

ASHTREE PRIMARY SCHOOL & NURSERY

Policy for Science

Introduction

- **THIS DOCUMENT IS** a statement of the aims, principles and strategies for the teaching and learning of Science at Ashtree Primary School and Nursery.
- **IT WAS DEVELOPED** during the spring of 2014 through a process of consultation with teaching staff.
- **IT WAS APPROVED** by the governing body in January 2023.
- **THIS POLICY WILL BE REVIEWED** fully with the staff in spring 2026. A schedule for the review of this, and all other policy documents, is set out in the School Improvement Plan.

What is Science?

SCIENCE is a body of knowledge which is built up through the experimental testing of ideas and which is organised in a way that makes it easy to use. Science is also a methodology, a practical way of finding reliable answers to questions we may ask about the world around us.

Aims

OUR AIMS IN TEACHING SCIENCE are that all children will:-

- enjoy the subject and study it with confidence and a sense of achievement
- retain and develop their natural sense of curiosity about the world around them
- develop a set of attitudes which will promote scientific ways of thinking, including open-mindedness, perseverance, objectivity, and a recognition of the importance of teamwork
- come to understand the nature of 'scientific enquiry' involving meticulous planning and observation; the making and testing of predictions; the design of fair and controlled experiments; the recording and presenting of data; making comparisons and identifying patterns; explaining results through critical reasoning and reviewing and evaluating evidence
- become effective communicators of scientific ideas, facts, and data
- build up a body of scientific knowledge and understanding which will serve as a foundation for future enquiry.

Principles of the Teaching and Learning of Science

SCIENCE is important because: -

- it stimulates and excites pupils' curiosity about phenomena and events in the world around them and satisfies this curiosity with knowledge
- through Science, pupils understand how major scientific ideas contribute to technological change – impacting on industry, business and medicines and improving quality of life
- children learn to question and discuss science-based issues that may affect their own lives, the direction of society and the future of the world
- it has built up a methodology for thinking which today forms the basis of most intellectual enquiry
- the skills and knowledge of Science have wide applicability in everyday life.

SCIENCE is a core subject in the National Curriculum.

- In the Foundation Stage, the fundamental skills and knowledge of the subject are set out in the Statutory Early Years Framework in Understanding of the World: -
 - guiding children to make sense of their physical world and their community through opportunities to explore,
 - observe and find out about people, places, technology, and the environment.

In Key Stages One and Two the fundamental skills, knowledge and concepts of the subject are set out in the National Curriculum, where they are categorised into 7 areas for Scientific Knowledge and 4 areas for Working Scientifically. The areas for Scientific Knowledge are;

1. Plants
2. Living Things and their Habitats
3. Animals including Humans
4. Materials
5. Light and Sound
6. Forces
7. Electricity

The areas for Working Scientifically are;

1. Ideas and Questions
2. Planning
3. Obtaining and Presenting Evidence
4. Considering and Evaluating Evidence

At Key Stage 1, 50% of curriculum time is spent on scientific enquiry and 40% at Key Stage 2. Examples of how these are delivered are outlined below.

During Key Stage 1, pupils observe, explore, and ask questions about living things, materials and phenomena. They begin to work together to collect evidence to help them answer questions and to link this to simple scientific ideas. They evaluate evidence and consider whether tests or comparisons are fair. They use reference materials to find out more about scientific ideas. They share ideas and communicate them using scientific language, drawings, charts, and tables.

During Key Stage 2, pupils learn about a wider range of living things, materials, and phenomena. They begin to make links between ideas and to explain things using simple models and theories. They apply their knowledge and understanding of scientific ideas to familiar phenomena, everyday things and their personal health. They begin to think about the positive and negative effects of scientific and technological developments on the environment and in other contexts. They carry out more systematic investigations, working on their own and with others. They use a range of reference sources in their work. They talk about their work and its significance and communicate ideas using a wide range of scientific language, conventional diagrams, charts and graphs.

Strategies for the Teaching of Science

THE SCIENCE CURRICULUM IS ORGANISED following the statutory objectives of the National Curriculum. Each unit of Science is provided to teaching staff through a Medium term plan. The Medium-term plan gives teachers the prior knowledge relating to the unit, the key vocabulary for the unit, the key steps in knowledge and skills for the unit, the possible misconceptions that could arise and the future learning that will follow on from the unit.

Science is taught for up to 1.5 hours per week in Key Stage 1 and for up to 2 hours per week in Key Stage 2.

THERE ARE NO PREDOMINANT MODES OF WORKING IN SCIENCE. Co-operative group work, individual work and class teaching are all used where appropriate. Science lessons regularly include opportunities for:

- whole class and group discussions
- learning through practical activities
- whole class plenary sessions to consolidate the learning and prepare for future learning.

SCIENCE is taught by Class Teachers, supported by Teaching Assistants, SENCO (the school's Special Educational Needs Co-ordinator) and Nursery Nurses. There is no specialist teaching in Science.

