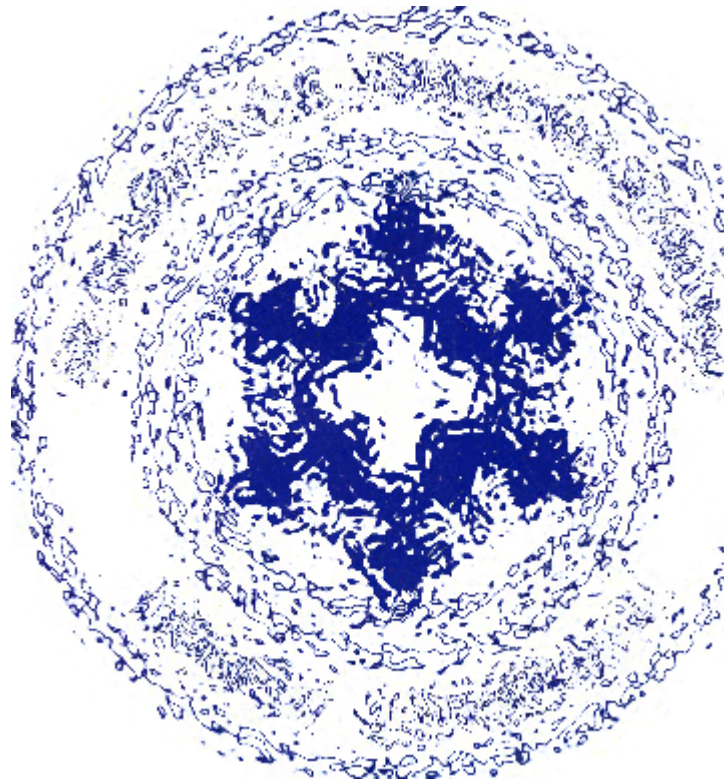


Policy for Science

St Mary's CE School, Kirkby Lonsdale



© STEM Learning Ltd.



Introduction

This policy outlines the teaching, organisation and management of science taught and learnt at St Mary's CE School, Kirkby Lonsdale.

The policy has been drawn up as a result of staff discussion and its implementation is the responsibility of all teaching staff. The responsibility for monitoring and review rests with the science subject leader Melissa Smith.

The main purposes of this policy are:

- To establish an entitlement for all pupils.
- To establish expectations for teachers of this subject.
- To promote continuity and coherence across the school.

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 and skills required to understand the uses and implications of Science, today and for the future.

The objectives of teaching science in our school are:

- Using scientific contexts to develop and consolidate cross curricular skills in literacy, Maths and ICT.
- Providing children with whole school Science weeks where children can work collaboratively to engage and challenge their thinking and to learn about discoveries and inventions that have changed history.
- Teaching science in a global and historical context; including the contributions

- significant scientists from a range of cultures;
- Developing and extending pupils' scientific knowledge and understanding;
- Developing pupils' ability to work scientifically and involve pupils in planning, carrying out and evaluating investigations;
- Developing pupils' scientific vocabulary and ability to articulate scientific concepts clearly and precisely;
- Ensuring that all pupils are appropriately challenged to make good progress in science.
- Take part in National Science and Engineering week and invite scientists to share their knowledge and experience of what science means to them.
- Maintain close links with QES, utilising their expertise and resources.
- Work in and enjoy our outside spaces as much as possible, taking inspiration from our locality.

Teaching and learning style:

Science teaching focuses on enabling children to think as scientists. We place an emphasis on practical learning both in and out of the classroom. We encourage visitors, such as STEM ambassadors to come into the school and talk about their experiences and understanding of the scientific world. We recognise and value the importance of hands on experiments and practical teaching, and we regard this as an important way of stimulating interest in the scientific world.

We recognise that in all classes children have a wide range of ability in science, and we seek to provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this by:

- setting tasks which are open-ended and can have a variety of responses; setting tasks of increasing difficulty, some children not completing all tasks;
- grouping children by ability in the room, and setting different tasks for each ability group; providing resources of different complexity, depending on the ability of the child;
- using teaching assistants to support children individually or in groups.

Emphasis is placed on the development of skills and an investigative perspective alongside scientific knowledge. A variety of teaching approaches are used:

- Teacher presentations and child led learning.
- Question and answer sessions, discussions and debates.
- Individual and group research.
- Investigating artefacts and sources of evidence.
- Fieldwork, and visits to local points of scientific interest.
- Workshops and guest speakers.

Promoting key skills through science:

At St Mary's we believe that the best science teaching nurtures and develops pupils' curiosity in the subject whilst also helping them to fulfil their potential. For our pupils to achieve well in science, they need to acquire the necessary scientific knowledge and also be able to enjoy the experience of engaging and purposeful scientific enquiry in order to help them to answer scientific questions about the world around them. The progression of skills throughout the school is monitored and should be a leading emphasis in all that we teach.

We strongly believe that our outdoor spaces are a valuable and essential part of our curriculum, none more so than in science. Appreciating the environment around us is an integral part of our school, and science is central to this. Teachers are encouraged to plan engaging and practical activities outside as much as the curriculum allows.

The new National Curriculum 2014 states why we teach science in schools: 'A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics...Through building up a body of 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.'

