

Abbey Hulton Primary School

Science Policy



Presented to Staff and Agreed: September 2019

Presented to Governors and Agreed: September 2019

Next Review: September 2021

At Abbey Hulton Primary School we believe that good science teaching and learning happens when:

- Children can discover for themselves through trial and error.
- Children use scientific vocabulary.
- Teachers are confident about what they are teaching.
- When children talk, ask questions, share ideas, explain.
- When children are inspired to do and know more, transfer knowledge.
- When children work in groups.
- When children work practically.
- When children are engaged, excited, involved.
- When children record their learning in a variety of ways using their own words.

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

School curriculum

Each year group has a specific science program to follow in key stages 1 and 2. These science areas are year group specific.

Curriculum Topics by Year Group:

Year Group	Topics to be covered throughout the year				
YEAR 1	PLANTS -Identification	ANIMALS including Humans	EVERYDAY MATERIALS	SEASONAL CHANGES	
YEAR 2	PLANTS -Growth	LIVING THINGS and their HABITATS	ANIMALS -what do we need to survive	MATERIALS -classifying /changing	
YEAR 3	ANIMALS including Humans -Nutrition, -Skeletons and muscles	PLANTS -Life cycle of a plant	LIGHT	FORCES and MAGNETS	ROCKS
YEAR 4	ANIMALS including Humans -Digestive system -Food chains	LIVING THINGS and their Habitats -grouping animals	STATES OF MATTER	ELECTRICITY	SOUND
YEAR 5	LIVING THINGS and their Habitats -life cycles of plants and animals.	ANIMALS, including Humans -changes from birth	MATERIALS -Dissolving -Evaporating -Filtering	EARTH and SPACE	FORCES and ELECTRICITY -circuits
YEAR 6	LIVING THINGS and their Habitats -classification	ANIMALS, including Humans -circulatory system	EVOLUTION and INHERITANCE	LIGHT	

Early Years Foundation Stage

Within the Area of Learning “Knowledge and Understanding of the World”, Foundation Stage children are developing the knowledge, skills and understanding that help them to make sense of the world, forming the foundations for later work in Science and other related curriculum areas. At Abbey Hulton, we help children to develop their knowledge and understanding of the world through practical activities based on first hand experience.

Activities in the Foundation Stage are planned to achieve a balance between child initiated activities and adult directed activities both inside and outside the classroom. They are designed to include the following opportunities:

- Stimulate interest and curiosity
- Learn how to use a variety of equipment
- Observe and investigate
- Make predictions
- Ask questions about why things happen and how things work
- Develop scientific vocabulary
- Solve problems and make decisions
- Use books and computers to find information.

Working scientifically within the curriculum

Class teachers must ensure that there are frequent opportunities for pupils to ‘work scientifically’ within the curriculum. ‘Working scientifically’ specifies the understanding of the nature, processes and methods of science. Pupils are required to work scientifically within all areas of the science curriculum.

The following skills are statutory:

Years 1 and 2

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- 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.

Years 3 and 4

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- 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 straight forward scientific evidence to answer questions or to support their findings.

Years 5 and 6

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- 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 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.

Planning

Science should be taught discretely in most cases but teachers are encouraged to make links to the other planning wherever possible.

The class teacher is responsible for writing the lesson plans for each lesson (short-term plans). These plans list the specific learning challenges and expected outcomes of each lesson.

Long Term Planning: The curriculum map (see above) outlines the units to be taught in each year group. Teachers can refer to Twinkl- Plan It resources as a basis to plan each topic.

Short Term Planning: Short term planning is the responsibility of individual teachers, who take into account of the needs of children in their class and identifying the way in which ideas might be taught.

Recording of Learning

The children's learning will be recorded in Science Books using a mixture of written methods and photographs of practical aspects. Children should record work from classroom-based tasks and record and annotate photographs of learning or specific achievements. Learning should be recorded in Science books on a regular basis.

Marking

Please refer to the whole School Marking Policy.

Teaching and learning style

We use a variety of teaching and learning styles in science lessons. Our principal aim is to develop children's knowledge, skills, and understanding. Sometimes we do this through whole-class teaching, while at other times we engage the children in an enquiry-based research activity. We encourage the children to ask, as well as answer, scientific questions; pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use,

technical terminology accurately and precisely. Lessons are encouraged to be as practical as possible. They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data: statistics, graphs, pictures, and photographs. They use ICT in science lessons because it enhances their learning. They take part in role-play and discussions, and they present reports to the rest of the class. They engage in a wide variety of problem-solving activities. Wherever possible, we involve the pupils in real scientific activities, for example, investigating a local environmental problem, or carrying out a practical experiment and analysing the results.

