Inspiring a love for lifelong learning

Science Intent, Implementation and Impact Overview

Science is vital to our future prosperity and it is important that our children are engaged with all aspects of science. We aim to teach about the practices of science, where our children learn how scientific knowledge becomes established through scientific enquiry. By learning this, our children will appreciate the nature and status of scientific knowledge through understanding for example, when scientific enquiry is open to revision in the light of new evidence. Our children enjoy learning about and learning from key scientists over time, and are supported in developing their scientific knowledge and understanding through the St Mary's University, 'Standing on the Shoulders of Giants' research materials.

Our science teaching provides opportunities for the learning of foundational knowledge from Reception onwards. We provide rich contexts for our children to learn a wide range of vocabulary which forms the beginnings of scientific concepts that will be developed further over time.

Our curriculum identifies the most important concepts for our children to learn, also teaching how these concepts are related so that over time children develop a deep understanding of the logical structure of each scientific discipline.

Biology: Animals including Humans, Plants, Living Things and their Habitats, Life Cycles, Evolution and Adaptation.

Physics: Light, Forces and Magnets, Sound, Electricity, Earth and Space.

Chemistry: Everyday Materials and Their Uses, Rocks and Fossils, States of Matter, Properties and Changes of Materials.

Earth Science: Seasonal Change, Earth and Space.

Our pedagogical expectations are demonstrated through the planning of well-structured lessons, revision of prior learning, introduction of new information in small steps and vocabulary, guided practice, modelled examples, questioning, checking for understanding, and independent practice. We aim to immerse our children in a range of opportunities for investigative work, whilst building on and consolidating their knowledge and skills from Reception to Year 6.

We teach both substantive knowledge (knowledge of the products of science referred to as scientific knowledge and conceptual understanding in the NC), and disciplinary knowledge (knowledge of how scientific knowledge is generated and grows 'working scientifically' in the NC). This

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knowledge distinction supports our curriculum design reflecting how knowledge is arranged and used in science, and whereby children know the science and know the evidence for it.

Intent

At APPS, it is our vision to inspire a love for lifelong learning through our children achieving their potential and producing success in all aspects of the science curriculum. We aim to develop children's natural excitement and curiosity and inspire them to pursue scientific enquiry now and in further life. Throughout the primary years, children should learn to work scientifically by investigating, explaining and analysing phenomena, making predictions, questioning the world around them and solving problems. We provide science teaching and learning that develops a strong understanding of science, encompasses scientific knowledge and working scientifically, therefore enabling our children to think scientifically, understanding the uses and implications of science for today and for the future benefit of our planet.

We intend to enable our children to engender a positive attitude to science and to develop confident and knowledgeable learners of science. We endeavour to nurture a love for the natural world, excitement for future possibilities in science and provide many opportunities for pupils to grow their own interests, independence and rational thinking.

Implementation

The science curriculum uses carefully planned units of work that progressively build children's skills, knowledge and understanding of a range of scientific disciplines and concepts. A variety of engaging contexts for learning are used including growing plants, reptile and farm animal visits, potato growing and other relevant hands-on practical activities are used whenever possible. Children learn about a diverse range of key scientific figures from the past and present, celebrating diversity and inclusivity. Links are made to the wider curriculum including History, Art, Maths, English and outdoor learning opportunities.

The National Curriculum statutory requirements are taught and assessed in each year group as a basic minimum. Teachers are familiar with previous and subsequent year groups' content in order to link learning and build on previous knowledge. When planning, teachers refer to the progression document for their current topic and use a range of resources to ensure teaching is progressive throughout school.

Science is taught discretely once a week. At the beginning of each topic, children inform the teacher what it is they already know and what it is that they wish to learn about through the completion of a KWL grid. Children then reflect upon what they have learnt at the end of the topic.

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Children's learning experiences make use of a range of venues including the school grounds, the local community, large indoor spaces as well as the classroom. Children also have the opportunity to attend professionally run workshops at the Science Museum and Kew gardens and visiting speakers and workshops further enrich the curriculum.

Science lessons often have a focus on collaborative learning promoting respect, inclusivity and responsibility. Children are given opportunities to develop the ability to express scientific ideas using the appropriate scientific vocabulary and to raise questions, using their knowledge to predict results. They are encouraged to be critical thinkers and learn how to test hypotheses and explain findings.

Children produce a variety of outcomes including annotated drawings and models, written explanations, video explanations and voice over apps. Research-informed teaching strategies such as those outlined in the WalkThru books and adaptive teaching ensures that science teaching is strong across the school and that high expectations are maintained for all learners.

Impact

Through our science education, our children have a positive view of themselves as scientists and show curiosity about the world around them, with the skills to think creatively and critically. They acquire age-appropriate knowledge and are equipped with investigative and enquiry skills to empower them to further explore the world around them. Children have a rich vocabulary which supports them to be successful scientists but also enables them to access and understand the wider curriculum.

Through our science teaching and school values, we ensure that APPS pupils have a good knowledge and understanding of scientific concepts from physics, chemistry and biology which provide a solid basis for further study throughout our primary school and on to KS3. To prepare them for the future, children have high aspirations and often become inspired to continue science learning or pursue a STEM career.