

Sutton Veny CofE Primary School

Science Policy

The 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.

Aims

The national curriculum for science 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

Our Vision for Science

To inspire in children, a sense of awe and wonder in the world around them and develop a culture of exploration and questioning. Children should be encouraged to think independently and raise their own questions as to why and how things happen, developing an enquiring mind rather than just accepting facts.

Aims

As a school, we aim provide high-quality teaching to meet the needs of all the children. We aim to provide a safe and encouraging learning environment that has high expectations for all children, who are all challenged to maximise their potential in Science.

Objectives

To achieve these aims our objectives are:

- to instil a passion and enjoyment of science across the school.
- to provide a progressive curriculum that ensures the children build on their prior scientific knowledge.
- to ensure children have the opportunity to work scientifically.
- to develop the children's scientific way of thinking and allow opportunities for children to conduct controlled investigations and seek answers to questions through collecting, analysing and presenting data.
- to plan effectively for the needs of all the children in science, including appropriate levels of challenge and support.
- to use accurate assessment to inform next steps in learning.
- to enable the children to use and apply scientific knowledge, understanding and concepts with confidence.
- to teach key scientific concepts and with consistency.
- to help the children recognise and use science in other areas of the curriculum.

Science Curriculum at EYFS and KS1

The EYFS Framework and the National Curriculum set out the programmes of study for science and map the progression of the scientific skills, knowledge and understanding that the children will acquire by the end of Year Two. Teaching and learning in science focuses on enabling children 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.

As they progress through KS1, the children begin 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 out new information using secondary sources of information. Children should begin to use scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways.

At this stage of their education, most of the children's learning should be done through the use of first hand practical experiences, complemented by using some books, photographs and videos. The key areas of study during EYFS and KS1 include:

- Seasonal changes
- Plants
- Animals including humans
- Every day materials
- Living things and their habitats

By the end of KS1 the children need to be able to use the following practical scientific methods, processes and skills:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions
- the children should be encouraged to explore the world around them and raise their own questions

Science Curriculum at KS2

Throughout Key Stage Two, children's scientific understanding builds on the solid foundations developed in the EYFS and KS1. In lower KS2, children should broaden their scientific view of the world around them by exploring, discussing, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments and begin 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. The children should be able to draw simple conclusions and use scientific language to discuss and write about their findings, spelling scientific vocabulary correctly. Throughout KS2, the children expand their scientific vocabulary and develop confidence in selecting the best scientific approach or method to answer science questions using different types of scientific enquiry, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding out new information using a wide range of secondary sources of information.

During lower KS2, children should be working scientifically by

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

In upper KS2, the children should encounter more abstract ideas and begin to recognize how these ideas help them to understand and predict how the world operates. They should also begin to recognize that scientific ideas change and develop over time and 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.

Children should be working scientifically by:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments

By the end of KS2 the children need to have covered the following key scientific areas including studying scientists who have made valuable contributions to their field:

- Living things and their habitats
- Animals including humans
- Plants
- Rocks
- Light
- Forces and magnets
- States of Matter
- Sound
- Electricity
- Properties and changes of materials
- Earth and space
- Evolution and inheritance

Planning in Science

The science curriculum is structured to allow the children to progress through the programmes of study set out in the EYFS Framework and The National Curriculum. These objectives have been mapped out by the school to ensure the children develop through the content in a logical, sequential and progressive manner.

Teachers produce detailed layers of planning to map out the scientific journey for the year group they are responsible for. e.g.

Long Term Planning – Objective Overviews – Weekly Planning

When planning, teachers give careful consideration to identify the prior knowledge pupils need to access new scientific learning. It is imperative that any misconceptions are elicited prior to teaching a new area of science to ensure new learning can build on a secure understanding. Teachers plan carefully to meet the needs of all children in the class, including those who require additional support and those who need challenging. Teachers have the confidence to respond to the children's needs and adapt their planning and teaching methods accordingly. All planning is stored centrally on the school server.

Assessment in Science

Assessment is a continuous process and teachers use a range of assessment techniques, before, during and after the lesson, to inform the next steps in teaching and to respond to the needs of the children they teach. Understanding in science is assessed in the following ways:

- Marking of children's work and books
- Identifying errors and misconceptions
- Asking questions and listening to responses
- Facilitating and listening to scientific discussions
- Observing children during lessons
- Making use of the children's self-assessments

The marking of children's books is essential in assessing their understanding. Work is marked against the objectives for that lesson and in line with school expectations. Children are encouraged to reflect on their own understanding and use self-assessment; the self-assessment strategies used are dependent on the age of the children.

Teachers use the key objectives from the EYFS Framework and The National Curriculum to assess the children's understanding and track their progress against these objectives. Teachers will look for a range of evidence that demonstrates that the children can independently meet the objectives before assessing their competence against the objectives. This assessment practice is consistent across the school.

Pupil progress meetings are scheduled at different points throughout the year and are held with members of the school's SLT. These meetings help track the progress of the children in relation to their starting points and supports planning for their progress. All class teachers make a formal assessment about each child's attainment at the end of the academic year. This indicates whether the child is:

- 1) **Working towards** the national standard in science.
- 2) **Working at the expected** standard science.
- 3) **Exceeding** the expected standard in science.

This information is reported to parents and carers through the end of year profile, which is produced for every child.

Teaching and Learning

The key features of teaching and learning in science at Sutton Veny:

- Weekly objectives and key vocabulary are displayed in classrooms and used as teaching points.
- Enthusiastic teaching and excellent pedagogical knowledge guides the children to make progress.
- Lessons are planned to identify appropriate levels of support and challenge.
- A safe and encouraging learning environment promotes taking risks and celebrates effort and thinking.
- Any misconceptions are used as teaching points to promote understanding and progress.
- The children's understanding is assessed throughout the lesson, using a range of assessment strategies.
- Teaching responds to the needs of the children, providing support, and moving children on, when appropriate.
- Scientific vocabulary is used accurately when teaching or discussing scientific topics.
- There are high expectations of the children's behaviour and engagement.
- Teachers have high expectation of the effort and quality of work that the children produce.
- A consistent approach to planning and assessment is embedded across the school.

Subject Leadership

The science subject leader provides overall direction for the subject. They are responsible for monitoring and evaluating the subject and identifying priorities for development. They are supported by the school's SLT and the Link Governor for science. The effectiveness of teaching and learning in science will be monitored and evaluated by:

- Monitoring planning and assessment practice across the school.
- Analysing school, local and national data.
- Lesson drop-ins, learning walks and observations.
- Monitoring the quality of the children's work in their science books.
- Feedback from staff.
- Discussions with the children.
- Monitoring activities with the science link governor.
- Evaluating the quality and impact of CPD in science.

Subject Leader: Clair Chatwin

Date: August 2021 (CC)

Next Review: June 2022 (CC)