Raising and maintaining standards in Science

At St. Peter's C of E Primary School, we work together to provide an inspiring, inclusive and creative learning experience for all of our children. As a 'Take Care' school, children are encouraged to take care of themselves, each other, their school and the wider world. Our welcoming and safe environment, encourages everyone to be happy, resilient and enthusiastic learners.

How SCIENCE is taught at St. Peter's:	**Objectives and vision**	**Leaders of SCIENCE and training received:**	**How SCIENCE is monitored and evaluated to ensure Quality First Teaching:**
At St. Peter's, we teach science using the 'CUSP' curriculum, which pays close attention to guidance provided by the National Curriculum sequence and content. It is infused with evidence-led practice and enriched with retrieval studies to ensure long-term retention of foundational knowledge. In Early Years, Science is taught through Knowledge and Understanding of the World. The children learn about the scientific world around them in their play and adult led activities. Our curriculum is designed to enable children to make sense of their physical world and community. In KS1 and KS2, our science curriculum is delivered through a series of modules, which are deliberately spaced throughout the academic year with opportunities to introduce and revisit key concepts. This approach enables staff to deepen pupil understanding and embed learning.	At. St. Peter's C of E Primary School, we want our children to recognise the importance of Science in every aspect of daily life; we encourage children to be inquisitive throughout their time at our school and beyond. The Science curriculum fosters a natural curiosity of the child, encourages respect for living organisms and the physical environment and provides opportunities for critical evaluation of evidence. We believe that science encompasses the acquisition of knowledge, concept, skills and positive attitudes. We want pupils to develop a complex knowledge of Biology, Chemistry and Physics, but also adopt a broad range of skills in working scientifically and beyond. Science lessons are inclusive and meaningful, so all pupils may experience the joy of science and make associations between their science learning and their lives outside the classroom. Studying science allows children to appreciate how new knowledge and skills can be fundamental to solving arising global challenges.	1 x Science Network Training Course	Science is planned into the annual calendar of monitoring yearly. Science is monitored through a combination of 'book looks', pupil book study and learning walks/classroom visits. When looking at books, checking that the evidence-led resources are being used as expected is carried out using a 'provision matrix'. The purpose of this is to evaluate the opportunities pupils have to think hard. 'Pupil Book Study' gives as insight into how well pupils remember and can explain the content as well, as the connections they make.

Raising and maintaining standards in Science

At St. Peter's C of E Primary School, we work together to provide an inspiring, inclusive and creative learning experience for all of our children. As a 'Take Care' school, children are encouraged to take care of themselves, each other, their school and the wider world. Our welcoming and safe environment, encourages everyone to be happy, resilient and enthusiastic learners.

CPD	**Sequencing and progression of the curriculum:**	**Improving life chances for vulnerable pupils: (Disadvantaged / EAL / SEND)**	**How the curriculum has been adapted in light of Covid-19:**
'CUSP Science Subject Leader' online session – to enhance subject leadership through: • 2 x 1.5 hour live Zoom sessions a year • Online collaboration and partnership throughout the year • Handbooks • Unique CUSP Monitoring Matrices • Interactive CUSP Evaluation Toolkits • Guest speakers and subject experts • Assessment updates and innovation • Share excellence through our collaborative partnership platform – Padlet 'CUSP Science CPD Library' slides: • CUSP Science • CUSP Working Scientifically Signed up to 'Explorify' – 'a free, exciting programme of activities for primary school teachers that will spark pupils' curiosity and develop their thinking skills.'	• Progression document showing progression in substantive knowledge (referred to as 'scientific knowledge and conceptual understanding' in the National curriculum. This is knowledge of the products of science: concepts, laws, theories and models. • Substantive knowledge progression document is divided into 'Biology', 'Chemistry' and 'Physics' to establish progression in each of the domains of science • Progression document showing progression in disciplinary knowledge (this is knowing how to collect, use, interpret, understand and evaluate the evidence from scientific processes. Pupils construct understanding by applying substantive knowledge to questioning and planning, observing, performing a range of tests, accurately measuring, comparing through identifying and classifying, using observations and gathering data to help answer questions, explaining and reporting, predicting, concluding, improving, and seeking patterns) • EYFS – KS1 Progression document	At St. Peter's, we aim for all science lessons and learning questions to be accessible to all pupils. Pre-teaching of scientific vocabulary provides all children with the opportunity to demonstrate an understanding of subject specific language. The use of dual-coded Knowledge Notes and Organisers provide visuals to aid understanding and recall. Knowledge notes are utilised in all lessons to minimise cognitive overload, so children can use and apply their knowledge more easily. Sentence stems can be used where necessary to aid with written evidence.	

Raising and maintaining standards in Science

At St. Peter's C of E Primary School, we work together to provide an inspiring, inclusive and creative learning experience for all of our children. As a 'Take Care' school, children are encouraged to take care of themselves, each other, their school and the wider world. Our welcoming and safe environment, encourages everyone to be happy, resilient and enthusiastic learners.

