



## Science Curriculum Statement

### Our CLEAR Curriculum Drivers:



### Curriculum Intentions:

At Foxhills, we aim for our children to become proficient scientists. Proficiency in science comes from an ability to investigate natural phenomena and answer scientific questions about the world around us. Being equipped with crucial scientific knowledge, will help children to understand the uses and implications of science today, and for the future. Through our science curriculum, we encourage children to develop their curiosity, to ask questions about what they have observed, to express their opinions, and make links with existing knowledge. Crucial knowledge refers to the knowledge the school has identified as being the most essential content that all children must acquire to ensure they meet the milestones for the end of Early Years Foundation Stage and Key Stage One in science.

### Our science concepts are:

- Investigating and exploring
- Comparing and contrasting
- Classifying

**At Foxhills the characteristics of an effective scientific learner are:**

- An ability to be curious about the world around them
- An ability to be patient and persistent
- An ability to observe things closely
- An ability to think logically
- An ability to ask and answer questions
- An ability to predict
- An ability to examine
- An ability to investigate
- An ability to reason and justify
- An ability to conclude
- An ability to question evidence

### **Curriculum Implementation**

**How is the science curriculum organised and how does it progress?**

The science curriculum begins with the concept of investigating and exploring for children in our Early Years Foundation Stage (EYFS). This is because children of this age and developmental stage are naturally curious, and starting school for the first time, exposes them to a new environment, new people, new experiences and opportunities to discover. Whilst absorbing new surroundings, investigating and exploring, children will naturally gather new information. Adults support children to interpret this information and encourage them to talk about what they have found out, what they have learnt, and what they have understood. As the autumn term progresses, adults support children to ask questions and challenge what they have discovered. Opportunities to learn in these ways prepare children to think like a scientist, and as the year progresses, adults draw upon this knowledge and support children to use it as a skill in lessons about knowledge and understanding of the world. During the spring term, children learn the concept of comparing and contrasting. This involves using hands on experiences and observational skills to find similarities and differences. Comparing and contrasting has been placed here because children begin to notice differences in the outdoor environment, as the seasons change. Comparing and contrasting enables children to use their knowledge from investigating and exploring as a skill in different contexts, for example: making links during small world play. Children learn about changing states at this time because natural changes are occurring in the world around them. Throughout the summer term, children have the opportunity to revisit these concepts further, in addition to learning about classifying. This has been positioned in the summer term because it helps prepare children for the expectations of the Key Stage One curriculum, during which children are required to classify more across a range of domains.

As children move to year one, they revisit the concept of investigating and exploring for the duration of the autumn term. This builds on from what they have learnt in EYFS as they begin to identify, using correct terminology when naming plants and animals. This concept has been deliberately chosen for Autumn 1, because revisiting crucial knowledge from EYFS helps children in their transition to the Key Stage One curriculum. During Spring 1, children gain a deeper understanding of comparing and contrasting. This is because children apply their knowledge of identifying as they begin to distinguish between objects and the materials from which they are made. To assist with this, children begin testing, experimenting and predicting. During the summer term, the children explore the concept classifying. This is because children have already acquired the crucial knowledge for science in year one and they are provided with opportunities to apply their knowledge in different contexts. They begin to demonstrate their ability to answer

questions and draw conclusions. This has been positioned at the end of the year one curriculum as it supports children in preparing for the expectations of the year two science curriculum.

In year two, the science curriculum begins by revisiting the concepts comparing, contrasting and classifying. This is necessary for the Autumn Term because learning begins with what children already know. This helps make new learning meaningful and allows opportunities for making connections. Task design in year two supports children to apply their knowledge as skills; tasks focus on children identifying similarities and differences as well as gathering evidence, drawing conclusions, reasoning and debating. During the spring term children delve deeper into the ways that sources of evidence are represented and learn how to use them to present their findings. Once the children have a secure knowledge of how to record their findings, they revisit investigating and exploring in the Spring Term. This is to provide them with opportunities to use their findings to analyse data. Children will further deepen their understanding of reliability and validity as they continue to compare and contrast. By the summer term, learning tasks enable children to explain their reasoning and make links across the concepts they have explored. The sequencing of the curriculum in the spring and summer term all serves to support children to acquire the characteristics of an effective scientist.

