Science Policy

"Teach a child to choose the right path and when they are older, they will remain upon it."

Proverbs 22:6

School Vision

At St Thomas' CE Primary School, we are taught to choose the right path. We build strong foundations that empower us to make the right choices and become valuable citizens, within our community and the wider world.

We model positive behaviours and set high expectations, through the teaching of Christian and British values, ensuring we are equipped with the skills and knowledge to build a positive future.

Ensuring that all pupils at St Thomas'
Learn, Enjoy, Achieve.

Intent

At St Thomas' our intention is preparing children today for a new tomorrow through our science teaching; equipping them with the scientific knowledge, giving all children a strong understanding of the world in which they live in.

The aim of the Science National Curriculum is to ensure that all pupils develop scientific knowledge and understanding about the world God created. We encourage an inquisitiveness, inspire a sense of awe and wonder and investigate the children's curiosity through exciting and practical investigations ensuring the pupils feel like real scientists.

Children are encouraged to become global citizens as they begin to make sense of a changing world and explore how humans can have a positive and negative impact on the world.

Science Vision and Principles for Learning Vision

At St Thomas' we inspire our children with science that allows them to explore their scientific knowledge and curiosity, whilst extending their vocabulary through hands on experiences and thought-provoking investigations.

Principles

In order to achieve our vision, we:

- Provide opportunities for working scientifically.
- Promote vocabulary rich learning environments.
- Create stimulating learning to provoke questions.
- Aim to embed enrichment opportunities.

Implementation

The Science Curriculum is delivered according to our long-term plan, which was created in response to the statutory requirements of the National curriculum 2014.

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;

As a school we have created our own pedagogical approach to delivering each subject. This can best be described as follows:

Link it – Learn it – Check it- Show it – Know it - incorporating the 'I do', 'We do', 'You do' sequence within it.

For each stage there are important aspects which has been developed from our deeper understanding of cognitive load theory.

Link it- This is the stage where we work at igniting children's awareness of the topic being studied. In some subjects this works through the use of echo or choral reading of information they are about to learn as part of the topic.

Learn it – This is the stage where the teacher provides new knowledge and is part of the 'I do' sequence in our day-to-day lessons. At this stage we limit the number of questions we are asking children and focus on the teacher's exposition.

Check it – This is an opportunity for the teacher to ensure that there is full understanding happening. This is strongly associated with the 'we do' sequence in the lesson. Questions are encouraged at this stage.

Show it – This is an opportunity for children to demonstrate what they know. In some cases, this can be done orally but, in most cases, it is shown in children's books. This links with the 'you do' sequence in the lesson.

Know it – This is where we get children to retrieve information they have learned. This is normally done at the end of the learning so that children can demonstrate that they have remembered key knowledge for the long-term.

In addition: -

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, often involving high-quality 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 all children keep up.

We build upon the learning and skill development of the previous years, as seen in MTPs. 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.

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.

Impact

The successful approach at St Thomas' 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. Children learn the possibilities for careers in science, through the celebration of science during British Science and STEM weeks. From this celebration of science, all children feel they are scientists and capable of achieving.

Children at St Thomas' overwhelmingly enjoy science and this results in motivated learners with sound scientific understanding.

Aims of Science Policy

Our Science Policy follows The National Curriculum 2014 for Science Guidelines and 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 knowledge required to understand the **uses and implications** of Science, today and for the future.

Purpose of Study

A high-quality Science education provides foundations for understanding the world. Science has changed our lives and is vital to the world's future prosperity. Through building key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how key knowledge and concepts

can be used to explain what is occurring, predict how things will behave, and analyse causes. This understanding should be consolidated through their appreciation of applications of Science in society and the economy.

In teaching Science we are developing in our children:

- a positive attitude towards Science and an awareness of its fascination;
- an understanding of Science through a process of enquiry and investigation;
- confidence and competence in scientific knowledge, concepts and skills;
- an ability to reason, predict, think logically and to work systematically and accurately;
- an ability to communicate scientifically;
- the initiative to work both independently and in co-operation with others;
- the ability and meaning to use and apply science across the curriculum and real life.

Planning

School curriculum

The programmes of study for Science are set out year-by-year for Key Stages 1 and 2. We are however, only required to teach the relevant programme of study by the end of the key stage. Within each key stage, School has the flexibility to introduce content earlier or later than set out in the programme of study and may introduce key stage content during an earlier key stage if appropriate. Teachers will base their planning on the programmes of study for their relevant year groups. Teachers will provide differentiation of tasks/activities within their weekly/Medium term planning.

