Science Curriculum Rationale

At Oreston Community Academy the fundamental aim of our Science learning is to ignite curiosity in our children; we want them engaged with their surroundings and explore why and how things work.

Intent

From an early age we want to equip children with the scientific knowledge and skills they need to make sense of their surroundings and become active global citizens.

At Oreston Community Academy, we know that highly effective teaching and learning stems from the interests and of the children. We aim to encourage the inquisitive nature of all learners, supporting and challenging all children to achieve their best. Science develops a healthy curiousness in children and promotes respect for both the natural and life sciences. We ensure that the Working Scientifically skills are developed throughout the curriculum so that the skills needed to use equipment, conduct experiments, build arguments and explain concepts confidently and continue to ask questions and be curious about their surroundings are fostered.

The 2014 National Curriculum for Science aims to ensure that all children, irrespective of their starting point:

- Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.
- Develop an understanding of the nature, process and methods of science through different types of science enquiries that help them to explore and answer questions about the world around them.
- Are equipped with the scientific skills required to understand the uses and implications for science, today and for the future. We understand that it is important for lessons to have a skills-based focus, and that knowledge can be taught through this.

Implementation

Teachers are committed to providing high quality teaching that meets the needs of all learners. They strive to reinforce an expectation that all children can build on their prior knowledge and are capable of achieving high standards in science.

Our whole school approach to the teaching and learning of science involves the following;

- Science is taught discretely, although where meaningful contexts can be added it is part of the topic learning, meaning there is immersion of the pupils understanding in a variety of projects. This strategy aims to enable the achievement of a greater depth of knowledge and understanding.
- Through our planning, children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to explore answers. Planning involves teachers creating engaging lessons, providing opportunities for the rehearsal and application of basic skills and using high-quality resources and meaning contexts to aid the understanding of conceptual knowledge. Teachers use precise questioning, based on Bloom's Taxonomy to assess conceptual skills and knowledge and ensure that all children are making good progress. Our thematic approach ensures that science is contextualised and opportunities to engage with the natural environment are maximised. For example, in Year 1, the theme of 'The Enchanted Woodland' guides the children's learning about plants and seasonal changes – taking advantage of the school allotment.

- We build upon the knowledge and skill development of the previous years to ensure that children are progressing and their understanding of scientific concepts increases. Within the theme of Mighty Metals in Year 3, children develop their understanding of forces; this is then built upon as they begin Year 4 during their study of states of matter. We aim to support children in becoming more proficient in their use of scientific equipment and interpretation of results to draw informed conclusions.
- Working scientifically skills and the acquisition of new vocabulary are embedded into lessons. Teachers model the use of equipment and scientific language (based on ASE guidance) to ensure that understanding is embedded. For example, the children in Year 4 develop their understanding of animals, with a focus on mammals within the theme of Blue Abyss, and this is then extended to using a range of scientific skills and resources, including 'Virtuali-tee' to deepen their understanding of the circulatory system in Year 6.
- We have a strong commitment to providing opportunities for children to learn in meaningful contexts and through first-hand experiences. Teachers take advantage of the abundant opportunities for learning both inside and outside of the classroom, both within the locality and further afield. The children visit local habitats including Wembury Beach, Radford Park and Paignton Zoo and engage with passionate scientists such as STEM ambassadors. We seek to develop positive relationships with the local community and beyond and encourage children to take responsibility for developments in the subject within the 'Eco Reps' Pupil Voice group.
- We seek to find innovative and creative ways to deliver the curriculum and constantly review and refresh our approach in line with the wider school priorities and scientific developments. The Oreston Curriculum Gazette is one way in which developments within science are shared amongst staff.

Impact

The impact of the curriculum is designed to give children a secure foundation of the knowledge and skills with which to draw on as global citizens. They will have their curiosity of the world around them fostered and encouraged. The approach at Oreston Community Academy will meet the needs and ignite the inquisitive nature in all children and lead them to be well rounded and self-motivated learners. Through various workshops, trips and interactions with experts and local companies, children will gain an understanding of the role science has in shaping lives, past, present and future. This learning will be shared and celebrated with each other, their families and members of the wider community.

<u>Science in the Early Years:</u>

Science is explored thought the children's understanding of the world and elements of technology. Fundamental to the approach is the provision of meaningful contexts for learning. The children begin their science learning with a multi-sensory exploration of materials, which is built upon as they begin the National Curriculum in Year 1. Outdoor opportunities are maximised and the children are encouraged to observe the seasonal changes in their locality through trips to Radford Park. This is built upon throughout their termly focus on seasons throughout Year 1. We provide opportunities for children to question, wonder, explore, discover, experiment, observe and predict through direct experiences. To develop these skills, children are exposed to scientific vocabulary and a range of levels of questioning are used to ensure every child can engage in and progress their understanding of science. Children are able to access the resources and environment around them and teachers provide stimulating opportunities that encourage children to discuss their opinions and notice the variance in scientific phenomena around them.