Science Curriculum Statement

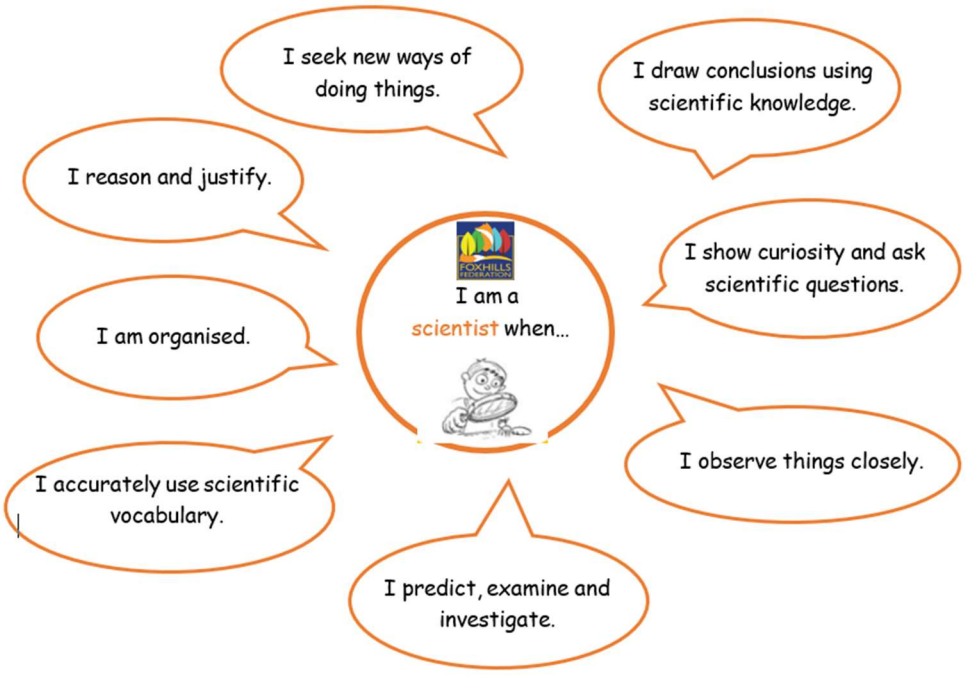
Vision for science at Foxhills

For every child to master working scientifically, so that it fosters their curiosity and encourages a sense of wonder across all three of the science domains.

Science is a subject that supports children's understanding of the natural world by creating links and making connections in order for them to understand why things occur. The science curriculum at Foxhills, has been tailored to develop a sense of excitement and curiosity about natural phenomena. All scientists at Foxhills understand that the discipline is a dynamic and engaging process designed to foster curiosity, critical thinking and scientific enquiry; that ultimately supports them to develop a unique perspective about the world in which they live.

Our curriculum has been carefully crafted to introduce young learners to scientific concepts through a combination of hands on experiences, exploration and support to make meaningful links between substantive and disciplinary knowledge.

Foxhills scientists are encouraged to reason scientifically with increasing sophistication and are supported to use their knowledge to work scientifically with increasing expertise. This is achieved through the use of observation, recording, questioning, and ultimately drawing conclusions.



Sequencing of the science Curriculum

How is the science curriculum organised?

The children revisit each scientific domain each year building on their previous knowledge. The children increase their working scientifically skills in each domain as they progress through the year groups.

Year R

When children start at Foxhills, they develop an understanding of the world by linking their science and geography learning. Children will begin with learning about plants in their immediate environment because overall in Autumn 1 they are learning to explore new environments. In autumn 2 they will learn about animals in their immediate environment as this links to other topics they are learning throughout their early learning goals this half term. In the spring term year R move their learning onto their first physics topic and they focus on learning about the different seasons. They do this in spring because they have already experience autumn and winter whilst at school and they can witness the change from winter to spring during this topic. In summer year R move onto the natural world and natural processes. They look at this in the summer term so that they can spend lots of time outside observing these process happen and seeing the new plants grow.

