Science

Intent

The curriculum for Science at Frogmore Infant School has been developed to ensure:

- Pupils make excellent progress in the acquisition of skills and knowledge in Science
- Pupils have the opportunity to learn to use a variety of approaches and types of scientific enquiry to answer relevant scientific questions
- Knowledge and skills are taught in a logical progression so that all pupils are able to acquire the intended skills and knowledge by the end of Key Stage 1
- Science skills are taught within the context of a topic theme enabling rich contexts, enrichment links with other subjects, breadth of learning, high expectations and a purpose for learning
- Pupils have the opportunities to be curious, ask questions about what they notice, communicate their findings in a variety of ways, show concentration and perseverance, self-reflect and develop independence and collaborate
- Pupils observe changes over time, notice patterns, group and classify, collect and analyse data and carry out simple comparative tests
- Pupil's learning will develop mainly through first hand experiences supported by secondary sources to develop rich dialogue and subject specific vocabulary

Schemes of Work are written for each theme drawing upon learning objectives as detailed in our Progression of Skills and Knowledge (PoSK) for Science alongside our KnAC model. KnAC is a model of planning which provides children with rich learning contexts based on concrete experiences. This involves practical, hand on learning in which time is invested to develop language/vocabulary, knowledge base and a sense of why this learning is important. Once children have acquired the relevant knowledge and skills they then apply these to a real life or imaginary context with a shared learning outcome. We plan opportunities across the curriculum, over time, for beautiful work to come from stages of drafting and feedback.

As a result of the impact of COVID, we have identified missed content (knowledge, skills, vocabulary and concepts). We are using a varied approach for education recovery in Science by providing opportunities within the curriculum to apply skills and techniques in working scientifically in a range of settings including continuous play.

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Curriculum coverage Why this?	• Knowledge, skills and understanding for Science are clearly laid out for each year group in the PoSK document. • PoSK ensure that pupils achieve the ambition of the National Curriculum for Science with opportunities to explore Plants, Everyday Materials and their uses, Animals, including humans, Living things and their habitats, Seasonal Change and Working Scientifically covered in depth over the Key Stage. • Timetabling for Science enables pupils to revisit and build on their skills and knowledge • Schemes of Work draw upon the richness of the local area as stimuli for learning
Curriculum sequencing Why now?	• PoSK ensures that the curriculum for Science is planned and sequenced so that new knowledge and skills build on what has been taught before and ensure pupils achieve our ambitious expectations at end of Key Stage 1 • PoSK and Schemes of Work identify small enough component steps so that all pupils can achieve our ambitious expectations at end of Key Stage 1 • Schemes of Work take account of gaps in pupils' knowledge and skills and allow sufficient time for skills to be practised over time to ensure automaticity • Schemes of Work use diagonal sequencing to make links between subjects to support later learning
Progress Knowing more and remembering more	• Teaching builds up pupils' knowledge and skills in long term memory because progress is knowing more and remembering more and enables pupils to perform more complex tasks over time • Teachers make links with previous learning to support automaticity and independence • Teachers have a clear understanding of gaps in skills and knowledge for individual pupils and plan to address these • Teacher use assessments to check planned skills/knowledge have been remembered and pupils have a high level of automaticity/ independence
Subject knowledge	The Curriculum Leader for Science works alongside year group teams to write Schemes of Work to: - Ensure teachers have high levels of subject knowledge - Ensure the curriculum is sequenced effectively so that new knowledge and skills build upon what has been taught and ensure pupils achieve our ambitious expectations at end of Key Stage 1 - Provide opportunities for pupils to work at greater depth - Identify professional learning needs in Science

Science

Ambition	• The Curriculum Leader for Science ensures that the curriculum is ambitious for all groups of pupils and removes gaps and barriers to learning through scaffolding, adaption, learning sequence including preteaching

Implementation

Pedagogy	• Teachers ensure that the teaching decisions they take achieve the intent for Science • Teachers ensure that short term planning for Science: - Locates the lesson in the context of the scheme of work and the pupils' prior knowledge and understanding - Ensure lesson activities focus pupils' thinking on the learning objectives to avoid overloading pupils' working memory - Ensures sequencing of learning for the unit of work enables more cognitively challenging activities based on previous learning - Provides effective challenge - Uses outcomes from assessments to fine tune the next small stage in learning - Identifies the learning objects and success criteria for the pupils - Makes effective use of guided groups/modelling/scaffolding - Provides opportunities for metacognitive approaches - Ensures pupils have opportunities to articulate learning in their own words/writing - Provides opportunities to promote and develop reading skills
Assessment	• Teachers use non-core assessments to check planned skills/knowledge have been remembered and pupils have a high level of automaticity/independence • Teachers use assessment to identify useful feedback and to plan/adjust subsequent learning
Learning environment	The Curriculum Leader for Science ensures that the learning environment around the school: - Demonstrates and models high expectations and standards in Science - Models the current learning journey and displays high quality examples of current learning - Is used to develop/extend language and thinking and reasoning - Celebrates children's learning - Provides high quality and relevant resources to ensure the full curriculum for Science can be taught

Culture	• The Curriculum Leader for Science ensures there is a climate of high expectations where pupils' enjoyment of Science can flourish

Impact

The Curriculum Leader for Science evaluates the impact of the curriculum through topic reviews, moderation activities, curriculum team subject reviews, learning walks, pupil interviews, data analysis and work sampling. The Curriculum Leaders is able to:

- Demonstrate pupils reach the school's end of KS1 expectations. Where pupils are working below ARE we are able to demonstrate sustained improvement in their subject knowledge/understanding/skills in relation to their prior attainment
- Demonstrate that the planned curriculum is taught
- Discuss strengths and development needs in Science
- Demonstrate that pupils are enthusiastic about the subject and highly motivated to learn showing curiosity, perseverance, self-reflection and independence

Recent impact analysis show a link between those pupils who are working below ARE and their acquisition of scientific vocabulary. As a result additional support is in place for these pupils.