

SCIENCE ON A PAGE

“Science is a way of thinking much more than it is a body of knowledge” (Carl Sagan).

“The important thing is to never stop questioning” (Albert Einstein).



Intent - We aim to...

Deliver an engaging and exciting curriculum that helps develop a love of science and inspires children to question.

Encourage children, regardless of their needs, to develop a passion for science. Pupils harness their natural curiosity and want to pursue scientific enquires.

Provide children with essential skills in hypothesising, predicting, fair testing, gathering data, analysing data and writing a detailed conclusion.

Support children to acquire and develop key knowledge that has been identified within each unit and across each year group.

Develop children into scientists with an understanding of how to work scientifically.

Create a culture where children love to set up scientific investigations and they take pride in their work.

Implementation - How do we achieve this?

Planning and Knowledge Organiser (KO)

The teachers have access to the school's Science KO and use that as their basis for planning. This document outlines what knowledge, skills and vocabulary should be used when covering each unit. Teachers are able to see what skills and knowledge have been taught previously and can therefore ensure a clear progression. Teachers can also use The Ministry of Eco Education's planning for guidance on any upcoming eco units which are to be taught.

Children are challenged in a range of ways

- Questions can be asked to children to further their individual knowledge and work on the extra information that they may know.
- Pupils to be given leading roles during team activities and experiments.
- Children are to complete a high quality piece of writing at the end of a topic. This is open-ended and can therefore showcase what has been learnt.
- Pupils to explain scientific concepts to other pupils.

How is Science taught?

Science is important for the future and we want pupils to yearn to understand it more. Children are significantly engaged in the eco-units that have been developed with the Ministry of Eco Education. Science is either taught once a week or it can be planned in a topic block by the class teacher. Teachers create and nurture a positive attitude to science learning within their classrooms and reinforce an expectation that all children are capable of achieving high standards in Science. Pupils are given intended outcomes but also the freedom to question, set up their own experiments and ideally they will begin to work out which scientific concepts are at play independently from the teacher. We plan for problem solving and real life opportunities that enable children to discover answers for themselves. Learning is revisited to ensure that key information has a chance to enter the long-term memory. Pupils are encouraged to take risks and experiment and then reflect on the final outcome. Afterwards, they can evaluate their work, thinking about what happened, how they can make changes and keep improving.

Pupils in Year 2 upwards experience a 'working scientifically' unit at the start of the year, where the skills needed for working scientifically are explicitly taught (such as working with variables). Teachers demonstrate how to use scientific equipment and celebrate curiosity. The progression of skills for working scientifically are developed through the year groups and scientific enquiry skills are of key importance within certain lessons.

Implementation - continued...

Children are supported in a range of ways

- Pre-teaching of scientific vocabulary at the start of each topic is encouraged so that it can be used in the following lessons. There is an agreed basic knowledge for all. STEM sentences have been created and these can be revisited throughout the years. Extra time may be given for learning vocabulary for EAL and SEN pupils in order for them to join in with discussion.
- Teachers use TAs to help support children when needed.
- Planning is careful to include accessible learning objectives and 'best/final' outcomes for all children, whatever their need. Some children may require extra time for writing or a scribe or a different method of recording.
- Lessons are practically led as much as possible and pupils are provided with a variety of engaging resources to enable them to carry out fun and exciting experiments. This is an opportunity for pupils to deepen their learning and develop their understanding of the concepts being taught.
- We teach lessons using different techniques to appeal to different learning styles e.g. videos, drama, texts, practical activities.
- We ensure that there are opportunities for paired, group and class discussion to consolidate learning and extend explanations.

Diversity in Science

We believe that pupils should study scientists from different backgrounds, cultures, religions and genders, ensuring a good diet of diversity from Reception to Year 6.

Assessment

At the start of each science unit, pupils will complete an elicitation and/or vocabulary grid. This assessment can be completed individually or as a class but the teacher must get an idea of what each child knows and understands (worksheet, KWL grid, mind map). The teacher then analyses these and notes down areas of strength and points for development. Planning is responsive and adjusted accordingly. Elicitations are revisited at the end of a topic via class conversation or by pupils re-doing their individual elicitation using a different coloured pen. Children can add to their knowledge and correct any prior misconceptions. Some classes may engage in regular low stakes testing. Pupils are assessed against statements linked to the NC on TT at the end of each unit taught. A final summative assessment is completed in July. The Science lead completes a data report based on these results which then inform the next year's action plan. Within the year, the subject lead will also carry out a blink test, pupil interviews, a book look and will converse with colleagues.

Trips/Extra-Curricular...

We look to plan in Science trips which we feel will have a positive impact on the learning of the pupils. Teachers find opportunities to develop children's understanding of their surroundings by accessing outdoor learning. Local scientists (including parents of pupils) have been invited to work with pupils in lessons. Science days have taken place and are planned with the whole school having a particular focus.

Impact - How do we know we've achieved our aims?

Pupils are engaged and thoughtful in lessons.

Clear development of skills from Reception to Year 6.

Science outcomes are of a high quality.

Pupils have strong scientific skills which they can use across the curriculum as well as across their time in our school.

Children are able to use and explain the meaning of scientific vocabulary.

Children have a life-long love of Science and learn about the possibilities of careers in Science.