



## Curriculum Intent

# 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

| <b>KEY VOCABULARY</b><br><br><b>Understanding The World</b>   | <b>Foundation Stage 1</b>  | <b>Foundation Stage 2</b>   |
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| 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<br>(Meaning of new words discussed as introduced through stories) | <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> |
| <b>Working Scientifically</b>   | <b>Year 1</b>  | <b>Year 2</b>   |
| Question, answer, observe, observing, equipment, identify, classify, sort, diagram, chart, map, data, compare, contrast, describe, biology, chemistry, physics, group, record.  | <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>   |   |
| <b>Plants</b>   | <b>Year 1</b>  | <b>Year 2</b>   |
| <b>YEAR ONE</b><br>Plant, flower, tree, bush, common/garden/wild, vegetables, evergreen/deciduous, structure,   | <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 and bulbs 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>  |

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| <p>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, toes, (basic parts of the</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> |

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| <p>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> <p><b>YEAR TWO</b></p> <p>Material, compare,</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> |

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| <p>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> |  |  |
| <b>Seasonal Changes</b>  | <b>Year 1</b>  |  |
| <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, hot, sunny, heat, sun, burn, protection, shade, skin,</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> |  |

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| <p>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, microhabitats, grass, water, survive, air, security, food, shelter, urban, food chain, sources of food, characteristics, urban habitat, rural habitat, artic 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> |

## Implementation

Key implementation principles are:

- Topic based Science lessons across all year groups

- Cross curricular references made wherever possible
- Use of class day boards and seasonal observations made throughout the year
- Seasonal observations made throughout the year
- Science Club in FS during Spring 1
- Science Day in FS during Spring 2
- Science Day in KS1 during Spring 2

### **Differentiation and Inclusion.**

The teacher, via observation, will make opportunities for children who need additional support to be supported, either by proximity to confident accurate pupils or an adult to enable participation.

Some children with SEND will participate with the support of 1:1 adult, who gauges the appropriateness of the activity and modifies as needed.

Opportunities for children to lead and develop ideas will contribute to the extension for more able children. Teachers should plan lessons and activities that incorporate scope for elaboration, demonstration, questioning and sharing of general knowledge for children who demonstrate strength in Science.

### **Assessment**

In Foundation Stage, children will be assessed at the end of Foundation Stage 2 using the Early Years Foundation Stage Understanding The World Early Learning goal. This is manifested by regular observations both in discrete lessons, and during child-led learning. Teachers may record this on Evidence Me programme. This helps to track progress throughout the year.

In Key Stage One, assessment in Science can take many forms and might include; written work, observations by the teacher, questions asked, questions answered, experimentation, explanation to another child or photographic evidence. This will then be recorded on Target Tracker so that progress can be monitored throughout the year.