



Science

Curriculum Intent:

The intention of our Science curriculum is for all of our children to develop an age-appropriate understanding of the knowledge, methods, processes and uses of Science, through the specific disciplines of Biology, Chemistry and Physics. Understanding 'The Bigger Scientific Picture' of their learning will allow our children to develop their own understanding of the impact of Science upon the world around them and answer deepening scientific questions- comprehending that this has implications both today and in the future.

Our bespoke curriculum design, promotes children's natural curiosity and excitement of Science with a rich variety of experiences and observations, tailored to the meet the needs of our learners. As children progress through school, they will become more proficient in different types of scientific enquiry, applying their growing knowledge to work scientifically through our knowledge-enabled approach. With rich links to reading and employment in Scientific industries, Science capital can be developed while promote positive attitudes to STEM, thus influencing aspirations for future study and employment.

Curriculum Vision:

At Parish Church of England Primary School, we inspire children to deepen their understanding of the world around them by nurturing their natural curiosity about how things are made and how they change over time. We aim to foster a genuine sense of awe and wonder in their exploration of scientific concepts and wider spiritual development.

We also strive to build Science capital – the knowledge, attitudes, experiences, and resources they accumulate throughout life – across the whole school community; thus helping children to recognise the lifelong opportunities that scientific learning and STEM subjects can offer within future study.

I have been the Science Subject Champion for the past four years, a role that has enabled me to share my passion for all things science and STEM across the school. With a background in A Level Science, I bring both subject knowledge and enthusiasm to inspire staff and pupils alike. I am particularly passionate about developing science capital and influencing children's aspirations, helping them see the relevance of Science in their everyday lives and future careers. My dedication to promoting high-quality Science education contributed to our school achieving the prestigious Primary Science Quality Mark (GILT), reflecting our strong commitment to excellence in Science teaching and learning.



Science - Subject Champion:
Mrs Hardy

Curriculum Sequencing:

Use of the National Curriculum as a basis with statutory content mapped out on bespoke knowledge planners. This is delivered through a minimum of one and half hours discrete Science teaching every week throughout school. Starting in EYFS laying the foundations for Scientific learning, five units per year group each span 7 weeks to ensure depth and breadth of coverage. Teaching sequence is fully explained on 'Science Unit Structure—Implementation Documentation.

A Unit Structure Summary [7-week unit of work unless a double unit where it is 14 weeks]						
Week 1 [Part A + B] Practical Pre-learning. Pre-Learning Vocabulary. The Bigger Scientific Picture.	Week 2 QUEST Lesson.	Week 3 QUEST Lesson.	Week 4 QUEST Lesson.	Week 5 QUEST Lesson.	Week 6 QUEST Lesson.	Week 7 Exit Task Completion. Post-Learning Vocabulary
One carefully chosen high-quality core unit text will be used throughout the unit (at the teacher's discretion) to enhance delivery and build Science Capital						

Teaching sequence is fully explained on 'Science Unit Structure—Implementation Documentation. Independent learning is encouraged throughout where misconceptions are embraced and used as essential teaching points. Promoting scientific enquiry at the core, built into every lesson, with use of skills progression papers across year groups. Aspirational knowledge is also carefully considered across topics, building systematically on previous topics containing overarching transferable concepts which run throughout all topics. Our Science curriculum aims to develop 'Science Capital', as a measure of children's engagement or relationship with Science, how much they value it and whether they feel it is 'for them' and connected to their life.



Our Rainbow Promises in Science:

Resilience and Perseverance:

Hands-on investigations encourage children to embrace mistakes as valuable learning opportunities, fostering resilience. Challenging enquiries build perseverance by requiring sustained effort and problem-solving. Open-ended tasks support creativity, confidence, and independent thinking by allowing for multiple possible solutions. The process of revisiting and refining ideas nurtures a growth mindset and strengthens the ability to adapt when faced with setbacks. Encouraging children to ask questions helps them think like scientists and persist in seeking deeper understanding. Through scientific enquiry, children develop independence as they plan, test, and draw conclusions based on their own investigations.