At St Mary's we aim to provide a high-quality Science education to develop a greater understanding the world. Through building key foundational knowledge and concepts, pupils at St Mary's 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 how Science has changed our lives and it is vital to the world's future prosperity.

Through our science teaching at St Mary's we aim to develop 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 to use and apply science across the curriculum and real life.

Promoting key vocabulary through science:

Through our teaching of science, we provide opportunities for pupils to develop the key vocabulary by:

- Kinaesthetically and verbally reviewing vocabulary in all lessons
- Displaying vocabulary in books and the school environment
- Encouraging a rich use of vocabulary in learning
- Promoting correct terminology
- Explicitly review and consolidate previous vocabulary learned
- Use of 'Knowledge Organisers' to support learning

Science curriculum planning:

We use the National Curriculum (2014) as the basis for our planning in science, building on the EYFS Curriculum. We ensure that there are opportunities for children of all abilities to develop their skills and knowledge in each unit, and we plan progression into the scheme of work, so that the children are increasingly challenged as they move through the school. This is further enhanced by theming units studied to enable children to make connections between units of study.

Responding to pupils' diverse learning needs – Challenge and Support:

At our school we teach science to all children, whatever their ability and individual need. This is in accordance with the school's curriculum policy of providing a broad, challenging and balanced education to all children. Through our science teaching we provide learning opportunities that enable all pupils to make good progress and recall information. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those with special abilities and talents, new arrivals and those learning English as an additional language, pupils who are economically disadvantaged and other identified groups and we take all reasonable steps to achieve this. Teachers have had specific training on gender differences within science; girls only opportunities have been provided in the form of clubs and focus.

Teachers' planning will set high expectations and provide opportunities for all pupils to achieve, so that everyone can take part in lessons fully and effectively. Teachers will take specific action to respond to pupils' diverse needs by:

- creating effective learning environments; securing their motivation and concentration;
- providing equality of opportunity through teaching approaches – ensuring that children of all intelligences are given the opportunity to succeed and make progress;
- using appropriate assessment approaches to inform teaching and learning

Health and safety:

We enable all pupils to have access to the full range of activities involved in learning science. Where children are to participate in activities outside the classroom, teachers should be aware of health and safety issues. Risk assessments are undertaken prior to activities, to ensure that they are safe and appropriate for all pupils. Before undertaking a field trip, teachers are encouraged to visit the proposed area of study and fill in a risk assessment form Via the Kym Allen Health and Safety Website. The Educational Visits Lead is Duncan Bromley.

Child protection:

We seek to safeguard children and young people by:

- valuing them, listening to them and respecting them;
- adopting child protection guidelines through procedures and a code of conduct for staff and volunteers;
- recruiting staff and volunteers safely, ensuring all necessary checks are made;
- sharing information about child protection and good practice with children, parents, staff and volunteers;
- sharing information about concerns, with agencies who need to know, and involving parents and children appropriately;
- providing effective management for staff and volunteers through supervision, support and training.

Assessment for learning and assessment of learning:

In EYFS teachers assess science against the 'Development Matters' statements in the 'Understanding of the world' area of the Early Years Curriculum. The statements go from birth through to the Early Learning Goals at the end of Reception.

- At St Mary's we use effective Assessment for Learning (AfL) strategies to inform our planning and teaching. In Key Stage 1 and 2 an initial assessment of learning is carried out the beginning of topics, this can be informal and practical, but is essential to aid planning and provision. Then at the end of each programme of study, summative assessment is carried out to assess subject knowledge. Practical skill development is at the heart of learning in science, and teachers are encouraged to make a judgment about a child's "working scientifically" skills after collecting more than one piece of evidence through, observation, discussion, questioning before recording these assessments on the grids.

- Teachers provide quality feedback to pupils (verbal or written) which clearly identifies how they might need to improve.

- At present class teachers provide an annual teacher assessment result and pupils' progress is tracked against the National Curriculum levels for Key Stage 1 and 2. We use the terms Emerging (-ARE), Expected(ARE) and Exceeding(+ARE) to give the children a measure of expected progress for that year group. These are recorded and evaluated by the science leader. These results feed in to the moderation cycle.

Resources

We make every effort to ensure that resources are available to support all units of work. We encourage the use of practical work in and out of the classroom and therefore resources constantly monitored for wear and tear and effectivity. Storage containers for each subject are provided in a central point. Staff are encouraged to maintain these on use.

Monitoring and review

Role of the subject leader

It is the responsibility of the science subject leader:

- to develop, implement and review an action plan for science; to monitor science throughout the school;
- to encourage staff to provide effective learning opportunities for all pupils;
- to develop valid activities, appropriate for children at different stages of development, which enable pupils to progress in the subject.

The curriculum lead gathers evidence each year to support the specific focus e.g. Fair test throughout the school.

Monitoring of the standards of children's work and of the quality of teaching in science is the responsibility of the history subject leader. The work of the subject leader also involves supporting colleagues in their teaching, being informed about current developments in the subject, and providing a strategic lead and direction for the subject in the school.

THE OUTCOME:

At St Mary's we strive to nurture and inspire children to be creative scientists of the future, our teaching and curriculum provision should challenge and excite them to learn proactively. We hope that pupils from St Mary's will go on to discover, challenge and bring change to our world in the years ahead.