

St Matthew's C of E Primary School

Science Policy

Our mission statement:

We aim to provide a positive learning experience in a safe and respectful environment. We strive to teach an inspiring and inclusive curriculum that promotes a love of learning. As a Christian school, we endeavour to develop the spiritual and moral values of all members of the St. Matthew's family, and a meaningful, loving relationship with God. We want our children to be cheerful and independent individuals who reach their potential and are proud of their achievements. We hope to develop confident, caring citizens who are well prepared to enjoy happy and rewarding lives.

Our motto: Live, Love, Learn

Policy Adopted	
Date	By Whom
15.01.2020	Achievement Committee
Date for next review: Jan 2023	
Signed by Chair of Governors	
Date of Signature	

This document is a statement of the aims, principles and strategies for teaching and learning of Science at St Matthew's C of E Primary school. This policy should be read in conjunction with the policies on:-

- Teaching & Learning
- Inclusion
- Behaviour
- Assessment and Record Keeping
- Equal Opportunities

AIMS AND OBJECTIVES

Science is a body of knowledge built up through experimental testing of ideas. Science is also methodology, a practical way of finding reliable answers to questions we may ask about the world around us. Science at St. Matthew's is about developing children's ideas and ways of working that enable them to make sense of the world in which they live through investigation, as well as using and applying process skills.

Science stimulates and excites pupils' curiosity about phenomena and events in the world around them. Because science links direct practical experience with ideas, it can engage learners at many levels. Scientific method is about developing and evaluating explanations through experimental evidence and modelling. This is a spur to critical and creative thought. Through science, pupils understand how major scientific ideas contribute to technological change – impacting on industry, business and medicine and improving the quality of life. Pupils recognise the cultural significance of science and trace its world-wide development. They learn to question and discuss science-based issues that may affect their own lives, the direction of society and the future of the world.

At St. Matthew's we believe that a broad and balanced science education is the entitlement of all children, regardless of ethnic origin, gender, class, aptitude or disability.

The aims and objectives of teaching Science at St. Matthew's are to:

- Stimulate and excite pupils' curiosity about changes and events in the world
- Satisfy this curiosity with knowledge;
- Engage pupils as learners at many levels through linking ideas with practical experience;

- Help pupils to learn to question and discuss scientific issues that may affect their own lives;
- Help pupils develop, model and evaluate explanations, through scientific methods of collecting evidence using critical and creative thought;
- Show pupils how major scientific ideas contribute to technological change and how this impacts on improving the quality of our everyday lives;
- Help pupils recognise the cultural significance of science and trace its development.

NATIONAL CURRICULUM ENTITLEMENT

Science is a core subject of the National Curriculum and pupils undertake science activities every week at both key stages. The work covered in Key Stage 1 builds on the Early Years Foundation Stage. Pupils in Reception develop their knowledge, understanding and skills through play activities and direct teaching from which the pupils undertake planned tasks. All National Curriculum programmes of study are covered throughout Key Stages 1 and 2.

PLANNING

Planning takes into account that the school places a high emphasis on the development of pupils' skills of working scientifically. In the majority of lessons the skills for working scientifically are taught alongside the science content in the programme of study. Each teacher has an overview of the topics that should be taught for their year group. Where there are mixed age classes the children in each year group within the class are taught science separately so as to ensure that all objectives are covered.

The objectives of planning in science are as follows:

- To set clear achievable learning objections for the children.
- To ensure that the work is matched to pupils' capabilities, experience and interest.
- To ensure progression, continuity and subject coverage throughout the school.
- To ensure there is a range of scientific investigations included.
- To develop assessment procedures.
- To provide criteria for the monitoring and evaluation of teaching and learning.

Curriculum planning in science is carried out in three phases (long-term, medium-term and short-term). The long-term plans map the scientific topics studied in each term during the key stage.

Our medium-term plans give details of each unit of work for each term. The class teacher is responsible for expanding the medium-term plans to produce specific learning objectives for each lesson (short-term plans).

The topics in Science are planned so that they build upon prior learning. We ensure that there are opportunities for children of all abilities to develop their skills and knowledge in each unit. Re-visiting, reinforcement and extension of learning is also built into the Science curriculum so that children are increasingly challenged as they move up through school.

TEACHING AND LEARNING STYLES

Teaching Styles

We use a variety of teaching and learning styles in our Science lessons. We believe in whole-class teaching methods, and we combine these with enquiry-based research activities. We encourage children to ask as well as answer questions that enhance working scientifically. Through employing a

variety of teaching methods, we hope to teach the children good practice and increase their scientific knowledge and vocabulary. We offer them the opportunity to use a variety of data as a stimulus for learning, such as graphs, statistics, real life scenarios and a chance to find out answers to questions. We also endeavour to allow children to use ICT, such as Data-logging equipment and the Intel Microscope, where this serves to enhance their learning.

Science Teams

During the Science lessons the children are split into mixed-ability Science groups. These teams can be named if the teacher wishes to do so. The children are encouraged to work collaboratively with their team members during theoretical and practical work. Not only does this help children who less confident than others, it encourages co-operation and confidence and allows all children to be treated equally. The teams are provided with tasks, challenges and hands-on experiments which children engage in.

SKILLS DEVELOPMENT

The teaching of Science should develop the key scientific skills of:

- Hypothesising and predicting.
- Planning and carrying out investigations.
- Observing and measuring.
- Presenting results by appropriate means, including use of ICT.
- Evaluating results and drawing conclusions.

Science teaching should also contribute to the cross curricular skills of:

- Discrimination
- Enquiry
- Reasoning
- Creative thinking
- Evaluation
- Problem solving
- Communication
- Collaboration
- Manipulation

We use homework to support school and class activities. This relates to the school's overall homework policy.