### **How are science tasks designed?**

In order to make learning meaningful, our science concepts are taught through topics. During each topic, children have the opportunity to learn new information, the opportunity to practise using that information in different ways; to link ideas, to connect knowledge, to compare, to reason, before moving onto applying new knowledge/information in a range of contexts. Despite a topic based approach, the discipline of science is preserved, because teachers are very clear about the characteristics of effective learning in science. These are shared with children in accessible ways, every time the children learn new science knowledge/content. This supports children in knowing what it 'looks like' to be proficient in science, and to think and learn like a scientist.

In science, tasks make children verbalise and discuss their findings and thoughts, using a range of scientific vocabulary they have learnt. Teachers design tasks which enable children to investigate and interpret sources of evidence, and evaluate and determine reliability, accuracy and validity. This is important because, explaining thinking, demonstrating understanding and reasoning, helps children to know more and connect ideas. 'Hooks' are used to engage all children, and are chosen based on what children have learnt before and the extent of their knowledge and understanding of a certain topic or concept. Children's written work demonstrates how children apply their knowledge and understanding, and how knowledge is used as skills.

Scientific opportunities take the form of:

- Scientific vocabulary
- Asking and answering questions
- Identifying, naming and describing
- Using scientific equipment
- Investigating sources of evidence
- Measurements and data
- Predicting and testing
- Summarising and concluding

### **Which skills or knowledge can children not access the rest of the curriculum without?**

Knowledge needs to be transferable and for that to happen children need to be curious about the world around them. Therefore, children need good communication skills, a broad and varied vocabulary, the ability to make sense of what they have seen or read, be able to analyse and problem solve and use their retrieval skills in order to access the rest of the curriculum.

### **What does Science look like across the curriculum?**

Children who are proficient in science, will be able to retrieve key information, make connections, discuss changes and understand significance. These skills are promoted through the curriculum and in other subjects, especially; geography, history, maths, PE, RSHE, and English.

Retrieval rocket tasks assist children in strengthening their long term memory. They encourage children to draw on schemas they have previously formed, therefore supporting them in making connections between then and now.

### **Provision for SEND and Greater Depth**

What are the typical barriers for children in science? How will these be overcome?

- Literacy/language skills – being able to access resources and record
- Numeracy skills understanding of how results need to be processed
- Preconceived notions
- Non-scientific beliefs (religion) (i.e history of Earth and life forms)
- Conceptual misunderstandings
- Vernacular misconceptions (scientific words having a different meaning to those used in everyday life)
- Factual misconceptions
- Preferred learning styles

At Foxhills Infant School we believe that science is inclusive and fosters curiosity in all children. Therefore teachers set suitable learning challenges in response to children's diverse learning needs, overcoming potential barriers, to enable all children to meet the same objectives.

The provision for SEND pupils is personalised in order for them to obtain the crucial knowledge to meet their milestones. In some cases pre-tutoring of key vocabulary and knowledge are carried out using a pre-learning journey, this can be with support from an additional adult. Misconceptions, spaced practise and retrieval opportunities are built into learning journeys to ensure pupils are supported in understanding key ideas, developing their long term memory. As soon as children have grasped a concept then independence is promoted, allowing them to enjoy success as they achieve each step.

The inclusive learning environment offers pupils the opportunity to demonstrate what they know, understand and can do, through multi-sensory approaches, including the use of ICT, 1-1 support or through peer support.

Curriculum Impact

A child who has acquired the crucial knowledge and developed proficiency in science will demonstrate the characteristics of effective learning:

