



## Curriculum Intent and Policy

*"Building a life-long love of learning in a safe and happy school."*

# Science

## Principles

We are living in a scientific age and it is vital that children should be able to play a full part in it. Children are, and should be naturally curious about the world around them. Science provides a means of questioning, explaining and understanding natural and physical phenomena. In Early Years we call this 'Understanding the World', and we should keep this overarching thought into KS1 even as the title of the curriculum changes to 'Science'.

At Loughton Manor First School we provide a curriculum based on an investigative approach to science, which is firmly rooted in each child's everyday experiences. Science and scientific understanding can be promoted via 3 main curriculum approaches:

- The embedding of 'The Scientific Method' (ask, test, observe, answer) as a platform through which children develop the fundamental skills of 'Working Scientifically' that ensure they have the fundamental skills to approach scientific thinking in any educational or real-world scenario.
- A range of carefully designed curriculum specific hands-on investigations and experiments designed to promote and stimulate scientific understanding.
- A number of independent investigations and experiments, as well as special events which serve to ensure that sheer pleasure and excitement in science is kindled.

Through our teaching we develop children's knowledge and understanding of important scientific ideas and skills, in accordance with their age, interests and abilities. We teach science in a way that enables children to develop a full range of skills through safe practical and investigative work, research and discussion.

Our commitment to teaching science is:

By the time children leave Loughton Manor First School at the age of seven, they should have experienced and observed phenomena in the natural and humanly constructed world. They should be able 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, comparative tests, and finding things out using secondary sources of information.

They will be able 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.

They will have learned fundamental scientific skills and language through first-hand practical experiences as well as having seen videos etc of advanced ideas and techniques which cannot be safely explored in the classroom.

Children will have a fundamental understanding of the scientific method, and also have been taught to work scientifically as an embedded feature of each science lesson.

# Progression in Scientific Understanding

KEY VOCABULARY	Foundation Stage 1	Foundation Stage 2
<p><b>Understanding The World</b></p> <p>Seasons, change, Spring, Summer, Autumn, Winter, hot, cold, warm, rough, smooth, hard, soft, prickly, bumpy, tree, plant, flower, bush, leaf, stem, water, sun, seed, bulb, grow baby, toddler, child, adult, name types of animals, town, city, country, beach, sea, forest, world, travel, melt, heat, cool (Meaning of new words discussed as introduced through stories)</p>	<ul style="list-style-type: none"> <li>• Use all their senses in hands-on exploration of natural materials.</li> <li>• Talk about what they see, using a wide vocabulary.</li> <li>• Explore how things work.</li> <li>• Understand the key features of the life cycle of a plant and an animal.</li> <li>• Begin to understand the need to respect and care for the natural environment and all living things.</li> <li>• Explore and talk about different forces they can feel.</li> </ul>	<ul style="list-style-type: none"> <li>• Explore the natural world around them, making observations and drawing pictures of animals and plants.</li> <li>• Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.               <ul style="list-style-type: none"> <li>• Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter</li> </ul> </li> </ul>
<p><b>Working Scientifically</b></p>	<p><b>Year 1</b></p>	<p><b>Year 2</b></p>
<p>Question, answer, observe, observing, equipment, identify, classify, sort, diagram, chart, map, data, compare, contrast, describe, biology, chemistry, physics, group, record.</p>	<ul style="list-style-type: none"> <li>• I can ask simple questions and recognise that they can be answered in different ways</li> <li>• I can observe closely using simple equipment</li> <li>• I can perform simple tests</li> <li>• I can identify and classify</li> <li>• I can use observations and ideas to suggest answers to questions</li> <li>• I can gather and record data to help in answering questions</li> </ul>	
<p><b>Plants</b></p>	<p><b>Year 1</b></p>	<p><b>Year 2</b></p>
<p><b>YEAR ONE</b> Plant, flower, tree, bush, common/garden/wild, vegetables, evergreen/decid</p>	<ul style="list-style-type: none"> <li>• I can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</li> <li>• I can identify and describe the basic structure of a variety of common flowering plants, including trees.</li> </ul>	<ul style="list-style-type: none"> <li>• I can observe and describe how seeds grow into mature plants</li> <li>• I can find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</li> </ul>

