

Mugginton Church of England Primary School



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Science Policy

This policy has been written in accordance with the Christian ethos of our school, our recognition of British values, an awareness of our position in the Global community and taking account of all current Safeguarding and Child Protection guidance and the new national curriculum September 2014.

At Mugginton Church of England Primary School, science allows every pupil to develop a deeper understanding of the world in which they live. We want our children to love science and feel excited by the subject. Through a stimulating curriculum, offering 'hands on', memorable learning experiences, we equip our children with the skills and knowledge to discover, question and develop their curiosity whilst building knowledge and a bank of core skills which will equip them for an ever-changing world.

Science is developing children's scientific knowledge and understanding of the nature, processes and methods of science, for now and the future. Our aim is for it to be taught as part of an inspirational and stimulating curriculum, where we plan sequential lessons building on previous learning, and successfully ignite new learning.

At Mugginton, we encourage children to be inquisitive individuals who want to explore the world around them. Our Science curriculum fosters a healthy curiosity about our world/universe and promotes respect for the living and non-living. Science teaches an understanding of natural phenomena. We aim to stimulate our children's curiosity in finding out why things happen in the way they do. We appreciate and value the fact that science teaches methods of enquiry and investigation to stimulate creative thought. Children will learn to ask scientific questions and begin to appreciate the way science will affect their future on a personal, national and global level.

At Mugginton, we promote pupils' SMSC development through Science in the following ways:

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.

Equipped with the skills and opportunities our pupils will be confident lifelong learners that will explore the world around them.

Intent

We aim to enable our children to

- Ask and answer scientific questions, to offer suggestions to be creative and gain enjoyment from their scientific work
- Plan and carry out scientific investigations using equipment, including IT, correctly.
- Know and understand the life processes of living things.
- Know and understand the physical processes of materials, electricity, light, sound and natural forces.
- Know about the nature of the solar system, including the earth.
- Evaluate evidence and present their conclusions clearly and accurately.
- Understand the uses and implications of science, today and for the future.

Teaching and learning

We use a variety of teaching and learning strategies in science lessons. Our principal aim is enjoyment and to develop children's knowledge, skills and understanding in a sequential manner. Sometimes we do this through whole-class teaching, while at other times we engage the children to ask, as well as answer, scientific questions. They have the opportunity to use a variety of data, such as statistics, graphs, pictures and photographs. They use IT in science lessons where it enhances learning. They take part in discussions and they present reports to the rest of the class and engage in a wide variety of investigative activities. Wherever possible, we involve the pupils in 'real' scientific activities, for example, researching a local environmental problem or carrying out a practical experiment and analysing the results. We believe it important for children to begin to understand and use the scientific method with a particular focus on key vocabulary and concepts such as independent, dependent and controlled variables.

We recognise that there are children of widely different scientific abilities throughout school and we ensure that we provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this in a variety of ways by:

Setting common tasks which are open-ended, differentiated and can have a variety of responses.

Setting tasks of increasing difficulty appropriate to the ages and abilities in the class.

Grouping children by ability in the room and setting different tasks for each ability group.

Providing resources of different complexity, matched to the ability of the child.

Using additional staff to support the work of individual children or groups of children.

In a Science lesson at Mugginton, you will see:

Happy children, working with purpose individually or in groups. The children will be able to tell you what they are learning and what skills/knowledge they need to use in order to succeed (in an age-appropriate manner). They will be able to tell you about the different mediums they have used and talk about the artist (including painters, sculptors, designers) who is inspiring their work. Junior-aged children will be able to show a visitor their sketchbook and talk about the progress they have made in the subject and pieces of work they are most proud of.

Implementation

Our school uses 'The National Curriculum in England, Key Stages 1 and 2 Framework Document' (2014) as the basis of its curriculum planning.

We carry out our curriculum planning in science in three phases (long-term, medium-term and short-term). The long-term plan maps the scientific topics studied in each term during the key stage. In some cases we combine the scientific study with work in other subject areas, especially at Key Stage 1; at other times the children study science as a discrete subject.

