occur. They begin to show care and concern for living things.

In their summer topic, **Water**, the Reception children look closely for similarities and differences and investigate materials using all their senses and to talk about why things happen and how they can change. They investigate which materials will float, to test out their predictions and talk about what they observe.

Year 1



In autumn, the children look at **Animals** that are birds, fish, amphibians, reptiles, mammals and invertebrates and also start to use the terms: carnivores, herbivores and omnivores. They describe and compare animals and identify, name, draw and label the basic parts of the **Human body** and say which part is connected with each sense.

The children learn about **Growing Plants** in spring. They identify and name a variety of plants including garden plants, wild plants and trees, and those classified as deciduous and evergreen. They also identify and describe the basic structure of flowering plants, including roots, stem/trunk, leaves and flowers. During the topic, **Seasonal Changes** the children observe the apparent movement of the Sun during the day and observe changes across the four seasons.

They also observe and describe weather associated with the seasons and how day length varies.

In summer, the children distinguish between an object and the **materials** from which it is made. They identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock describe the simple physical properties of a variety of everyday materials and compare and group together a variety of everyday materials

Year 2

In autumn, the children continue to look at **Animals**, including humans, and find out about offspring which grow into adults. They also find out about and describe the basic needs of animals, including humans, for survival (water, food and air). They describe the importance for humans of exercise, eating the right amounts of different types of foods, and hygiene.

In spring, the children continue to learn about **Plants** and observe and describe how seeds and bulbs grow into mature plants. They find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. During their topic, **All Living Things** they explore and compare the differences between things that are living, dead, and things that have never been alive.

In summer, the children learn about **Habitats** and identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different

kinds of animals and plants, and how they depend on each other.



They identify and name a variety of plants and animals in their habitats, including micro-habitats and describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.

They do a topic about **Materials** and identify and compare the uses of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock, and paper/cardboard.

Year 3

In autumn, the children learn about **Forces and Magnets**. They observe how magnets

attract or repel each other and attract some materials and not others. They compare

and group materials and identify some basic magnetic materials. They also do a topic on **Rocks and Soils**, in which they compare and group together different kinds of rocks on the basis of their simple physical properties and relate this to their formation. They also describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock.



In spring, the children also do a topic on **Plants** and identify and describe the functions of different parts of flowering plants: roots, stem, leaves and flowers. They also explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. They investigate the way in which water is transported within plants and explore the role of flowers in the life cycle of flowering plants, including **pollination, seed formation and seed dispersal**.

The children continue to find out about **Animals**. They identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. They also describe the ways in which nutrients and water are transported within animals, including humans. They identify that humans and some animals have skeletons and muscles for support, protection and movement.

In summer, they do a topic on **Light & Shadow** and observe and name a variety of sources of light, including electric lights, flames and the Sun, explaining that we see things because light travels from them to our eyes. They also look at how light is reflected from surfaces and associate shadows with a light source being blocked by something: find patterns that determine the size of shadows



Year 4

In autumn the children look at **Plants and animals** in the local and wider environment. They look for specific characteristics in order to classify them and begin to recognise that environments are constantly changing and that this can pose a danger. Year 4 children also do a topic on **Sound** during the autumn term during which they observe and name a

variety of sources of sound, noticing that we hear with our ears. They recognise that sounds get fainter as the distance from the sound source increases and they find

patterns between the volume of a sound and the strength of the vibrations that produced it.

In spring, the children's work on animals involves looking at **Teeth and Eating**. They are able to describe the simple functions of the basic parts of the digestive system in humans and identify the different types of teeth in humans and their simple functions. They identify how plants and animals, including humans, resemble their parents in many features. They 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 learn to identify how animals and plants are suited to and adapt to their environment in different ways.

In summer, the children do a topic called **'Changing State'** and compare and group materials according to whether they are solids, liquids or gases. They observe that some materials change when they are heated or cooled, and measure the temperature at which this happens. They learn about evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.



Year 5

In Year 5, the children continue to learn about **Magnets and Springs**. They are able to describe magnets as having 2 poles and predict whether two magnets will attract or repel each other, depending on which poles are facing. They learn about the human circulatory system and explain the functions of the heart, blood vessels

and blood (including the pulse and clotting).

In spring, the children continue to develop their knowledge of **All living things** and describe the life cycles common to a variety of animals, including humans (birth, growth, development, reproduction, death), and to a variety of plants (growth, reproduction and death).

They learn about the **Earth, Sun and Moon** (Earth and Space) describe the movement of the Earth relative to the Sun in the solar system. They describe the movement of the Moon relative to the Earth and describe the Sun, Earth and Moon as approximately spherical bodies use the idea of the Earth's rotation to explain day and night.

In summer the children look at '**Changing State**' again and compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, conductivity (electrical and thermal), and response to magnets. They understand how some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. They use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering.

Year 6

In the autumn term, during the topic **Forces in Action**, the children learn about the force of gravity acting between the Earth and the falling object. They identify the effect of drag forces, such as air resistance, water resistance and friction, that act between moving surfaces and describe, in terms of drag forces, why moving objects that are not driven tend to slow down.

They begin to understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs. In their topic on Changing circuits, the children identify and name the basic parts of a simple electrical circuit, including cells, wires, bulbs, switches and buzzers and associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. They compare and give reasons for variations in the

brightness of bulbs, the loudness of buzzers and the on/off position of switches.



In spring, the children learn about **micro-organisms** and explain the classification of living things into broad groups according to common observable characteristics and based on similarities and differences, including plants, animals and micro-organisms. They describe the life process of reproduction in some plants and animals and describe the changes as humans develop from birth to old age, which includes recognising the impact of diet, exercise, drugs and lifestyle on the way their bodies function. The children in Year 6 do a topic on **Materials** and are able to explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning, oxidisation, and the action of acid on bicarbonate of soda.

In summer, during the topic '**How we see things**' the children continue to find out about light. They understand that light appears to travel in straight lines. They 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 and use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them, and to predict the size of shadows when the position of the light source changes.

Interdependence & Adaptation recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents and describe how adaptation leads to evolution over time, since we separated from other primates.