<p>uous, structure, environment, grow/growth, habitat, leaf/leaves, blossom, petal, fruit, roots, bulb, seed, trunk, branch, stem, water, sunlight, air, soil, compost, nuts, nutrients.</p> <p><b>YEAR TWO</b></p> <p>Observe, describe, record, seeds, bulbs, plants, tree, bush, growth, germinate, healthy, survive, survival, water, air, sun, energy, temperature, soil, compost, nutrients, food, roots, stem, trunk, flower, petal, leaf/leaves, local environment, seasons, year, weather, reproduction</p>		
<p><b>Animals including humans</b></p>	<p><b>Year 1</b></p>	<p><b>Year 2</b></p>
<p><b>YEAR ONE</b></p> <p>Animals, humans, fish, amphibians, reptiles, birds, mammals, carnivore, herbivore, omnivore, environment, structure, common animals, pets dogs, cat, horse, cow, etc. hair, head, face, ears, nose, eyes, mouth, lips, teeth, arms, elbows, neck, shoulders, body, hands, wrist, legs, knee, feet,</p>	<ul style="list-style-type: none"> <li>● I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</li> <li>● I can identify and name a variety of common animals that are carnivores, herbivores and omnivores</li> <li>● describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</li> <li>● I can identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</li> </ul>	<ul style="list-style-type: none"> <li>● I can notice that animals, including humans, have offspring which grow into adults</li> <li>● I can find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</li> <li>● I can describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</li> </ul>

<p>toes, (basic parts of the human body), senses, smell, sight, touch, hearing.</p> <p><b>YEAR TWO</b></p> <p>Animals, humans, offspring, grow/growth, young babies/baby, toddler, child, teemager, adult, egg, chick, chicken, caterpillar, pupa, butterfly, spawn, tadpole, frog, lamb, sheep, puppy, dog, etc. basic needs survival, water, air, food, exercise, health/healthy, hygiene, nutrition, fruit and vegetables (as many as possible).</p>		
<p><b>Everyday Materials</b></p>	<p><b>Year 1</b></p>	<p><b>Year 2</b></p>
<p><b>YEAR ONE</b></p> <p>object, material, made from/used, wood, plastic, glass, metal, water, rock, brick, stone, foil, cotton, paper, fabric, elastic, physical, properties, group, together, compare, describe, hard/soft, stretchy/stiff, shiny/dull, rough/smooth, bendy/not bendy, waterproof/not waterproof, absorbent/not absorbent, opaque/transpar ent</p>	<ul style="list-style-type: none"> <li>● I can distinguish between an object and the material from which it is made</li> <li>● I can identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</li> <li>● I can describe the simple physical properties of a variety of everyday materials</li> <li>● I can compare and group together a variety of everyday materials on the basis of their simple physical properties.</li> </ul>	<ul style="list-style-type: none"> <li>● I can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> <li>● I can find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</li> <li>●</li> </ul>

<p><b>YEAR TWO</b>  Material, compare, identify, name, suitable/suitability, wood, metal, uses, plastic, glass, brick, rock, paper, cardboard (as many as you can think of), shapes, solid, rough, smooth, bendy, stretchy, clear, twist, see-through, hard, soft, opaque, (introduce as many properties of materials as you can), change/changing, squash, bend, Remember that children need to know the difference between a material and the object that is made from it. For example, fabric may be the material but the object could be a cardigan. Help your children understand that one material can be used to make more than one object.</p>		
<p><b>Seasonal Changes</b></p>	<p><b>Year 1</b></p>	
<p>seasons, Autumn, Winter, Spring, Summer, daylight, day, night, length of the day, sun, sun-safety, dark, light, weather, temperature, warm, cold, frost, snow, ice, frozen, dry, wet, rain, wind, showers, sleet,</p>	<ul style="list-style-type: none"> <li>• I can observe changes across the four seasons</li> <li>• I can observe and describe weather associated with the seasons and how day length varies.</li> </ul>	

<p>hot, sunny, heat, sun, burn, protection, shade, skin, puddles, drizzle, mist, fog, leaf/leaves, brown, golden, yellow, red, evergreen, tree, plant, deciduous, tree/plant, flower, daffodil, tulip, snowdrop, crocus, primrose, rose, holly, ivy</p>		
<p><b>Living things and their habitats</b></p>		<p><b>Year 2</b></p>
<p>living, dead, never been alive, life processes, healthy, habitats, environment/local environment, basic needs, depend, names of plants and animals, micro-habitats, grass, water, survive, air, security, food, shelter, urban, food chain, sources of food, characteristics, urban habitat, rural habitat, arctic habitat, pond habitat, forest/wood, stones, soil, logs, wood, leaves, litter, pollution</p>		<ul style="list-style-type: none"> <li>• I can explore and compare the differences between things that are living, dead, and things that have never been alive</li> <li>• I can 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</li> <li>• I can identify and name a variety of plants and animals in their habitats, including microhabitats</li> <li>• I can 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.</li> </ul>

## SCIENCE POLICY

### Philosophy

We are living in a scientific age and it is vital that children should be able to play a full part in it. Children are naturally curious about the world around them. Science provides a means of questioning, explaining and understanding natural and physical phenomena.

At Loughton Manor First School we provide a curriculum based on an investigative approach to science, which is firmly rooted in each child's everyday experiences.

Through our teaching we develop children's knowledge and understanding of important scientific ideas and skills, in accordance with their age, interests and abilities.

