Science

National Curriculum in England

'Purpose of study:

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.'

Intent

At St Eanswythe's, we believe that all children should take part in exciting, stimulating science lessons. We aim to inspire children to ask questions and have the opportunity, through sequenced science lessons, to develop a genuine sense of curiosity about the world around them. We teach a range of skills, appropriate to age and understanding, to help them do this.

We use the Oak National Academy curriculum to structure and support our teaching of science. Pupils are taught coherent, knowledge-rich units that meet and exceed the requirements of the National Curriculum. Through this curriculum, pupils gain a deep understanding of science as an evidence-based discipline built around the core strands of biology, chemistry, and physics, alongside units exploring the Earth and space, the environment, and sustainability.

Pupils systematically build a strong body of foundational scientific knowledge as they progress through school. The Oak Academy framework intentionally develops disciplinary literacy, enabling children to communicate scientific ideas using accurate scientific vocabulary, diagrams, and written explanations with increasing precision and maturity. Above all, we want to inspire our pupils to enjoy science through practical exploration and enquiry, testing ideas and investigating the mechanics of the natural world.

Implementation

Pupils are encouraged to apply the knowledge they learn in science to investigations that test a hypothesis or answer a specific enquiry question. The Oak National Academy curriculum explicitly weaves together substantive knowledge (the scientific facts, models, and concepts) and disciplinary knowledge (how scientific knowledge is established and validated):

- Knowledge-first approach: Substantive concepts are introduced and explicitly taught first, ensuring pupils have the cognitive foundation needed to make sense of practical observations and conduct meaningful enquiries.

- Working scientifically: Disciplinary understanding is embedded within lessons rather than taught in isolation. Pupils learn and practise the five key types of scientific enquiry:

    - Observing over time
    - Pattern seeking
    - Identifying, classifying, and grouping
    - Comparative and fair testing
    - Research using secondary sources

- Practical skills and communication: Gathering data, accurate measurement, tabular recording, graphing, and drawing reasoned conclusions are systematically taught and revisited across diverse contexts to foster confident scientific communicators.

- Diverse scientists and modern relevance: Pupils encounter notable scientists, inventors, and researchers across history and from diverse backgrounds. They learn that scientific enquiry has always been a collaborative, global human effort—recognising historical pioneers as well as modern scientists tackling global challenges such as climate change and healthcare innovation.

Impact

The Oak National Academy science curriculum is sequenced cumulatively, using the principles of cognitive science to ensure knowledge sticks:

- Spaced retrieval and sequencing: Key concepts are regularly revisited at spaced intervals, allowing children to build upon prior learning, connect schema, and achieve genuine depth rather than surface coverage.

- Clear vertical progression: Threads of learning (such as animals and humans, plants, materials, and forces) build progressively year-on-year, allowing pupils to consolidate prior knowledge before tackling more complex, abstract concepts.

- Rich scientific vocabulary: High-level, tier-three vocabulary is introduced explicitly and rehearsed frequently, ensuring pupils can articulate scientific reasoning with precision.

- Formative assessment: Well-structured checkpoints and low-stakes retrieval quizzes help teachers quickly identify misconceptions or gaps in foundational knowledge and address them immediately.

By learning science through the Oak Academy framework, pupils at St Eanswythe's leave primary school understanding the world through a rigorous scientific lens—fully prepared for the secondary science curriculum with curiosity, confidence, and a lifelong desire for discovery.