Year 1

In autumn 1 children begin their science learning with materials to allow them plenty of opportunities to observe and work practically to build on their working scientifically skills from year R. Working hands on offers a less abstract concept as they start their science learning journey for year 1. Children will continue materials into Autumn 2 to give them a chance to embed and consolidate their learning. In the spring term year 1 children will begin to gather and record their observations in relation to their animal survival and human body topic. The children will learn how to classify and identify. This gives the children the opportunity to build their working scientifically skills. In Summer 1

	the children will learn about seasons building on their prior knowledge from year R. Children will do this in summer 1 so that they have experienced all seasons of the year by this point. The children will finish their science learning with plants in summer 2 as this will be the right time of year for them to be able to see the plants growing. <u>Year 2</u> Starting with materials again in autumn 1 children will have the opportunity to carry out practical observations and begin testing more independently. Children will develop their question skills and sense of curiosity. This will enable the children to use their scientific working skills independently throughout the rest of the year. The next three half terms move through animal survival, lifecycles and habitats. Focusing on needs of animals, offspring and food chains. Children in summer 1 will develop their knowledge of plants from year 1 by understanding the parts and functions. this needs to be completed in summer 1 to let the children plant their own plants and give them time to watch them grow over the whole summer term. In preparation for transition to year 3 the children in summer 2 learn how to keep their body healthy. To encourage their independent choices. The Foxhills Infant School curriculum has been developed in partnership with Foxhills Junior School to ensure that, as children transition between infant and junior education, their science learning remains coherent and children are supported to make maximum progress.
What are the knowledge types and how will they be taught?	The curriculum at Foxhills is knowledge-based because our staff are united by the belief that knowledge promotes intellectual growth: The more you know, the more you understand the world. Knowledgeable children are confident and can broaden their experiences. The knowledge in our Science curriculum has been split into two different knowledge types. Substantive knowledge (knowing that…) and disciplinary knowledge (knowing how…). Substantive knowledge is comprised of established facts. Children are taught these facts and are taught this knowledge through highly effective teacher modelling. This knowledge is presented to children in different ways and is reinforced through the use of knowledge organisers, and questioning. Disciplinary knowledge refers to the method of working, in this case scientific enquiry. Teachers demonstrate to children the different methods of scientific enquiry that they can carry out to answer scientific questions. To begin with children will be supported to carry out scientific enquires but will eventually be able to complete these independently. This way of working fosters children's curiosity.
How is the curriculum implemented?	When delivering the science curriculum to our children, teachers consider both pedagogical knowledge and pedagogical content knowledge. Pedagogical content knowledge refers to the link between what the children need to know (our knowledge) and how to teach it; knowledge of pedagogy, knowledge of pupils and teacher attitudes and beliefs (relationships, accountability and commitment). When considering pedagogical knowledge, teachers think about the best ways for the subject to be taught and delivered (based on our disciplinary understanding). At Foxhills we believe that the most effective way to implement our science curriculum is by fostering children's curiosity. All science learning journeys at Foxhills begin with a big question which is used to hook the children in to the learning. The children will then be encouraged to use different methods of scientific enquiry, research and questioning to work out how to answer the big question. Teachers will share high quality models of work and methods to give them the opportunity to become scientists. In science lessons curiosity is fostered through the use of effective questioning by teachers/TAs and the children themselves. The adults will be constantly encouraging children to explore their environment and the world. Teachers will revisit relevant knowledge, prior to teaching new knowledge which enables children to hang their new knowledge onto that which they already know and understand, therefore making links explicitly clear, enabling knowledge webs to develop. For learning to take place, there must be a change in a child's long-term memory, therefore it is essential that once learned, the most crucial content is revisited. This is why the curriculum is recursive and children revisit the different domains throughout the years they are at Foxhills.
Adaption and variation	Some of the typical barriers in science learning are: • 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

	At Foxhills Infant School we believe that science is inclusive and fosters curiosity in all children. Lessons will be tailored so that all children are exposed to the science learning domains and are able to participate in science enquires. 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-teaching 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. Cutaway teaching provides an opportunity for children to experience varied modelling, based on their individual needs, and writing scaffolds, adapted knowledge organisers and other personalised resources ensure all children are able to acquire the same knowledge and keep up with the expectations of our ambitious curriculum.
Rationale for enrichment and wider personal development	In addition to the design of the science curriculum, leaders have sequentially mapped opportunities for enrichment and personal development beyond the expectations of the curriculum in science. Enrichment in science takes the form of visits from scientists, visits to science museums and opportunities for science experiments. These have been chosen and planned in a coherent way and they strengthen the school's science offer because they aim to increase engagement, whilst facilitating meaningful cross curricular links. This supports our aim to provide real and meaningful contexts for science.
Impact	Teachers check children's understanding of the science curriculum through the use of constant AfL during and between lessons. This enables teaching to be adapted and misconceptions to be addressed in real time. Pink feedback given to children acknowledges successes and explains why a child has been successful. Green feedback identifies where a child needs to improve. It is very specific and achievable in enabling the child to improve. The Science subject leader conducts book looks, triangulated with lesson observations and pupil conferencing in order to assess the extent in which all children are making progress in achieving our vision for science.