Science Curriculum

Intent

The 2014 national curriculum for science aims to ensure that all pupils:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics

- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them

- are equipped with the scientific skills required to understand the uses and implications of science, today and for the future.

We understand that it is important for lessons to have a skills-based focus, and that the knowledge can be taught through this. At Slaithwaite C.E., we encourage children to be inquisitive throughout their time at the school and beyond. The Science curriculum fosters a healthy curiosity in children about our universe and promotes respect for the living and non-living. We believe science encompasses the acquisition of knowledge, concepts, skills and positive attitudes. Throughout the programmes of study, the children will acquire and develop the key knowledge that has been identified within each unit and across each year group, as well as the application of scientific skills. We ensure that the Working Scientifically skills are built-on and developed throughout children's time at the school so that they can apply their knowledge of science when using equipment, conducting experiments, building arguments and explaining concepts confidently and continue to ask questions and be curious about their surroundings. Differentiated activities will enable all children to access experimental work. Thorough planning of teaching and learning will allow natural progression matched to individual pupils' needs.

Implementation

Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all children are capable of achieving high standards in science. Our whole school approach to the teaching and learning of science involves the following;

- Science will be taught in planned and arranged topic blocks by the class teacher, to have a project-based approach. This is a strategy to enable the achievement of a greater depth of knowledge.

- Through our planning, we involve problem solving opportunities that allow children to explore solutions themselves. Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom. Planning involves teachers creating engaging lessons, involving well-prepared resources to aid understanding of conceptual knowledge. Teachers use precise questioning in class to test conceptual knowledge and skills, and assess children regularly to identify those children with gaps in learning, so that teaching can match children's needs.

- In all classes, we recognise that children will have a wide range of abilities in science and we seek to provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. Resources and support for individuals or groups can allow all children to access the curriculum.

- We build upon the learning and skill development of the previous years. As the children's knowledge and understanding increases, and they become more proficient in selecting, using scientific equipment, collating and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence.

- Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career and new vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in-keeping with the topics.

- Teachers demonstrate how to use scientific equipment, and the various Working Scientifically skills in order to embed scientific understanding. Teachers find opportunities to develop children's understanding of their surroundings by accessing outdoor learning and workshops with experts.

- Children are offered a wide range of extra-curricular activities, visits, trips and visitors to complement and

broaden the curriculum. These are purposeful and link with the knowledge being taught in class.

- Regular events, such as Science Week or project days, such as Nature Day, allow all pupils to come off-timetable, to provide broader provision and the acquisition and application of knowledge and skills. These events often involve families and the wider community.

Differentiation

We recognise that in all classes there are children of widely different abilities in science and we seek to provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. Resources and support for individuals or groups can allow all children to access the curriculum. Allowing the tasks to be of different difficulties, differentiated questioning, scaffolding in investigations and open ended tasks, means we can allow all children to meet their potential.

SEND

By maintaining an inclusive learning environment, we ensure that lessons are tailored to suit the needs of the individuals in the class. Multi-sensory approaches, including the use of computing, allow all children to access the learning objectives. We aid children with both peer and adult support to assist their learning.

Mastery and Greater Depth

Children can gain a greater level of understanding in science due to the open-ended nature of investigations and the opportunities for applying scientific skills in real life situations. Children who display mastery in science and work at greater depth can transfer and apply their science knowledge in different contexts, showing they make connections with other areas of learning and retain the knowledge without difficulty. Children who are greater depth in science are encouraged to support their peers in their learning by explaining their understanding, modelling their investigative procedures and engaging in problem solving discussions.

Explicit curriculum links

Through this, where possible, we can make links to other areas of the curriculum as well as teaching science as a discrete subject.

- English – Children can develop understanding of scientific vocabulary and topic- specific language. Fluency in reading will also be developed with age appropriate science texts. Speaking and listening skills will also be important when discussing experiments and explaining thinking. Report writing skills will be developed when science work is presented, along with a wide range of explanation texts.
- Maths – In science work, comprehensive maths skills are important. When conducting experiments, scales need to be read accurately, data needs to be collected precisely and results need to be presented in various forms in tables, graphs and charts. Finally, results need to be compared and analysed, leading to reasoned conclusions.
- Computing – Through the computing skills needed for research and use of the internet, children can develop their scientific understanding and have opportunities to present their findings in documents or presentations. A range of computer data presentation will also allow the children to develop their analysis skills.
- PSHE – Science contributes significantly to the teaching of PSHE. Biology topics that explain processes in the human body help children to understand how their choices can affect their health. Having a greater understanding and awareness will give children the confidence to question and discuss situations that affect them.

Impact

Our approach at Slaithwaite C.E. results in a fun, engaging, high-quality science education, that provides children with the foundations and knowledge for understanding the world. Our engagement with the local environment ensures that children learn through varied and first hand experiences of the world around them. Frequent and progressive investigative work and real life problem solving is embedded throughout the science curriculum. Opportunities for workshops, trips and interactions with experts in the scientific field are included. Children have the understanding that science has changed our lives and that it is vital to the world's future prosperity. Children learn the possibilities for careers in science and work with professionals, ensuring that children have access to positive role models within the field of science. From

this exposure to the real world of science, all children feel they are scientists and capable of achieving. Children at Slaithwaite C.E. overwhelmingly enjoy science and this results in motivated learners with sound scientific understanding.