Articulate Learner:

Scientific language is explicitly taught through targeted vocabulary development activities and the use of structured sentence stems. Oracy is promoted through "Speak It" tasks and regular opportunities for children to explain their results and reasoning. Reading is connected to science through annual *Reading is STEMSational* projects, while consistent vocabulary use is supported by the LDST Vocabulary Pledge.

Influence Aspirations

Science influences children's aspirations by building their Science Capital through meaningful connections with STEM across both curricular and extracurricular activities. Initiatives such as Creation Champions provide pupil leadership roles that empower children to take an active interest in science. Participation in Parish University Science Courses broadens their exposure to scientific learning, while the "A Scientist Just Like Me" initiative introduces relatable role models, making science more accessible. Strong partnerships with local secondary schools and universities help create clear pathways and motivation for pursuing STEM careers. Additionally, educational trips offer hands-on experiences that enhance real-world engagement with science.

Nurture Curiosity

Children engage in hands-on, practical activities designed to spark curiosity and foster a love for science. Outdoor learning is integrated into every unit, helping to connect scientific concepts with real-world experiences. The QUEST approach is used to encourage inquiry and exploration, while access to a wide range of scientific reading materials supports deeper understanding. Learning is guided by the five strands of scientific enquiry, ensuring a comprehensive and well-rounded approach. Practical science is consistently embedded throughout the curriculum, and connections with STEM Ambassadors provide inspiring real-world role models to motivate and engage children.

British and Christian Values

Through science, children explore the natural world, fostering awe and appreciation for God's creation. Investigative work in experiments promotes endurance by encouraging children to persevere and overcome challenges. Collaborative scientific tasks cultivate mutual respect, as children learn to listen respectfully and value diverse perspectives while working as a team. Additionally, science lessons support SMSC (spiritual, moral, social, and cultural) development by nurturing spiritual curiosity, guiding moral decision-making, encouraging social cooperation, and enhancing cultural awareness.

Opportunities to Build on Knowledge and Skills

The curriculum is designed with progressive planning, building knowledge year on year through a sequenced approach supported by vital vocabulary that reinforces subject-specific language. Concepts are interconnected both within science and across other subjects, creating strong schema links. Collaboration is encouraged through group tasks and cross-curricular connections, promoting teamwork among children. Retrieval practice is embedded via Knowledge Organisers and regular reviews to aid long-term retention. Lessons follow the QUEST delivery model, which includes Question, Understand, Explore, Summarise, and Think stages. Additionally, teaching aligns with the school's Rainbow Promises, ensuring that lessons support both the school's values and children's personal development.

Wellbeing and Health

Our Science curriculum promotes healthy living by fostering an understanding of diet, exercise, and hygiene, while also raising awareness of the risks associated with drugs, alcohol, and smoking. It emphasizes safety in both everyday life and scientific contexts. Students learn about lifecycles and reproduction in a respectful manner and are encouraged to care for the environment and embrace sustainability. The curriculum nurtures an appreciation of nature and highlights its positive impact on well-being, inspiring awe and wonder to support emotional development.



Inclusive Practice in Science:

EYFS as the Bedrock of Learning:

In EYFS, Science is initially explored through the ELG Understanding the World, with a focus on Our Natural World - The Discipline of Science. Children develop their scientific understanding through five carefully planned learning enquiries detailed in our EYFS knowledge planner. The Science curriculum across EYFS is planned and sequenced effectively to support all children's progression, appropriate to their age and stage of development. These enquiries nurture curiosity and observation skills, encouraging children to notice patterns, ask questions, and explore the world around them. Learning is rooted in the Characteristics of Effective Learning: engagement through play and exploration, motivation via active learning, and thinking through creative and critical enquiry. This approach not only fosters a love of Science (with outdoor learning being a central component) but also lays a strong foundation for the more formal and progressive scientific learning they will encounter in Year 1.

Strong Foundations:

Our Science curriculum clearly defines the essential knowledge for Reception and Key Stage 1, guiding teachers in prioritising both teaching and assessment through high-quality interactions. When gaps in knowledge, skills, or behaviour are identified, staff receive time and training to adapt curriculum content or teaching approaches as needed. Scientific learning remains central, with care taken not to introduce complex reading and writing tasks too early. Science is taught for 90 minutes each week, supporting fluency in foundational knowledge and skills through regular practice and retrieval. The curriculum has been carefully reviewed to avoid overload and maximise learning time. 'Speak It' opportunities are embedded throughout to develop articulate, confident learners.

