



Science

Intent of the Science Curriculum

AFJS aims

At Abbots Farm Junior School, we promote and embed the key values of ambition, reflection, resilience and healthy body and mind in our children throughout their time at the school and beyond. We strive to provide our children with a rich Science curriculum encouraging children to recognise the power of rational explanation and to develop a sense of excitement and curiosity about natural phenomena. Science teaches methods of enquiry and investigation to stimulate creative thought. Children learn to ask scientific questions and begin to appreciate the way science will affect their future on a personal, national, and global level.

In teaching science, we are intent on developing:

- substantive knowledge and understanding of life processes and living things, materials and their properties and physical processes
- positive attitudes towards science and promoting children to question the world around them
- an understanding of science through scientific enquiry and investigation;
- independent learners as well as being effective collaboratively;
- a passion and enjoyment for science, so that they will develop a deep and lasting interest and may be motivated to study science further;
- concern about, and active care for, our environment;

We develop the key scientific skills of:

- investigation - including observing, measuring, predicting, hypothesising, experimenting, communicating, interpreting, explaining and evaluating
- using scientific language, recording and techniques
- ICT in investigating and recording
- effective communication of scientific ideas, facts and data
- Problem solving

National Curriculum

The 2014 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 skills required to understand the uses and implications of science, today and for the future.

Roles and responsibilities

The science leader is responsible for keeping up to date with the latest developments in science education, and to share these with staff and pupils when appropriate. They are responsible for implementing the whole school vision (science principles) and advise and support staff with continuing professional development and support with planning. They also ensure that science resources are kept well-stocked and are relevant to the planning. They monitor provision of science and pupils' progress and contribute to the strategic development of learning in school.

Year group teams are responsible for ensuring science units are taught in the order set out on the long-term plan and for ensuring that all National Curriculum substantive knowledge and disciplinary knowledge (working scientifically) are taught in a carefully planned and progressive way. They are responsible for mapping out the disciplinary knowledge being taught in each year group so that the science leader can monitor coverage. Staff are responsible for providing challenge and support to those that need it, based on prior knowledge of the children and regular formative assessment in lessons. They are also responsible to assessing pupil's progress of substantive knowledge and disciplinary knowledge.

The governors are responsible for discussing science provision with the Curriculum Lead as part of the wider curriculum and allocating some governors to monitor the provision, its strengths and areas for development when required, and for reporting these to wider the governing body.

Implementation of the Science Curriculum

Planning

At Abbots Farm Junior School, we use the National Curriculum for science as the basis of our curriculum planning. Science is taught predominantly as discrete units but some links are also made within the Creative Curriculum. National Curriculum objectives are adapted to the local circumstances of the school in that we make use of the local environment in our fieldwork and we choose a locality where the physical environment differs from that which predominates in our immediate surroundings.

Progression

Progression in science comes in 2 parts:

1. Progression in disciplinary knowledge through regular practice of key scientific skills.
2. Progress in substantive knowledge in biology, chemistry and physics

Teaching and Learning

Our whole school approach to the teaching and learning of science involves the following:

- Developing children's knowledge, skills, and understanding
- Planning a curriculum that builds on prior learning, identifies and addresses misconceptions and engages learners in high-quality lessons. PLAN documents as well as other resources, which include Explorify and STEM Learning are used to plan our curriculum.
- Providing problem solving opportunities that allow children to apply their knowledge and find out answers for themselves. Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom. Teachers use effective questioning in class to test conceptual knowledge and skills, and to assess understanding.
- We build upon the substantive and disciplinary knowledge from the previous years. As the children's knowledge and understanding increases, and they become more independent in selecting, using scientific equipment, collecting data and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence.
- Working scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's learning journey.
- Working scientifically focuses on the key features of scientific enquiry. These types of scientific enquiry include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils are given opportunity to seek answers to questions through collecting, analysing and presenting data.
- Teachers demonstrate how to use scientific equipment, and the various working scientifically skills in order to embed scientific understanding. Teachers find opportunities to develop children's understanding of their surroundings by accessing outdoor learning.
- Recognising there are children of widely different learning abilities and needs in all classes and we ensure that we provide suitable learning opportunities for all children by matching the challenge of the task to the child.

Principles

The following are the principles of Science teaching at Abbots Farm Junior School, decided and agreed by the children and staff on the way we feel Super Science is at our school.