We teach science in a way that enables children to develop a full range of skills through safe practical and investigative work, research and discussion.

### Specific Aims

Children will:

- develop practical skills such as observing, hypothesising, measuring and recording.
- develop skills of predicting, asking questions, making inferences, concluding and evaluating.
- acquire positive attitudes and values such as curiosity, observation and a willingness to listen to and cooperate with others.
- develop thinking skills, e.g. learning to keep an open mind and think divergently.
- demonstrate care for and sensitivity to the living and non-living environment.
- develop a respect for their own health and safety.

Teachers will:

- provide stimulating experiences which promote and foster active learning.
- encourage a questioning approach to science in order for children to explore the world about them with all their senses.
- provide high quality teaching and learning opportunities.
- create opportunities for cross-curricular learning.
- wherever possible, relate scientific understanding to the children's real – life experiences.

### Planning & Organisation

**KS1** In Key Stage One we have created umbrella topics, which encompass each of the Science strands from the National Curriculum. Science is taught through topics and also whole school Science Days have been successfully implemented. The aim of a science day is to inspire and motivate children in their science learning. The work is of an investigative nature, involves demonstrations by visiting practitioners as well as hands-on investigations, and makes science meaningful and exciting.



**Foundation Stage** In the Foundation Stage, teaching Science is an integral part of the topic work. Science makes a significant contribution to the objectives in the EYFS document developing a child's understanding of the world. In addition, other areas of learning give examples that support children's learning of science.

Much of what happens in class will coincidentally have some scientific implications and we are always ready to capitalise on these.

Teachers plan together in year group teams to ensure continuity and progression.

### **Teaching Methods**

There are a wide range of teaching methods by which science can be taught depending on the age, interests and abilities of the children and the particular topic that is being covered.

Group work provides children with the time and space to carry out relevant practical work and make the most of the opportunities for discussion. We offer a range of grouping from individual teaching to whole class sessions (see Curriculum Policy).

### **Cross Curricular Links**

There are many links with other subject areas and much effective science teaching can be carried out through the arts, maths and literacy.

Opportunities are taken to capitalise on appropriate links between subjects especially in the area of the environment, making full use of the school grounds. We have a school woodland and garden areas. These areas enable the children to have greater access to experiential and observational stimuli, and every opportunity is made to utilise them to their full potential.

### **Outdoor Learning**

At Loughton Manor First School we pride ourselves on our school grounds and benefit from a community rich with learning opportunities. We recognise the importance of Outdoor Learning (OL) on our children's development and plan OL opportunities whenever possible. We have a specialist practitioner who is trained as a Forest School Leader. A termly rota ensures that all children have time at forest school, and Year 1 children also have an 'Outdoor Explorers' weekly rotation which is led by an experienced outdoor leader.

### **Assessment**

As in all areas of the curriculum there is ongoing teacher assessment. In addition, an aspect of science is assessed each half term for each child. A range of evidence is kept, and results are recorded using Target Tracker software. At the end of Key Stage One, Year Two teachers collate all relevant data and assess each child's attainment.

### **Resources**

Resources for science are located in the science cupboard situated in the Year 1 shared area. Each class teacher will ensure that they have all the necessary resources available in good working order to meet the science topic requirements.

In the event of equipment becoming damaged or broken it must be reported to the science manager so that it can be replaced.

Some additional graphic resources are situated on the staff shelves in the resource room.

### **Equal Opportunities**

All children will have equal access to the science curriculum irrespective of race, gender or mobility (see Equal Opportunities Policy and Racial Equality Policy).

### **Differentiation**

In planning science we structure activities to ensure success for all children. Able children should undertake work of a more challenging nature where appropriate.

We realise that a child may have considerable scientific understanding without having the writing skills to be able to record their work. Therefore, differentiated arrangements for recording are made and an ability to produce written work is not a criterion for attainment in science.

Some children will need additional classroom support for science activities.

### **Health and Safety**

Teachers accept responsibility to plan safe activities and ensure that resources are in a safe condition before use with the children. As with all our teaching, children will work within the school's Health and Safety Policy.

### **Monitoring and Evaluation**

Monitoring and evaluation will be within the remit of the Maths, Science, Computing Team, a curriculum team which meets half termly. Their annual SIP Action Plan will identify aspects for development/improvement that help to support and sustain our high standards. The action plan details aspects to be monitored and evaluated, and identifies these members of staff/governors involved.

### **Roles and Responsibilities**

The Science subject manager together with the head teacher, Curriculum Team and the governing body is responsible for the review of the subject policy. It is the Science manager's role to support colleagues, review planning and ensure that the necessary resources are in school in order to deliver the National Curriculum Programmes of study. The Science manager will keep abreast of current thinking within the teaching of Science and communicate these ideas to the school staff.