Meeting the needs of all learners:

We are committed to meeting the needs of all learners through inclusive, adaptive teaching in Science. Our planning promotes metacognition and enables children to access learning at their own level, supported by knowledge organisers to deepen understanding. Pupils receive targeted support based on individual needs, including pre-teaching and interventions to reinforce scientific knowledge.

For those with identified SEND, teachers use appropriate assessment to ensure needs are met as identified through their pupil passport. Using our SEND Toolkit, lessons are planned to address potential areas of difficulty and remove barriers to achievement. This aligns with the EEF's Adaptive Teaching recommendations, incorporating explicit instruction, cognitive strategies, scaffolding, flexible grouping, and technology. Our approach ensures all learners secure the milestone knowledge required to progress with confidence.



Wider Curriculum Considerations in Science:

Teaching Pedagogy:

Our primary Science lessons follow a clear pedagogical structure, guided by Rosenshine's Principles of Instruction to ensure effective teaching and learning.

Each lesson includes opportunities to review prior knowledge, check understanding, model scientific concepts, scaffold new learning, and guide practice. The QUEST approach underpins lesson delivery, promoting curiosity, enquiry, and critical thinking. Outdoor learning is regularly integrated, allowing pupils to engage with Science in real-world contexts and deepen their understanding through hands-on exploration. Bespoke knowledge organisers and planners support both in-class learning and independent home study, helping pupils retain key knowledge and develop as confident, capable young scientists.

Question to answer.

Understanding previous learning.

Explore new knowledge and vocabulary.

Student practise.

Talk, test, tell.



Developing Cultural Capital:

In Science, develop cultural capital by equipping children with the knowledge, behaviours, and skills to understand and engage with the world around them. Through our rich Science curriculum, pupils explore key areas of scientific interest—biology, chemistry, and physics—while recognising the impact of Science in everyday life. Using our QUEST approach, children are fully immersed in scientific enquiry, thinking and working like scientists in every lesson. We nurture Science Capital through participation in STEM weeks, links with local universities such as Edge Hill and Liverpool Hope, and a range of Science-focused trips and visits. Opportunities like the STEM Ambassador programme and career exploration further broaden pupils' understanding of the wide variety of paths within the world of Science, inspiring future aspirations.

Personal Development:

Our Science curriculum encourages personal development by fostering curiosity, critical thinking, and a sense of wonder about the natural world, which can support spiritual growth. Through hands-on investigations and exploration, children develop confidence, resilience, and collaborative skills. Science nurtures respect for life and the environment, helping pupils reflect on their place in the world and their responsibilities within it. By connecting scientific learning to broader questions about existence and purpose, the curriculum supports both intellectual and spiritual development, promoting a deeper appreciation of life and the world around them.

Staff CPD:

Our approach to CPD in Primary Science is rooted in collaboration, consistency, and continuous improvement. Internally, regular coaching cycles support staff by modelling best practice and effective teaching strategies across year groups. The Science Subject Lead recently achieved the Primary Science Quality Mark (GILT) Award through close collaboration with colleagues. Planning and curriculum sequencing are developed across the partnership, ensuring coherence and progression. Staff benefit from external support through the 'Reading is STEMsational' programme with STEM Learning, online 'Reach Out CPD', termly Science Teaching Newsletters, and curriculum updates via LDST networking and School Improvement Liverpool. This comprehensive CPD ensures strong foundations in Science are in place from the earliest years.

Assessment:

Our Science curriculum is supported by robust and consistent assessment procedures, guided by the TAPS Science Pyramid and the principle of 'active pupils, responsive teachers'. These processes are embedded across all year groups and ensure accurate tracking of both substantive and working scientifically knowledge. Assessments include practical pre-learning tasks, vocabulary checks, retrieval activities in every lesson (with three formally recorded per topic) and diagnostic exit tasks to evidence scientific enquiry. Teachers make final topic judgements (emerging, expected, or exceeding) using bespoke statements aligned with the TAF. Assessment data is recorded and analysed using the LDST Trust Assessment System (Ask Eddi).