Super Science at



As **scientists** we work to **investigate** and record in a variety of ways, allowing us to **reflect** on what we have discovered and learnt so that we can draw conclusions.



We are **ambitious** with our use of **scientific vocabulary** to question and explain what we are thinking, doing and learning and can relate this to the world around us.

We are **excited** by the world of science and are **resilient** in finding the answers to our own and others questions.





We are **stimulated** to develop our thinking and learning as scientists by confident teachers who carefully plan our investigative work.

We **collaborate** and are active to develop a **healthy mind and body** by engaging in purposeful practical activities.

We have great **fun!**



Cross-curricular links

English

Science contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. The children develop oral skills in science lessons through discussions (for example of the environment) and through recounting their observations of scientific experiments. They develop their writing skills through writing reports and projects and by recording information.

Mathematics

Science contributes to the teaching of mathematics in a number of ways. The children use weights and measures and learn to use and apply number. Through working on investigations, they learn to estimate and predict. They use numbers in many of their answers and conclusions.

Information and communication technology (ICT)

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. Children use ICT to record, present and interpret data and to review, modify and evaluate their work and improve its presentation. They also use weblinks to science sites.

Personal, social and health education (PSHE) and citizenship

Science makes a significant contribution to the teaching of personal, social and health education. This is mainly in two areas. Firstly, the subject matter lends itself to raising matters of citizenship and social welfare. For example, children study the way people recycle material and how environments are changed for better or worse. Secondly, children benefit from the nature of the subject in that it gives them opportunities to take part in debates and discussions. Science promotes the concept of positive citizenship.

Spiritual, moral, social 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. Through many of the amazing processes that affect living things, children develop a sense of awe and wonder regarding the nature of our world. Science raises many social and moral questions. Through the teaching of science, children have the opportunity to discuss, for example, the effects of smoking and the moral questions involved in this issue. We give them 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 and, by developing the children's knowledge and understanding of physical and environmental factors, it promotes respect for other people.

Wider opportunities/enrichment opportunities in Science

To promote a life-long interest in science, inspiring the future generation of scientists, we aim to develop the 'science capital' of our children by providing:

- science clubs to enthuse children in practical science
- opportunities for the children to get involved in the Eco-schools programme
- year group visits linked to the science topics taught
- visitors to talk about the work they do as scientists and work with the children
- learning opportunities that involve using the local outdoor learning environment
- opportunities to take part in science competitions
- regular events including science week and days as well as space camp
- Science assemblies
- A science display of learning in each class

Local links

One of our whole school curriculum aims is to ensure that children engage with and learn about their local community and the importance of places and people around them both today and in the past. In Science this is promoted through:

- involvement in organised science events e.g. science fairs, science weeks and science competitions
- involvement in Eco Schools
- making links with local secondary schools

- involvement of science guest speakers from the local and wider community
- Local school visits to Bluebell woods and other schools

Impact of the Science Curriculum

Assessment and Recording

Curriculum progression is measured by our learners knowing more and remembering more. By striving to meet our curriculum aims, we assess children's work in science by making formative assessments from the probing question put to a child as they think something through; quick recap questions at the opening of a lesson; observations and scrutiny of the natural work of children; right through to formal test questions. TAPs assessments have been introduced as a tool to provide teachers with a further supportive structure to evaluate substantive knowledge and working scientifically objectives through the use of focused assessment activities and work samples. By the end of each topic, a record of whether children have met expected objectives is kept electronically on Insight. Teachers then use this information to inform and adapt their future planning.

Monitoring and Review

The science leader creates an action plan for the development of the subject and provide a review of the subject to the headteacher annually. They review the curriculum through work trawls, learning walks, lesson drop-ins and pupil interviews to determine knowledge acquisition and development of working scientifically skills.

Health and safety

The safe use of equipment is promoted at all times.

The ASE Safety Policy has been adopted by the staff and a copy is stored in the office.

The school's Health and Safety Policy should be consulted for details regarding scissors, craft knives, electrical equipment, wet areas, heavy equipment and the use of tools. Any animals, including minibeasts, being used for study should be treated with respect and returned as soon as the activity is complete. For specific guidance related to work undertaken on `Decay`, consult the ASE Safety Policy. Leaves and berries that are poisonous should be avoided in any classroom displays and their dangers made clear to the children.

Date last reviewed: June 2020 by C. Wolsey

Reviewed and updated: March 2024 by C. Wolsey

Next review: March 2026