



**MELLERS PRIMARY SCHOOL  
SCIENCE POLICY  
MAY 2022**

## **National Curriculum**

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. 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. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

## **Vision for science**





At Mellers Primary School, we believe in giving children a science curriculum which enables them to explore and discover confidently, so that they have a deeper understanding of the world around them. To achieve this, our curriculum aims to use exciting, practical, hands-on experiences which encourage curiosity and questioning whilst also providing pupils with a progression of scientific understanding. We are keen to involve parents and the community in this aim and vision, so that children can take these experiences home with them and become independent learners.

## **INTENT**

### **Aims and objectives**

We want our children to love science and have no limits to what their ambitions are. The intent is for our science teaching to equip our children with not only the minimum statutory requirements of the science National Curriculum, but to prepare them for the opportunities, responsibilities and experiences of later life, with no limits. Our science curriculum fosters a healthy curiosity in children about our universe and promotes cross curricular links with other key curriculum subjects. We believe science is the acquisition of knowledge, concept and skills. 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 focussed on 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.

Our aim is that these experiences will help children to:

-  Secure and extend their scientific knowledge and vocabulary
-  Ignite their curiosity
-  Develop transferable skills such as observation, communication and teamwork
-  Be equipped to make informed decisions about new technologies, their health and the scientific opportunities around them.

We believe that these opportunities will ensure that our children are confident, life-long learners who will explore the world around them.

## Science curriculum planning

Science is a foundation subject in the National Curriculum. We are using the 2014 National Curriculum framework to adapt and develop our current planning.

Planning is supported by a number of resources including the 'PLAN' Knowledge Matrices, Rising Stars and Hamilton Trust. These resources address the aims of the curriculum and provide teachers with the necessary knowledge to adapt as needed.

We carry out curriculum planning in science in three phases (long-term, medium-term and short-term). The long-term plan maps the topics studied in each term during each key stage; this is created collaboratively between the subject leader and year group teachers to ensure coverage of objectives, progression of skills and avoidance of repetition. Medium term plans for each subject area are created by teaching staff with an emphasis on the knowledge and skills that will be taught and how they will be taught. Science is taught discretely but staff make meaningful links across subjects where appropriate. Prior knowledge is linked to new learning to deepen children's understanding and to ensure new concepts and skills are retained. Knowledge organisers are used to share planning with the pupils.

The year group teachers create the short-term lesson plans for each Science session. These plans list the specific learning objectives and resources for each lesson. These are for the year group teachers' use but may be shared with colleagues, as necessary.

## IMPLEMENTATION

### Pedagogy

The key to the effective delivery of science at Mellers is the combination and balance of knowledge-based learning, combined with the understanding and practice of the working scientifically skills. All teachers have received training to understand its importance in both the planning and teaching stages.

In planning and delivering science lessons, we use 'Rosenshine's Principles of Learning' to ensure that the teaching is based on cognitive science and research. The principles are:

- 🛡 Begin a lesson with a short review of previous learning
- 🛡 Present new material in small steps with student practice after each step
- 🛡 Ask a large number of questions and check the responses of all students
- 🛡 Provide models
- 🛡 Guide student practice
- 🛡 Check for student understanding
- 🛡 Obtain a high success rate
- 🛡 Provide scaffolds for difficult tasks
- 🛡 Require and monitor independent practice
- 🛡 Engage students in weekly and monthly review.

### TEACHING METHODS AND APPROACHES

The teaching of science must contain the following:

- 🏆 Revisit: an opportunity to answer questions with the aim of recapping prior knowledge required for the lesson or topic.
- 🏆 'How to sound like a scientist': vocabulary instruction designed to equip the children with the scientific vocabulary they will need for the lesson.
- 🏆 An anchor task: used to present a problem, usually in a real-life context, at the start of a lesson. This engages the pupils, facilitates discussion and provides a useful assessment opportunity for teachers.
- 🏆 Main Activity: used to focus the pupils' attention on the key concepts and strategies that will be developed in the lesson. This is usually in the form of a practical activity such as an investigation, a fair test, a drama activity or dialogic discussion.
- 🏆 Independent written activity: this is to consolidate learning for the children and is used as an assessment tool for teachers. The written activities are completed in the children's' curriculum books and can be recorded in many ways such as: annotated pictures/ results of an experiment, written explanations/ conclusions/ results displayed in tables/graphs/ charts, posters or information leaflets

## **Early Years Foundation Stage**

Science in the foundation stage is addressed through free-flow learning and exploring the world. EYFS teachers will encourage children to explore a chosen scientific area through the set up of specific stations in the unit. Children in foundation stage are encouraged to use and discover a variety of materials, tools and techniques, whilst making observations and exploring similarities and differences of objects and living things around them. It is important for EYFS pupils to show awareness of their own health and hygiene from a young age, including healthy eating habits and sleeping well.

## **The contribution of science to teaching in other curriculum areas**

The teaching of science is more effective when developed in a holistic way. There are clear links to how science can be developed in other subjects for example maths, design technology and geography. Pupils across all year groups should be given opportunity to develop skills of working collaboratively to solve scientific problems and to ask questions in all areas of learning.

## **Special educational needs (SEN)**

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 against expected levels.

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, and 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.

Children identified with special educational needs and needing additional support will be provided with an Individual Provision Map (IPM). The IPM may include, as appropriate, specific targets relating to science. We enable pupils to have access to the full range of activities.

## **Equal opportunities**

As a staff we endeavour to maintain an awareness of, and to provide for equal opportunities for all our pupils in science. We aim to consider cultural background, gender and language differences, both in our teaching attitudes and in the published materials we use with our pupils.

## **Resources**

Science resources are stored centrally and organising according to the area of science they relate to. We recognise the value of using high quality resources and regularly update our stock to meet the needs of the curriculum.

## **Monitoring and review**

Monitoring of the standards of children's work and of the quality of teaching in science is the responsibility of the subject leader. The work of the subject leader also involves supporting colleagues in the teaching of science, being informed about current developments in the subject, and providing a strategic lead and direction for the subject in the school. The subject leader has specifically allocated time in which to fulfil this role by reviewing samples of children's work and visiting classes to observe teaching in the subject. They also monitor planning and ensure that the intent for science is being effectively implemented.

A named member of the school's governing body is briefed to oversee the teaching of science. This governor meets with the subject leader to review progress termly and receives a written report. Where children are to participate in activities outside the classroom, for example, a visit to an outside site, we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

## **IMPACT**

### **Assessment and recording**

We expect most children to achieve age related standards or better in science within each year group. We also look for pupils that show a greater depth of understanding.

Children's progress and attainment per unit of study is tracked through the assessment framework on SIMS on an annual basis. The subject leader reports on:

- 🛡 recent development work
- 🛡 performance analysis
- 🛡 pupil outcomes in relation to development priorities, their impact on teaching and learning, and future developments.

Governors monitor the effectiveness of the school twice a year through a variety of other activities including learning walks and classroom observation as per the Monitoring and Evaluation framework in the School Improvement Plan. The feedback to children policy is followed for practical and recorded work. This is an ongoing process until the completion of a unit of work. The pupils create a page in their curriculum learning journey book that is used by teachers when forming end of year judgements.

**Signed:**

**Date:**