We recognise that in all classes children have a wide range of scientific abilities, 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:

- setting tasks which are open-ended and can have a variety of responses;
- setting tasks of increasing difficulty (we do not expect all children to complete all tasks);
- 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;
- opportunities for outdoor learning wherever possible with each year group.

Spoken language

The national curriculum for science reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and articulating scientific concepts clearly and precisely. They must be assisted in making their thinking clear, both to themselves and others, and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

Equal opportunities

We aim to create equality of opportunity for all our children, whatever their gender, abilities or background and give them chance to demonstrate what they know, understand and can do.

Special Educational Needs

The School's Policy document for Special Educational Needs explains in full the procedures which are in place for providing for pupils with Special Educational Needs. Within Science, tasks are differentiated to ensure access to the National Curriculum and to offer activities which are relevant to the conceptual development of the child.

Greater Depth Pupils

Pupils with above average ability are to benefit from a curriculum which offers challenge and opportunities for investigation in order to extend their learning. We aim to give very able pupils the opportunity to extend their scientific thinking through extension activities such as problem solving, investigative work and research of a scientific nature.

Safety

All staff will follow COSHH guidance 'Be Safe'.

Teachers must plan safe activities for science and complete a risk assessment if necessary. Teachers and teaching assistants need to be aware of health and safety procedures when using equipment/food in science lessons. Pupils must be aware of the need for personal safety and the safety of others during science lessons.

The contribution of science to teaching in other curriculum areas

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), group work undertaken 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. When the children use weights and measures, they are learning to use and apply number. Through working on investigations they learn to estimate and predict. They develop accuracy in their observation and recording of events. Many of their answers and conclusions include numbers. Results are recorded in a variety of charts such as bar charts and line graphs. Timings are often required during investigations.

Personal, social, health and citizenship education (PSHCE)

Science makes a significant contribution to the teaching of PSHCE and citizenship. This is mainly in three 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, the subject gives children numerous opportunities to debate and discuss. They can organise campaigns on matters of concern to them, such as helping the poor or homeless. Science thus promotes the concept of positive citizenship. Science teaching also includes aspects of promoting healthy lifestyles and diets and why these are important.

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, drugs and alcohol 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.

Science and ICT

Information and communication technology enhances the teaching of science in our school significantly because there are some tasks for which ICT is particularly useful. It also offers ways of impacting on learning which are not possible with conventional methods. Software is used to animate and model scientific concepts and to allow children to investigate processes which it would be impractical to do directly in the classroom. Data loggers are used to assist in the collection of data and in producing tables and graphs. Children use ICT to record, present and interpret data, to review, modify and evaluate their work, and to improve its presentation. Children learn how to find, select, and analyse information on the Internet and on other media.

Assessment

Teachers will use a variety of methods to assess children throughout their learning: observations made of children working scientifically, written work in their books and where possible test results for a particular topic.

Resources

We have sufficient resources for all Science teaching units in the school. We keep these in a central store. An inventory of resources is kept on the network and is updated when new resources are ordered. The subject leader must be informed of any changes regarding science resources i.e missing or broken resources and/or when new or replacement resources are required.

Monitoring and review

It is the responsibility of the subject leader to monitor the standards of children's work and the quality of teaching in science. The subject leader is also responsible for supporting colleagues in their teaching, for being informed about current developments in the subject and for providing a strategic lead and direction for science in the school. The subject leader gives the Head Teacher an annual summary report in which she evaluates strengths and weaknesses in Science, and indicates areas for further improvement which is presented to Governors. In addition, there is a report on the development of Science in the termly Head Teacher's report to Governors. This is written by the Science subject leader.

Staff Training

The Science subject leader is responsible for ensuring that all staff are adequately trained so that they are able to deliver the curriculum effectively. This will include: organising CPD; leading staff meetings; sharing resources for planning and teaching; supporting colleagues. Regular communication with staff will be sustained and all staff can speak to the subject leader if they require any further support.

This policy will be reviewed at least every two years. It will be then disseminated to staff and to parents and pupils as necessary. A copy will be kept centrally in the School Office.