Attainment	**Progress**	**Data collection and assessment**:	**Parental engagement**
		As evidence suggests, feedback is the most impactful as near to the point of learning as possible. That is why the 6 phases of a lesson allow teachers the space to listen, watch and interact to intelligently give feedback at the point of learning. Assessment at St. Peter's takes many forms: • Formative assessment throughout the lesson • Formative outcomes from cumulative quizzing • Summative outcomes from cumulative quizzing • Pupil Book Study Feedback, quizzes and thinking hard tasks all contribute towards the bigger picture of how well pupils retain and remember the content.	Attainment and effort in Science is reported on in yearly end of year reports. Photographs of science lessons/activities uploaded on to some class pages on the school website

Raising and maintaining standards in Science

At St. Peter's C of E Primary School, we work together to provide an inspiring, inclusive and creative learning experience for all of our children. As a 'Take Care' school, children are encouraged to take care of themselves, each other, their school and the wider world. Our welcoming and safe environment, encourages everyone to be happy, resilient and enthusiastic learners.

Pupil attitudes	Wider Opportunities for SCIENCE:	A typical lesson:	Other
	• 'Astronomy Day' – October 2022 • Residential visits (LKS2 & UKS2)	All science lessons incorporate the following elements: • Explicit teaching of vocabulary • Revisiting of prior learning • Use of scientific vocabulary in learning • Reading • Working scientifically • Evidence of learning in pupil's books	

Strengths	Areas for development	Actions to be taken to address
• Using CUSP Science, which is an evidence-led curriculum that is built on the principles underpinned by the best cognitive and neuroscientific research available. Three core elements constitute the overarching curriculum offer: Cognitive load theory, Principles of Instruction and Generative Learning Practice. • Broad and balanced curriculum, including mapping out skills coverage and development • Following a long-term sequence that is supported by evidence-led learning modules and high-quality teaching resources that clearly outline what pupils should know, be able to do and remember at key points in their Primary education.	• Establish pupil attitudes towards science to gain an appreciation of how pupils feel about science, and to provide the subject leader with an idea of where science is working well and where it needs to improve.	• Pupil voice questionnaire
	• Ensure teachers have access to the physical resources they need, to ensure high-quality teaching of science is enabled in every class.	• Carry out resource inventory • Set up a simple system for staff to record their resourcing needs, for example with a document saved on the shared drive or a form displayed in the staffroom

Raising and maintaining standards in Science

At St. Peter's C of E Primary School, we work together to provide an inspiring, inclusive and creative learning experience for all of our children. As a 'Take Care' school, children are encouraged to take care of themselves, each other, their school and the wider world. Our welcoming and safe environment, encourages everyone to be happy, resilient and enthusiastic learners.

<table>
<tr>
<td rowspan="3">

Interleaving: relevant subjects are positioned to support and enhance learning so that pupils retrieve and transfer knowledge. For example, in LKS2, learning of 'rocks' is enhanced through the contextual study of the Stone Age in history, and in UKS2, 'Electricity' learning is enhanced through the study of electrical systems in design and technology.
Creative, engaging, motivating, and stimulating lessons
Evidence of the use of CUSP 'Thinking Hard' routines to support coherent formation of long-term memory (for example, word connection, double-page spread, word pathways, image cues) (monitoring – June 2023).
Core knowledge and vocabulary is present in pupil voice and writing (pupil book study – June 2023), enabling children to make connections with prior knowledge and then build on this.
Pupils can explain why and how they use Knowledge Organisers and Knowledge Notes (pupil book study – June 2023)
Retrieval practice used to embed new knowledge, giving new learning an organised place to be stored in the memory, and therefore retrieved. - evidence of retrieval activities through questions, quizzes, 'two things', 'give one/get one' (June 2023 monitoring)
Children are being given opportunities to 'think hard' and use the substantive content in a disciplinary manner by 'thinking like a scientist' (monitoring – June 2023)

</td>
<td>

Ensure there is a balance of provision of 'Working Scientifically' in KS1, LKS2 and UKS2 to ensure children have the opportunity to build on their scientific skills.

</td>
<td>

Look at planning for each module to identify the tasks used which focus on developing disciplinary knowledge. Establish the balance of provision.

</td>
</tr>
<tr>
<td>

To raise the profile of science and enhance the curriculum, by children going on science-based trips, visitors coming into school, and the children experiencing curriculum enrichment days

</td>
<td>

Science activities during 'British Science Week'. PSTT's Whistlestop Science Weeks provide sets of ready-made ideas and activities for science weeks or one-off days.
Class teachers to organise educational visits
Subject leader to invite science visitors into school (where budget allows)

</td>
</tr>
<tr>
<td>

To ensure that quizzing and retrieval practice is frequent (summer 2023 monitoring suggested that retrieval practice wasn't always being used in all classes)

</td>
<td>

Teachers to use the cumulative quizzes at the end/start of each lesson to give pupils opportunities the retrieve their knowledge at regular intervals.
Pupils complete the full quiz at the end of each study and the results used by the class teacher to outline who knows what and where pupils have struggled. As a result, post- or pre-teaching can be planned to close any knowledge gaps.

</td>
</tr>
</table>

Raising and maintaining standards in Science

At St. Peter's C of E Primary School, we work together to provide an inspiring, inclusive and creative learning experience for all of our children. As a 'Take Care' school, children are encouraged to take care of themselves, each other, their school and the wider world. Our welcoming and safe environment, encourages everyone to be happy, resilient and enthusiastic learners.