Scientific knowledge and conceptual understanding

The programmes of study describes a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of Science, including collecting, presenting and analysing data.

The nature, processes and methods of science

'Working scientifically' specifies the understanding of the nature, processes and methods of Science for each year group. It should not be taught as a separate strand.

Attainment targets

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Foundation Stage

Pupils explore science topics through making predictions, using their senses and investigating materials and their properties. Science is taught through the strand of, 'Understanding the World'. Science teaching and learning is also linked to the other strands of The EYFS framework for learning, 2021.

Teachers and teaching assistants support pupils to develop a solid understanding of things occurring around them in their day-to-day lives. Children are encouraged to be creative and inquisitive as they participate in activities. Pupils are encouraged to use their natural inquisitiveness, while taking part in exploratory play in specific scientific areas as well as areas that link across the EYFS framework.

Key Stage 1

The main focus of science teaching in Key Stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about Science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.

Pupils should read and spell scientific vocabulary at a level consistent with their reading and spelling knowledge at Key Stage 1.

Lower Key Stage 2 – Years 3 and 4

The main focus of Science teaching in Lower Key Stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. 'Working scientifically' must **always** be taught through and clearly related to substantive Science content in the programme of study.

Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing reading and spelling knowledge.

Upper Key Stage 2 – Years 5-6

The main focus of Science teaching in Upper Key Stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At Upper Key Stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer Science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings. Pupils should read, spell and pronounce scientific vocabulary correctly.

'Working and thinking scientifically' must **always** be taught through and clearly related to substantive Science content in the programme of study.

Cross-curricular Science Opportunities

Teachers will seek to take advantage of opportunities to make cross-curricular links. They will plan for pupils to practise and apply the skills, knowledge and understanding acquired through Science lessons to other areas of the curriculum.

SEND, Pupil Premium and Greater Depth

All children at St Thomas' will receive 'Quality First Teaching.' Any child with SEND or Pupil Premium funding may have work additional to or differentiated in order to better support them in accessing the curriculum dependent on their needs.

Our school offers a creative and varied curriculum providing children with a variety of opportunities in order to reach their full potential. Our aim for each child to make excellent progress from their individual starting point.

Assessment

All Science learning is assessed in line with the school assessment policy. Teachers will assess children's work in Science against the objectives for the year group.

At the end of Key Stage 1 and 2, TAFs (Teacher Assessment Frameworks) will be used to evidence and assess data on a National basis.

Classroom Environment

In all classrooms, the celebration of Science should be clearly evident. This should be up to date with the latest unit, complete with examples of children's learning. Displays should have a balance of informative, celebratory and interactive elements.

At St Thomas' working walls are essential to support the learning of children throughout the school. All classrooms should have an engaging Science area, which inspires children to delve further into the taught unit, e.g. books and hands on resources.

Home/school Links

At St Thomas', we believe that parental support is vital to aid the progress of the children. We aim to involve our parents in Science as much as possible through:

- Parents evenings
- A clear overview of Science within the class matrix Sharing of assessment data and next steps in learning.
- Celebration of science through British Science and STEM week
- Science challenges

Leadership and Management

The subject leader's role is to hold a high level of subject pedagogical content and an understanding of the critical endpoints that come before and after. Analysing and building the appropriate provision in all areas of Science, whilst cultivating the staff's pedagogical content knowledge to maximise learning across their school.

Subject leaders will support staff in the following areas:

- Disseminating relevant information and providing relevant training for staff (direct or through other professionals)
- Demonstrate a commitment to keeping up to date in current issues and matters whilst developing CDP for themselves and staff members
- Leading by example through modelling quality first lessons and teaching styles
- Having a high quality knowledge and materials to ensure progression in the subject and to make certain these are explicitly clear for staff to follow and plan from
- Identifying and supporting development needs for staff- including providing induction to associate teachers, Early Career Teachers (ECTs) and new members of staff on subject content
- Monitoring standards, attainment and progress across school including providing feedback to share good practice and develop further to raise standards.

Monitoring and Evaluation

The quality of teaching and learning is monitored as part of the appraisal process through lesson observations and the progress and attainment document. Progression across the school is monitored by the subject leader including the implantation, impact and assessment of learning. The subject action plans and advisors identify actions to raise standards.

The subject leader will also provide an annual summary report to the Headteacher and governors. This will evaluate the success and areas for development. A named member of the governors is allocated to Teaching and Learning. The Link governor will meet at least every term to discuss, monitor and evaluate current provision.

Safety

Following COSHH guidance 'Be Safe'.

Policy title:	**Science Policy**
Approved by:	**Full Governing Body**
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