



Science Policy

Intent

The 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 Thornaby Church of England Primary School 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.

Implementation

Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all pupils 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 EYFS and KS1 in planned and arranged Cornerstones topic blocks. In LKS2 and UKS2 pupils will engage in science through discreet lessons and through topic to enable full coverage and increase the achievement of a greater depth of knowledge.
- 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. 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.

- We build upon the knowledge and skill development of the previous years. As the children's knowledge and understanding increases, and they become more proficient.

1. Teaching and Learning

Our plans show the breadth of study as well as how 'Working Scientifically' is embedded within each unit of work. Plans also include the key knowledge for each topic that all children should know. Scientific vocabulary is to be taught with each unit of work to enable children to articulate scientific concepts clearly and precisely. The teaching of Science may be as a whole class, in small groups or individual work.

2. Working Scientifically

Working Scientifically must always be taught through and clearly related to the programme of study. Pupils learn to use a variety of approaches to answer relevant scientific questions by collecting, analysing and presenting their findings.

Children will use different types of enquiry throughout each year:

- Observe over time
- Classifying and grouping
- Pattern seeking
- Comparative and fair test
- Research and secondary sources

Through this approach we aim to develop the following skills: observing, raising questions, predicting, hypothesising, planning, controlling factors (fair testing), measuring, collecting and interpreting data, constructing tables and graphs, explaining, communicating and evaluating findings, researching information.

3. Attitudes

Through Science we endeavour to foster the following qualities:-
Excitement, curiosity, perseverance, open-mindedness, self-discipline, sensitivity to others, independence, adaptability, co-operation, and care for living things.

4. Progression

We recognise that our curriculum planning must allow for children to gain a progressively deeper level of knowledge, understanding and skill competency as they move throughout the school. Our Science plans are progressive and enable teachers to adjust plans to meet the particular needs of individuals or groups of children.

A science skills map helps teachers to plan for progression in AT1 and is used to support planning.

A science key knowledge map helps to ensure that children are revisiting topics and building on previous knowledge.

5. Records and Assessment

Formative assessments are carried out daily and used to clarify learning and adapt teaching. These are done through mini plenaries and 'live' individual feedback as pupils work, by teachers and teaching assistants. Peer to peer feedback, discussion and reflection is used regularly as an essential part of learning. The Express stage of topic allows for the children to demonstrate their learning from the topic. Assessment activities are varied and can be a piece of writing, a quiz, a piece of practical work or a presentation. Teachers may use evidence from discussions or written work to assess attainment. Objective sheets are used at the beginning and end of each topic to assess prior knowledge and learnt knowledge. The children have the opportunity to reflect on their learning/self-assess at the end of the topic identifying what they have learnt throughout the topic.

Following the completion of these summative assessments a judgement is made as to whether pupils are working below, at or above the expected level. These are recorded on a whole school foundation assessment tracker. This enables subject leaders to easily monitor the work produced across school. When a pupil reaches the end of a key stage a formal judgement is made using the same criteria.

6. Monitoring

The Science curriculum is monitored by the science co-ordinator through staff meetings, observation of teaching, monitoring of plans, children's work, and pupil voice. Through our academy cluster we are working on devising a science exemplar file to share work across the academies and work towards using this as a moderation tool.

7. Special Educational Needs

Planning for pupils with SEND is part of the planning process that we do for all pupils at Thornaby Church of England School. Removing barriers for pupils with SEND ensures that all children can learn and progress in ways that are personalised to them but to also ensure they have access to a broad and balanced curriculum.

We strive hard to meet the needs of those pupils with special education needs and take reasonable steps to achieve this. To ensure our SEND children learn more effectively, it may be appropriate to plan smaller steps for them to achieve the learning goal, adapt the task through differentiation, alter the materials (such as less on the page, enlarged font, simple language etc), use a range of teaching styles or provide additional resources, materials or equipment. The modifications we make to each lesson depends on the SEND needs of the children and the intended learning outcome.

The SENCO is available to support staff with advice concerning any aspect of special educational needs including the provision or adaptations that need to be in place for SEND children.

Impact

The successful approach at Thornaby Church of England Primary 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, continuous and progressive learning outside the classroom is embedded throughout the science curriculum. Through various workshops, trips and interactions and participation in a whole school STEM week, 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, as a result of our community links and connection with national agencies such as the STEM association, Middlesbrough Football club and Inspire 2 Learn Teesside enable children to learn from and work with professionals, ensuring that children have access to positive role models within the field of science from the immediate and wider local community.

Children at Thornaby Church of England Primary overwhelmingly enjoy science, and this results in motivated learners with sound scientific understanding.