

Science at Yarm Primary



At Yarm Primary, our intent is to provide children with a broad and balanced curriculum, which builds on their needs and prepares them for the future. We use a project-based approach to provide an engaging and purposeful context for learning where pupils are encouraged to apply the skills and knowledge in a range of subjects. We place emphasis on mastering key skills to provide a solid foundation for lifelong learning.

Intent

The National Curriculum identifies Science as a core subject. At Yarm Primary School, we wish to reflect this through a curriculum that builds on children's natural curiosity. We wish to develop and support our children to **question, enquire and challenge**, ultimately leading to them seeing themselves as scientists as well as recognising the crucial role that science plays in the world around them.

Within the National Curriculum:

Pupils should be given opportunities to:

- *develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.*
- *develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them*
- *equip themselves with the scientific knowledge required to understand the uses and implications of science, today and for the future.*

Pupils should be taught:

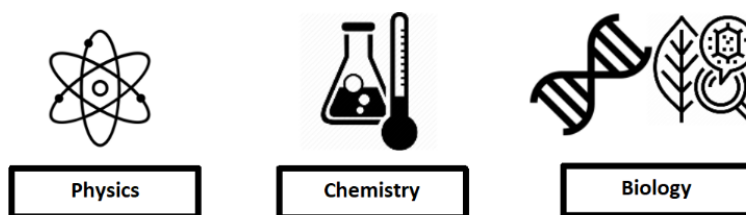
In EYFS, understanding of the world involves guiding children to make sense of their physical world and their community through opportunities to explore, observe and find out about people, places, technology and the environment. Within the Early Years environment, the children have access to sand, water, paint and small play area, where they can investigate properties of materials both independently and through teacher led activities. Quality questions and questioning supports the children to begin to use terminology such as melting and freezing to help them to articulate the world that they see around them.

Throughout Key Stage 1, children explore the topics of: Plants, Animals, including humans, Everyday Materials, Seasonal Changes and Living things and their Habitats.

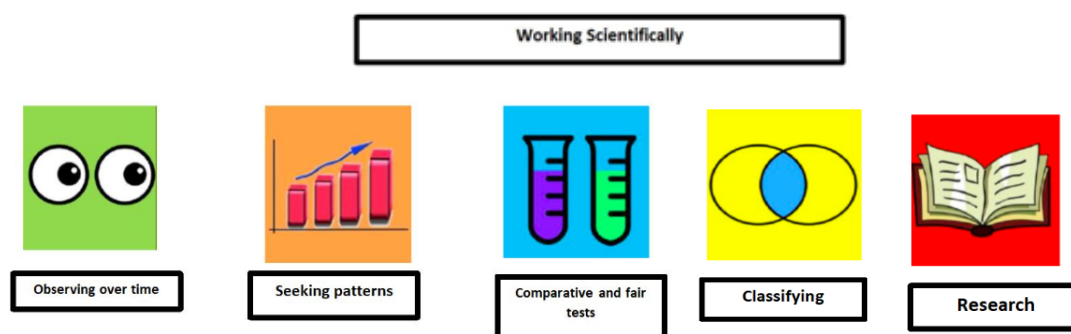
Within Key Stage 2 children are expected to develop their scientific understanding of the topics covered from Key Stage 1 as well as exploring new topics such as Rocks, Light, Forces and Magnets, States of matter, Sound, Electricity, Properties and changes of materials, Earth and Space and Evolution and Inheritance.

Throughout their science learning, children are expected to identify whether they are learning biology, chemistry or physics and over time widen their understanding of the role of a scientist. Such terminology and symbols are expected to be shown and increasingly embedded through school – as well as identified by the children themselves.

Our curriculum captures the important role that both substantive and disciplinary knowledge plays in developing children's scientific understanding.



Substantive knowledge includes the key scientific concepts that the children are required to learn through each stage of their learning – these include evaporation, states of matter and evolution.



Disciplinary knowledge sets out the key skills that the children need to be confident with to correctly investigate and test their understanding. This centres around our 'five lines of enquiry', which include observing over time, pattern seeking, identifying, classifying and grouping, comparative and fair testing and researching. Pupils should also seek to ask and answer questions through collecting, analysing and presenting data.

Implementation

To implement the offer children are supported in developing their skills through discrete topic links or more explicit sequences of work. Sequences are designed to develop knowledge, skills and understanding of all pupils and allow for them to progress to the next stage. Pupils should be able to describe associated processes and key characteristics and common language, but they should also be familiar with and use, technical terminology accurately and precisely. Each lesson should ensure that children are able to draw on, retrieve and connect key prior knowledge. This includes activities such as 'The Big Question, Odd one Out and 'What if?' Such retrieval practice allows for teachers to precisely assess prior understanding and adapt their science teaching in an engaging context before moving to the next stage of learning. Throughout the science curriculum, pupils should be given opportunities to work scientifically. This should centre around our 'five lines of enquiry'.

Each classroom visually captures the children's science learning through displays, which clearly evidence current science learning as well as deepening prior knowledge. Displays in school promote our intent to create inquisitive scientists who can link their prior learning and make connections across scientific disciplines. As a result, displays reflect prior and current learning, which is supported by interactivity and strong examples of scientific investigation. Key, diverse scientific figures (including modern influencers) are promoted half-termly with each Year group celebrating their achievements alongside their scientific contributions to society.

Teachers are encouraged to plan regular opportunities for the children to answer their own questions, using scientific skills and enquiry to find out their answers. Scientific vocabulary is regularly used and modelled at a stage and age-appropriate level to support the children's understanding as well as opportunities for productive self-discovery. Effective modelling and demonstration of how to use scientific equipment supports the children to use their scientific skills and explore the concepts that underpin them. Skills are expected to be taught within a progressive framework, modelled to children and links to other subjects (such as maths) built upon. Alongside skills being mapped and developed through each stage, children are then able to interpret and present data and select/use their own equipment. This results in children being able to progressively draw their own conclusions, as well as to suggest new and alternative ways that their enquiries could be conducted.

Annually, British Science Week is a way to raise the profile of STEM within school, with all year groups taking part. Focussed whole-school projects using high-quality practical resources are used through the year to build on the children's prior learning and target intended skills progression. These include making an alarm or exploring the world through a self-made periscope. As well as this, children are given regular opportunities through the year to appreciate and understand the important careers that derive from STEM learning. STEM Ambassadors are increasingly used through school to raise the profile of a range of careers (such as engineers and biologists) with local links built upon to support this.

Year groups develop learning opportunities around a scientific topic, with some driving the learning across the half term through the development of enquiry questions. Examples include:

Is there life on Mars?

Harry Potter: Magician or scientist?

Impact

The successful impact of our Science curriculum is reflected through our children building on their natural curiosity to recognise the pivotal role that science plays in the world around them to recognise themselves as scientists. Children can then build on their inherent curiosity to enquire, question and challenge using scientific vocabulary correctly and securely. As well as this our impact would use engaging, quality lessons to create future scientists in the making, with our children able to question, make links across concepts and be able to confidently use scientific enquiry to address their innate curiosity.

School internal data shows the vast majority of children accessing and working at the required standard within their year groups. Regular (termly) work and display book looks are used to support and build upon identified actions as well as to ensure consistency in our offer.

Additionally, pupil voice is used termly to capture how the children view science, highlight misconceptions and capture their love of the subject.

"I love Science because it challenges me and I can find out about the world!"

"I've always thought I could be a scientist and find it really fun!"

"I really enjoy experimenting and seeing if my hypothesis is correct. It's okay to be wrong!"

"It's great to use trial and error in our experiments!"

