Curriculum - Science

Intent ♦ Implementation ♦ Impact

Courage **Resilience** **Honesty** **Kindness**

Matthew 7:24 - "Therefore everyone who hears these words of mine and puts them into practice is like a wise man who built his house on the rock"

Intent

At St. Nicholas-at-Wade Primary School, we believe that all pupils deserve a fully rounded curriculum to become confident, independent, lifelong learners. Our curriculum intent is centred around the following drivers, which are fully embedded across all subjects:

- Every child a reader
- Every child a learner
- Every child a citizen
- Every child happy and healthy
- Every child creative and curious.

This policy sets out the school's aims, principles and strategies in relation to the teaching of science. It is to be used by teaching staff to ensure consistent high expectations of their pupils, which in turn will ensure that the pupils see themselves, act as, and develop as scientists through a curriculum that stimulates, excites and motivates them.

We aim to provide all children with a deep knowledge and understanding of the world around them in addition to acquiring specific skills and knowledge to help them to think scientifically and gaining a secure understanding of scientific processes. As they progress, we want the children to understand the uses and implications of science and learn to question and discuss science-based issues that may affect their own lives and the future of the world.

All children are given opportunities to participate in activities across the disciplines of biology, chemistry and physics during their time in school, transferring and building on prior knowledge, through carefully sequenced lessons so that they know and remember more.

"Learning can be defined as an alteration in long-term memory. If nothing has altered in long-term memory, nothing has been learned…pupils connect new knowledge with existing knowledge." *Ofsted*

Scientific enquiry skills are embedded throughout the topics, where the children are encouraged to develop and use a range of skills more independently, including: questioning the world around them, planning experiments and making quantitative and qualitative observations.

Aims

As educators, we aim to:

- Use a variety of teaching strategies to develop scientific knowledge and conceptual understanding by building on pupils' curiosity and sense of awe of the natural world.
- Develop pupils' investigative skills – including observing, questioning, planning, predicting, experimenting, measuring, recording, interpreting, hypothesising, communicating and evaluating.
- Provide pupils with the opportunities to apply their knowledge, skills and ideas in real life contexts and become aware of the uses of science in the wider world.
- Help foster concern about, and actively care for, our environment.
- Develop pupils' use of information and communication technology (ICT) in their science studies.
- Enable pupils to become effective communicators of scientific ideas, facts and data by using the language and vocabulary of science.
- Develop pupils' social skills so that they can work responsibly and cooperatively with others, develop resilience and perseverance when they are faced with a challenge.
- Extend the learning environment for our pupils via our school grounds to localities such as Birchington, Minster and Reculver, highlighting specific outdoor learning opportunities throughout our planning.
- Promote a 'healthy lifestyle' for our pupils.

Implementation

As a school, we have adopted 'Cornerstones Maestro' as tool for planning and assessment of our science (and foundation) curriculum in school, which reflects the objectives set out by the National Curriculum 2014 Programme of Study for Science. Skills, concepts and knowledge will always relate to the National Curriculum and suggestions have been made to teachers about how the science can be taught through specific Cornerstones topics so that the children's learning is cross curricular and full coverage is met throughout the school. Each year group will cover units of work, over a two-year rolling cycle, as shown in our 'Science Long Term Plan'.

A cross curricular approach is encouraged where possible so pupils will experience science through literacy (reporting and recording), history (the work of influential scientists over time), geography (science of geology, habitats and other earth sciences), mathematics (accurate measuring, and data recording) and Computing.

Early Years

In Early years science the children will

- Explore the natural world around them, making observations and drawing pictures of animals and plants. (UW)
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. (UW)
- Make comments about what they have heard and ask questions to clarify their understanding. (CAL)
- Hold conversation when engaged in back-and-forth exchanges with their teacher and peers. (CAL)
- Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. (CAL)
- Offer explanations for why things might happen, making use of recently introduced vocabulary from stories, non-fiction, rhymes and poems when appropriate. (CAL)

Key Stage 1

The principal focus of science teaching in Key Stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the world around them. Pupils will be encouraged to be curious and ask questions about what they notice. They will be supported in developing their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They will begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but good use should also be made of appropriate secondary sources, such as books, photographs and videos.

Lower Key Stage 2

The main aim of science teaching in years 3 and 4 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use a developing scientific vocabulary to talk and write about what they have found out.

Upper Key Stage 2

A fundamental focus of science teaching in years 5 and 6 is to enable pupils to develop a deeper understanding of a wide range of scientific concepts. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage

2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings. Pupils should read, spell and pronounce scientific vocabulary correctly.

Teachers ensure that children are not only familiar with, but have opportunities to develop and apply their working scientifically skills. These include:

- Pattern Seeking
- Observation over time
- Grouping and classifying
- Using equipment and fair testing
- Researching and presenting

SEN

In our science classes, we strive to make learning accessible for every student, including those with special educational needs (SEN). To achieve this, we utilise a variety of teaching methods and resources tailored to different learning styles. For instance, we provide hands-on activities, visual aids, and adapted tasks that support understanding and engagement

Impact

Children at St. Nicholas at Wade can make sense of the world around them. They confidently ask scientific questions and show an appetite for wanting to find out more about the world they live in and the part they play within it.

Children enjoy a high-quality science education delivered via thought-provoking and engaging lessons. This provides the foundations for understanding the world they live. When children leave primary school, our curriculum prepares them for a life in an increasingly scientific and technological world, which is constantly changing.

Subject leaders evaluate the impact of our curriculum through dedicated 'Subject Weeks'. During these weeks, leaders engage in a comprehensive examination of their subjects, which includes book scrutiny, observing teaching, tracking planning, and conducting pupil conferencing. This thorough approach enables leaders to ascertain the effectiveness of the planned curriculum in enhancing pupils' knowledge, understanding and outcomes in line with the endpoints. The process provides a 360-degree perspective on the intent behind the curriculum, allowing leaders to make informed decisions and strategically plan for subsequent steps to optimise educational outcomes for all students.