

## Science Curriculum 2021-22

### Curriculum Intent

#### What is the intent of the science curriculum?

- Science teaching at St Thomas More Catholic Primary School aims to give all children a strong understanding of the world around them whilst acquiring specific skills and knowledge to help them to think scientifically, gain an understanding of scientific processes and familiarise themselves with the uses and implications of science from yesterday, for today and for the future. It is our vision to instil a lifelong love of science within our children, enabling them to have **high aspirations** and be aware of all future possibilities.
- In line with Development Matters (2021) – Understanding of the World and The National Curriculum Programmes of Study for Science, (2014), scientific enquiry skills, knowledge and conceptual understanding are embedded in each topic the children study and these areas are revisited and developed throughout their time at school. Introducing knowledge and skills experience in Early Years Foundation Stage, topics are then taught in Key Stage One and studied and revisited again in further detail throughout Key Stage Two. This model allows children to build upon their prior knowledge in a series of progressive steps (spiral curriculum) whilst increasing their enthusiasm for science and embedding this conceptual knowledge and enquiry skills into their long-term memory.
- Specialist vocabulary for topics is also taught and developed, and effective questioning to communicate ideas is an important part of lessons. Links between other areas of the curriculum are also encouraged in order to support and strengthen their scientific knowledge, conceptual understanding and skills in enquiry. Use of a variety of scientific, specialised and non-specialised equipment and resources, and a range of learning opportunities within and out of the school grounds, are utilised in order to maximise children’s engagement, motivation and learning experiences. Alongside these measures, independence in scientific study is encouraged so that pupils learn to understand the world around them: it will develop their natural curiosity, enable them to question why things happen and provide opportunities for critical evaluation of evidence and proof, while equipping them with the **moral values** of respect for living organisms and the physical environment.
- To be able to live science in everyday life is the key to our vision: for children to understand the role it plays in the world is vital for them as individuals, as part of society, for the world and for the future. Our intent is that for every child leaving the school, the passion and essence of science is embedded into their thinking and being.

## Curriculum Implementation

In ensuring high standards of teaching and learning in science, St Thomas More Catholic Primary School implements a broad and balanced science curriculum that is progressive throughout the whole school.

### How does the curriculum overview allow all children to achieve?

- Planning for science is a process led and overseen by the subject leader and one in which all teachers are involved to ensure that the school gives full coverage of the National Curriculum Statutory Framework (2014) and Development Matters (2021).
- Teachers follow the Science Curriculum Map for their year group and refer to the Science Progress Ladder to ensure learning is built on previous knowledge and conceptual understanding; equally, teachers plan in conjunction with the children's future learning so that knowledge and concepts are secured ready for the next stage in their scientific development.
- Science is often taught as discrete units and lessons in order to ensure coverage; it is also delivered through cross-curricular activities so that learning is maximised and children see science in every area of life.
- Lessons are timetabled at least once weekly; lesson lengths and amounts vary each week depending on the content.
- Teachers' planning ensures that investigations and scientific enquiry is developed in line with the curriculum in order to enhance knowledge acquisition and conceptual development. Activities are planned to ensure that working scientifically is embedded into the topic being taught. Challenge is also an integral part of planning and teaching in order to develop critical thinking.
- Children are provided with regular opportunities to develop strategies for questioning and thinking. Self-assessment, independence and autonomy are encouraged in order to ensure the children learn to be scientific critical thinkers.
- Planning ensures clear learning outcomes for each lesson with a variety of challenging activities planned at all levels of ability to guarantee learning is maximised for each child.
- Planning and teaching of lessons involves adapting and extending the curriculum to match all pupils' needs. This includes support from tailored work opportunities, use of appropriate resources in order to access materials or extend learning, and the use of teaching assistants.
- Where appropriate, teachers also plan with the children's interests in mind in order to assist children to answer their own scientific questions.
- Use of technical, scientific vocabulary is planned for and encouraged throughout science lessons and in other learning and school experiences.
- The school is well-resourced, with a variety of science equipment, and outdoor-learning is part of planning and teaching, including the regular use of Forest School, Opal Learning and Muddy Puddle Teaching.
- A high level of teacher subject knowledge of science in the school is maintained by meetings, training and professional development. Membership to science associations are also held and updates are shared with staff. The school is currently working towards gaining the Primary Science Quality Mark. This all, in turn, ensures children are receiving quality science curriculum and experiences.
- Monitoring is carried out at regular intervals as a means of self-evaluation and improvement to better the science education for the children.
- Parents, governors and the local community are encouraged to participate in order to enhance the curriculum, through 'Bring a Parent to Science' and across school opportunities.

- Science Week and STEAM Week are held annually to broaden experiences. Science specialists, speakers, educators and school trips are arranged, where possible, by year groups as part of their science curriculum planning.

### SEND/Disadvantaged

Our aim is to make our SEND and Disadvantaged children to feel valued and included, and to have **high aspirations**. Inclusion is embedded in our practice and teachers regularly review and reflect upon their own practice to ensure progress is made. Teaching is adapted and responds to the strengths and needs of all learners.

### How is prior knowledge revisited?

- Through curriculum planning, prior knowledge is revisited in order to build upon and develop into the next stage of learning. These are taken from the Curriculum Maps and Progress Ladders so that lessons build on one another in each topic and across year groups.
- Monitoring and sharing of planning and children's work allows staff to build on previous knowledge and prepare for the next stage of learning.
- Assessments are carried out in order to assist planning.

### How is assessment used effectively?

- Assessment is used consistently and strategically following a 'plan, do and review' cycle to evaluate children's progress, knowledge and understanding. It is a valuable tool used by teachers to be able to identify individual strengths and areas for development to inform next steps in planning and teaching. Teacher, peer and self-assessment, oral and written feedback and formative and summative assessments inform next steps, interventions, reviews and provision to ensure children are supported and extended.'

### How is cultural capital developed through the curriculum?

- Children are provided with the scientific experiences, skills acquisition, knowledge and conceptual developments in order to use in their social engagements and participation in the bigger picture of life; these are practised throughout the school.
- Science Club and competitions increase science capital and raise the aspirations of our children.

### Curriculum Impact

The impact and measure of this is to ensure children not only acquire the appropriate age-related knowledge linked to the science curriculum, but also the scientific knowledge and skills which will equip them to progress from their starting points and how to live within their everyday lives.

Our science curriculum is varied, thorough and planned to demonstrate progression. Children meeting the success criteria for the curriculum are deemed to be making good or better progress, with enjoyment, enthusiasm and **high aspirations** being among the markers of success. This will be seen not only in science lessons, but within life at school, life outside school and in their future lives once they leave school.

- Children will demonstrate clear scientific knowledge, conceptual understanding and exhibit key enquiry skills from their relevant starting point; these will meet the requirements of the National Curriculum (2014) and Development Matters (2021) age-related expectations as a minimum. There will be clear, even accelerated, progression in their learning throughout each lesson, each topic, each year group, each key stage and throughout their time at the school.
- Children will be confident and competent in their application of science in their everyday lives, and will skilfully use their knowledge and abilities to navigate themselves around the world. They will competently be able to communicate their science knowledge, demonstrate their science skills and show their critical thinking in a variety of ways.
- Children will retain this knowledge pertinent to science in a real-life context: they will have passion, enthusiasm, energy and enjoyment of the world around them.
- Children will have **high aspirations**, which will see them through to further study, work and a successful adult life.