Curriculum Intent, Implementation and Impact Statement

Science

Intent

At St Charles Borromeo we have designed a curriculum which we believe will prepare our children for life beyond primary school. Everything we do is underpinned by our Gospel values and ethos, with 4 key words highlighting our learning journey through school, namely:

Grow, Learn, Work, Follow

We will **grow** in our Catholic faith by praying and worshipping together.

We will work hard so that we can **learn** and be the best that we can be.

We will **work** together in our families, school, and parish, and with those both near and far, to make our world a better place for us all.

We will **follow** the example of Jesus and his teachings in all that we say and do.

Our aim is for all of our children to:

- **Grow** to be confident, inquisitive and reflective learners who take risks and persevere
- **Learn** to be respectful and tolerant children who are kind to themselves and others, so that they can be the best that they can be
- **Work** independently and collaboratively with self-discipline and resilience
- **Follow** the example of Jesus to live out our faith and values in an ever changing world

Science is all around us – it is a way of learning about the natural world using observation and logical reasoning. At St Charles we recognise the importance of fostering children's curiosity and interest in the world. We encourage children to be inquisitive throughout their time at school and beyond.

Science provides children with the opportunity to understand the world around them and provides an exciting context to apply many of the other skills

and disciplines they learn at school. The National Curriculum for Science identifies three key areas in which the children should be taught:

- knowledge and understanding through the specific disciplines of biology, chemistry and physics
- working scientifically
- the application of science

Our school has a carefully planned science curriculum that ensures children, from early years to year 6, cover these three aims in an accessible, creative and engaging way. We believe that children learn science best by doing and seeing; by providing the children with a range of opportunities to actively carry out different types of scientific enquiries, we ensure that working scientifically and application of knowledge is embedded into the heart of our science curriculum. Our school endeavours to ensure that every child is given the opportunity to enjoy and make progress in science. In addition, the wider curriculum provides many opportunities to apply and deepen children's understanding of science. Teachers are expected to plan for these opportunities in their wider teaching. As a school, we also embrace any opportunities that raise the awareness of environmental issues (like air pollution or plastic waste) as we firmly believe it is our responsibility to raise the citizens of the future.

Implementation

Science is taught at St Charles through weekly, discreet lessons (usually as a double lesson spanning the whole afternoon), but where possible, links are made to other subjects (for example links to PSHE and PE, where children are taught about the importance of healthy living.)

The science curriculum follows the year by year progression of knowledge and skills as set out in the National Curriculum.

Throughout the programmes of study, the children acquire and develop the key knowledge that has been identified within each unit and mapped out across each year group, as well as the application of scientific skills. Most topics are revisited and developed throughout their time at school. This model allows children to build upon their prior knowledge.

Existing knowledge is checked at the beginning of each topic, as part of the KWL strategy (What I know, What I would like to Know and What I have Learned). This ensures that teaching is informed by the children's starting points and that it takes account of pupil voice, incorporating children's interests.

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 as well as continuing to ask questions and be curious about their surroundings. Working Scientifically skills are embedded into lessons and new vocabulary and challenging concepts are introduced through direct teaching. Teachers demonstrate how to use scientific equipment, and the various Working Scientifically skills in order to embed scientific understanding.

Through our planning, we involve problem solving opportunities that allow children to apply their knowledge, and find out answers for themselves. Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. Planning involves teachers creating engaging lessons, involving high-quality resources to aid understanding of conceptual knowledge. Teachers use precise questioning in class to test conceptual knowledge and skills, and assess pupils regularly to identify those children with gaps in learning, so that all pupils keep up. Tasks are selected and designed to provide appropriate challenge to all learners, in line with the school's commitment to inclusion, as well as opportunities to work independently and collaboratively. Teachers use varied teaching approaches, maximising learning opportunities as they arise, adapting and responding to the experiences of the children. Teachers are encouraged to find opportunities for outdoor learning.

At the end of each topic, key knowledge is reviewed by the children and checked and assessed by the teacher and consolidated as necessary.

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 Days and Weeks, 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.

The science lead works closely with other science leads within the education trust and regularly shares updates and available resources with all staff. Teachers are offered CPD training in staff meetings.

Impact

We want children to enjoy and value science and appreciate the range of skills it will provide them with. An essential part of children becoming scientists is promoting curiosity and encouraging them to ask questions. By the end of KS2, our expectation is that children will be able to develop their own questions, plan different types of enquiries to answer those questions and communicate their findings in a variety of ways. Children will understand that part of science is failing and that problem solving helps us to overcome these failures. Children will have a clear understanding of how scientists both past and present have contributed to society's understanding of the world around them. They will understand the role that science and other STEM subjects play in solving some of the key problems facing the world, such as climate change.

Pupils are provided with a range of opportunities to showcase and communicate their ideas, research and findings.

We ensure that when assessing our pupils, evidence is drawn from a wide range of sources to inform the process including: interaction with pupils during discussions and related questioning, day to day observations, practical activities such as practical enquiries, the gathering, presentation and communication of fieldwork data and writing in different genres. The outcomes of each enquiry serve to inform the teacher's developing picture of the knowledge and understanding of each pupil and to plan future learning accordingly. Teachers also use end of unit tests and Kahoot quizzes as assessment tools. Assessment at end of each unit is recorded on Simple Assessment Tracker for Science, which enables us to see the progress of all the children within the school. Regular scrutiny of books by the subject leader and SLT takes place to check for progress.

At the end of each year we make a summative judgement about the achievement of each pupil against the subject learning goals for science in that year. At this point we decide upon a 'best fit' judgement as to whether the pupil has achieved and embedded the expected learning goals, exceeded expectations or is still working towards the goals.

Pupil voice is measured and demonstrates that pupils enjoy science, they are engaged and enthusiastic. They particularly enjoy experimenting, science trips and further opportunities to practise observation skills.