Science Curriculum Statement

"It is important to view knowledge as sort of a semantic tree – make sure you understand the fundamental principles, i.e. the trunk and big branches, before you get into the leaves/details or there is nothing for them to hang on to."

Elon Musk

Intent – What we are trying to achieve?

At Orchard, we nurture future Scientists, one experiment at a time.

At Orchard, our Science curriculum sparks curiosity and fosters a love of discovery. We aim to develop the natural curiosity of each pupil by focusing on hands-on learning, encouraging students to explore, ask questions, and think critically. By engaging with key scientific concepts and practical experiments, students build a strong foundation for understanding the world, while also developing a sense of responsibility for the environment. We aim to make science fun, relevant and inspiring for all.

Implementation – How do we translate our vision into practice?

Ambitious – Planning and Design

- Taught on a two-year rolling programme to accommodate mixed aged classes, our Science curriculum covers all of the relevant National Curriculum (2014) requirements for each key stage.
- We use our Curriculum Progression Documents to match content with teaching as we believe that following one programme does not provide the bespoke teaching and learning experience that we want for our pupils.
- Science is planned to foster a life-long love of learning, through a practical, thematic approach to learning where Science is one of the 'key drivers' for the Learning Adventures.
- A blocked curriculum approach has been implemented in the school to ensure coverage and progression across a number of curriculum areas.
- Meaningful links with other subjects are made where appropriate to ensure that the Science curriculum is a rich base of factual knowledge and vocabulary that helps pupils to make connections within a 3D model.
- Planning involves problem-solving opportunities, encouraging children to ask questions and use scientific skills to discover answers, fostering curiosity in the classroom. Lessons use high-quality resources and precise questioning to identify and address to address learning gaps.
- Working Scientifically skills are embedded, with new vocabulary and concepts introduced progressively through direct teaching.

Enjoyable – Enrichment through a thematic approach

- The acquisition of knowledge in Science is achieved through a range of high quality, engaging and hands on learning opportunities supplemented by enrichment opportunities to widen experiences to enable our pupils to reach their full potential.
- Enrichment through stimulating and 'memorable experiences' such as Inspiration Days, theme days, special outcome events and visits/visitors are built in to each Learning Adventure make learning in Science 'enticing' and to engage, immerse and hook the children into their learning experience.

Relevant – Progression

- We rigorously drive home knowledge which underpins pupils' learning in Science and enables the progressive use and application of skills in a range of contexts.
- Connections between concepts provide the basis for progression. The curriculum framework across each phase (EYFS, Key Stage 1, Lower Key Stage 2 and Upper Key Stage 2) has been carefully mapped to set out the necessary knowledge that will be taught, and how these essential concepts develop cumulatively throughout each unit.
- In light of educational research about cognitive load, horizontal, diagonal and vertical links have been plotted within our curriculum to ensure that pupils revisit key information and concepts in different contexts, subjects and at different ages. These logical connections are planned purposefully and explicitly to build the structure of our curriculum and enable staff to refer back to prior learning on which new layers of knowledge can be successfully laid.

Nurturing – Personal Development and Wellbeing

- SMSC (Spiritual, Moral, Social and Cultural development) as well as Character Education is a 'golden thread' that runs throughout the Science curriculum.
- In addition, Science lessons are designed to encourage collaborative problem-solving which develop our school values and provide challenge and ambition, as well as self-management and resilience.
- A varied timetable for extra-curricular activities for Science is offered by the school enabling the children to extend their range of experiences.

Creative – Teaching and Learning

- Rosenshine's Principles of Instruction play a key role in developing knowledge and skills so that children know more and remember more overtime across all subject areas of the curriculum:
  - Present learning in small, coherent steps
  -Ask key questions
  - Guide children's practice
  - Systematically check children's understanding
  - Obtain a high success rate
  - Provide scaffolds for challenging activities
  - Provide opportunity for independent practice
  - Review learning half-termly
- We recognise that not all learning needs to be captured in the written form and or by every child. Whole class books, video or sound recordings, photographs or conversations/observations are often just as valuable in demonstrating understanding.
- Assessment at Orchard is designed to shape future learning. Assessment in Science is made throughout the year using learning observations and formative assessments of recorded work.

Inclusive – Success for all

- Science lessons are designed to provide our pupils with the scaffolding required to access the learning at all levels.
- Teachers ensure that any form of differentiation is appropriate and does not place a glass ceiling on learning for any child, no matter their ability or needs.
- Where necessary, individual adaptations are made to meet the needs of children with high levels of SEND.
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Impact – What is the impact of our curriculum on the students?

- The successful approach at Orchard Primary results in a fun, engaging, high-quality science education, that provides children with the foundations for understanding the world.
- Our engagement with the local environment ensures that children learn through varied and first hand experiences of the world around them. So much of science lends itself to outdoor learning and so we provide children with opportunities to experience this.
- Through various workshops, trips and interactions with experts and local charities, children have the understanding that science has changed our lives and that it is vital to the world's future prosperity.