Our medium-term plans give details of each unit of work for each term. The plans are reviewed by the Headteacher. As we have mixed-age classes in Key Stage 2, we do our medium-term planning on a two-year rotation cycle and in Key Stage 1 we plan on a three-year rotation cycle. In this way we ensure complete coverage of the National Curriculum (2014).

The class teacher is responsible for writing the daily lesson (short-term plans). These plans list the specific learning objectives and success criteria for each lesson. The class teacher keeps these individual plans and discusses them with the science subject leader on an informal basis.

We have planned the topics in science so that they build upon prior learning sequentially. We ensure that there are opportunities for children of all abilities to develop their skills and knowledge in each unit and we also build progression into our science scheme of work, so that the children are increasingly challenged as they move up through the school.

Foundation Stage

We relate the scientific aspects of the children's work to the statutory framework for EYFS, which underpins the curriculum planning for children aged three to five. Science makes a significant contribution to the objectives in the ELGs of developing a child's knowledge and understanding of the world, e.g. through investigating which objects float or sink when placed in water.

Teaching science to children with special educational needs

At our school we teach science to all children, whatever their ability. Science forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our science teaching we provide learning opportunities that enable all pupils to make progress. We do this by setting suitable learning challenges and responding to each child's different needs. Assessment against the National Curriculum allows us to consider each child's attainment and progress.

When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors – classroom organisation, teaching materials, teaching style, differentiation – so that we can take some additional or different action to enable the child to learn more effectively. This ensures that our teaching is matched to the child's needs.

Intervention will lead to the creation of an Individual Education Plan (IEP) for children with special educational needs. The IEP may include, as appropriate, specific targets relating to science.

We enable pupils to have access to the full range of activities involved in learning science.

STEM Activities

We believe in connecting classroom activities and experiences to real-life opportunities. Instead of treating science, technology, engineering and mathematics as separate subjects, when opportunities for STEM activities present themselves we encourage a cross-disciplinary approach that is all about solving problems.

For instance, we have presented the children with a problem—creating more habitats for bugs and insects at Forest Friday and around school. Children had to investigate where minibeasts like to live, and come up with a suitable design and solution.

A STEM primary education introduces children to the idea that mistakes are normal and, in fact, can be seen as a positive because they help you to move on to something greater. They also encourage teamwork, an inquisitive nature and creativity — things we value highly at Mugginton.

Impact

Assessment and recording

Teaching staff make short-term assessments during every lesson. For example, by evaluating children's responses to questions and written tasks, scrutinising work.

Medium-term assessments are carried out at the end of each unit. A range of assessment activities including formal tests, teacher-prepared tests, book scrutiny and pupil-discussion is used to measure progress. These data are also used to inform planning and identify children for additional intervention programmes.

We assess children's work in science by making informal judgements as we observe them during lessons and termly non-statutory tests in Key Stage 2. On completion of a piece of work, the teacher marks the work and comments as necessary in line with our marking policy. At the end of a unit of work s/he makes a summary judgement about the work of each pupil in relation to the National Curriculum. We use this summary as the basis for assessing the progress of each child. We pass the information on to the next teacher at the end of the key stage.

Teachers make an assessment of the children's work at the end of Key Stages 1 and 2. Teachers observe and assess children's work throughout the year. We use practical science in Key Stage 2 to assess children's progress of investigative skills. We report the teacher assessment to parents.

Resources

We have resources for all science-teaching units in the school which are kept in a central stock cupboard. The library in each classroom contains a good supply of science books and we use a range of IT to support children's individual research and learning.

We work closely with outside organisations such as Rolls Royce to obtain expertise and resources.

Monitoring and review

It is the responsibility of the science subject leader to monitor the standards of children's work and the quality of teaching in science. The science subject leader is also responsible for supporting colleagues in the teaching of science, for being informed about current developments in the subject and for providing a strategic lead and direction for the subject in the school. The science subject leader and the Headteacher discuss the strengths and weaknesses in the subject and indicate areas for further improvement.

Evaluation may take place by several methods including:

Assessment of pupils' work and their achievements.

Analysis of teacher's planning as seen in the long and short term plans.

Discussion between staff.

Classroom observation.

External inspection and advice.

Pupil interviews.

At the end of the topic teachers review their work and annotate plans for future reference.