CROSS CURRICULAR OPPORTUNITIES

Mathematics

This is the subject, which most obviously links with Science. Science offers opportunities for practical application of many mathematical skills from basic computation to the drawing and interpretation of graphs, tables and pie-charts. Through working on investigations children learn to estimate, predict, accurately observe and record events. Science also provides opportunities for practical measurement and comparisons of: time, weight, length, capacity, area, volume and the weather.

English

The whole range of English skills can be developed through Science in a variety of ways. Speaking and Listening – Science lends itself to class and group discussions, debate, verbal descriptions and

the reporting back of findings from investigations. Scientific vocabulary is developed, broadening children's language. Reading – Children must read the instructions from sheets or work-cards in order to carry them out. Research from written sources or ICT based sources is also a key skill. Linking the class reading book to a Science topic is also possible. Writing – Science can provide many opportunities for the development of non-fiction writing, reporting, recording, instructing and describing.

Computing

Staff and children use ICT in Science lessons where appropriate. They use it to support their work in Science by learning how to find, select and analyse information on the Internet and on CD-ROMs. Children may use ICT to record, present and interpret data and to review, modify and evaluate their work and improve its presentation.

Geography and History

In examining how scientific ideas affect the world we live in, links with geographical and historical aspects of our environment are inevitable. These links tend to be more obvious in the natural Science context; however, study of the environment also lends itself to work in forces and structures, the nature of materials, energy transfer and other aspects of physical Science.

Personal, Social and Health Education (PSHE) and Citizenship

Science makes a significant contribution to the teaching of PSHE. Firstly, the subject matter, primarily ourselves and growth enhances children's awareness of how bodies change and how to maintain our bodies in a fit and healthy state. P.E can also be linked in closely with science. Matters of citizenship and social welfare are raised when children study recycling and how environments are changed for better or worse. Opportunities to take part in debate and discussions are also available.

Spiritual, moral and cultural development

Science teaching offers children many opportunities to examine some of the fundamental questions in life, for example, the evolution of living things and how the world was created. Science also raises many moral and social questions, e.g. pollution. Children are given the chance to reflect on the way people care for the planet and how science can contribute to the way we manage the Earth's resources. Science teaches children about the reasons why people are different, by developing the children's knowledge and understanding of physical and environmental factors, it promotes respect for other people.

We develop science informally through science activities that are helped by outside agencies, school visits, parent meetings and other out-of-school activities.

EQUAL OPPORTUNITIES IN SCIENCE

Science is taught within the guidelines of the school's equal-opportunities policy.

- We ensure that all our children have the opportunity to gain science knowledge and understanding regardless of gender, race, and class, physical or intellectual ability.
- Our expectations do not limit pupil achievement and assessment does not involve cultural, social, and linguistic or gender bias.
- We aim to teach science in a broad global and historical context, using the widest possible perspective and including the contributions of people of many different backgrounds.

- We draw examples from other cultures, recognising that simple technology may be superior to complex solutions.
- We value science as a vehicle for the development of language skills, and we encourage our children to talk constructively about their science experiences. “Talking Science” is a useful way in which we encourage this.
- We recognise the particular importance of first-hand experience for motivating children with learning difficulties.
- We exploit science’s special contribution to children’s developing creativity; we develop this by asking and encouraging challenging questions and encouraging original thinking.

ASSESSMENT AND RECORDING IN SCIENCE

We use assessment to inform and develop our teaching.

- Topics commonly begin with an assessment of what children already know.
- We use Assessment for learning (AfL). Children are involved in the process of self-improvement, recognising their achievements and acknowledging where they could improve. Activities during, and at the end of, each topic record achievement and celebrate success. For example, children at the end of Key Stage 2 can self-mark completed work - identifying good points in their work and ways in which they could improve.
- We mark each piece of work positively, making it clear verbally, or on paper, where the work is good, and how it could be further improved- see the Marking Policy for more information on the way marking is carried out at St. Matthew’s.
- The school science subject leader monitors progress through the school by sampling planning, children’s work and conferencing with pupils at regular intervals. Children who are not succeeding, and children who demonstrate high ability in science, are identified and supported.
- Teachers can use end-of-unit tests to assess learning and identify areas where further reinforcement is needed. Equally important is the continuous assessment of children’s work, much of which is informal. This assessment is used to inform teaching throughout the school.
- It is entirely at the teacher’s discretion as to what assessment procedure is used, e.g. test, quiz, question/answer session, end of unit mind mapping etc.
- Teachers record assessment information for their class on progress ladders. This clearly shows progression across all areas of science throughout KS1 and KS2.
- A step assessment is recorded in Target Tracker at the end of each year.
- Reports to parents are made verbally each term, and written once a year, describing each child’s attitude to science, his/her progress in scientific enquiry and understanding of the content of science.

RESOURCES

Organisation

All Science resources are stored in the Science cupboard, which is to be locked for safety reasons. Children are not allowed in unless accompanied by a member of staff.

Written Sources

Selections of non-fiction books are stored in clearly labelled topic boxes. There are also files and notes on various topics. These are to be found on the shelves in the science cupboard.

Practical Equipment

All practical equipment and resources are stored in the larger red topic boxes. These are labelled with a list of contents. Staff should be careful when lifting and placing boxes back onto the shelves for Health and Safety reasons.

Outside Resources

The school grounds have areas that can prove particularly useful for habitat and mini-beast studies, e.g. the school garden, the hill, the grassed areas surrounding the KS1 and KS2 playgrounds and the non-tarmac playground.

FUNDING

Spending in Science is funded mainly from the Science budget and is linked to the School Development Plan.

Revised and accepted by the Governors January 2020

Last reviewed: January 2017

Date of next review: January 2023