Voluntary parent helpers are utilised by the class teacher, when available, to support the lesson's learning objectives.

COMMERCIALY AVAILABLE SCHEMES OF WORK are available in school to support the teaching of Science, if required.

EQUAL OPPORTUNITIES for all children, regardless of race or gender, are ensured by the rigorous application of the school's Equal Opportunities Policy.

SPECIAL NEEDS AND INCLUSION

In Science we aim to prevent any barriers to learning and participation for any pupil. As far as possible, resources and adult support are delegated to meet SEND and Inclusion needs, to encourage independent learning and to improve the classroom experience for all pupils. Individual Support Plans are implemented, as appropriate, after discussions involving parents, pupils, staff and external agencies.

MOST ABLE

All teachers are aware of pupils in their class who are on the Register of Most Able pupils. The needs of Most Able pupils may be met by enrichment, extension, or acceleration activities as appropriate. Schemes of work show the curriculum may be enriched by additional resources/materials or extending a pupil's thinking skills where possible.

HOMEWORK is used to support Science through tasks such as: -

- researching a topic
- specific tasks set as a whole school picture homework

This is in accordance with the school's Homework Policy.

THE EMPHASIS IN OUR TEACHING OF SCIENCE is on first hand experience and we encourage children increasingly to take control of their own learning. This is developed through Working Scientifically Skills, which is taught through contexts taken from The National Curriculum Programmes of Study for Key Stage 1 and Key Stage 2. We also strive to provide a balance between Scientific Knowledge and Working Scientifically Skills, to ensure that our pupils have a well-rounded Science education.

EXCELLENCE IN SCIENCE IS CELEBRATED: -

- with the child verbally and through written comment
- with the parents through consultations and reports

- in displayed work (class and school)
- in sharing assemblies
- with merit and effort certificates
- with the wider community through displayed work
- through Science days and visitors.

Strategies for Ensuring Progress and Continuity

PLANNING IN SCIENCE is a process in which all teachers are involved, wherein: -

- the foundation for curricular planning is the School Improvement Plan, developed through a process of collaboration between staff, and approved by governors
- work plans for each year and each term are drawn up by individual teachers following the Science medium term plans for each unit (with a focus on collaborative year group working) and monitored by the Co-ordinator and Leadership Team
- staff meetings are used to discuss the Science curriculum and to ensure consistency of approach and standards
- the Development Matters document and the Foundation Stage Profile for Understanding the World guide the learning in the Foundation Stage.
- HfL ‘Progression in Scientific Knowledge’ is used in KS1 and KS2 alongside the National Curriculum and other publications.

THE ROLE OF THE SCIENCE CO-ORDINATOR is to: -

- take the lead in policy development and monitoring of Science to ensure progression and continuity in Science throughout the school
- support colleagues in their development of detailed work plans and implementation of the Early Learning Goals/Programmes of Study
- support colleagues in assessment and record keeping activities
- monitor progress in Science and advise the Leadership Team on action needed using agreed criteria for success
- take responsibility for the purchase and organisation of central Science resources
- keep up to date with developments in Science education and disseminate information to colleagues as appropriate
- establish, develop and maintain contacts with advisers, outside agencies, other schools, parents and governors
- support colleagues by leading INSET opportunities
- gather information to inform budget and planning priorities for the School Improvement Plan
- provide support in the induction of new staff.

FEEDBACK TO PUPILS about their own progress in Science is achieved through the marking of work. Effective marking: -

- aims to be encouraging, supportive and diagnostic through positive and constructive comments. The comments should be scientifically based rather than literacy based.
- is often undertaken while a task is being carried out through discussion between child and teacher
- ensures that corrections move the pupils’ learning on.

This is in accordance with the school’s Feedback and Marking Policy.

FORMATIVE ASSESSMENT is used to guide the progress of individual pupils in Science. It involves identifying each child’s progress in each aspect of the subject, determining what each child has learned and what therefore should be the next stage in his/her learning. Formative assessment is carried out by teachers in the course of their teaching. Suitable tasks for assessment include: -

1. small group discussions perhaps in the context of a practical task.
2. short tests in which the teacher gives questions orally and pupils write answers.
3. specific assignments for individual pupils.
4. individual discussions in which children are encouraged to appraise their own work and progress.
5. Hinge Questions to assess children's learning during a lesson.

Strategies for Recording and Reporting

RECORDS OF PROGRESS IN SCIENCE kept for children contain: -

- records of their progress against the Early Years Framework
- a yearly record of progress in each attainment target
- evaluation of termly and weekly planning identifying future areas for teaching (group and class)
- children's books/folders (individual)
- record of school's weekly assessment rota
- end of unit assessments

Assessment will be based on observation, discussion and product where appropriate.

REPORTING TO PARENTS is done on a twice-yearly basis through consultations and annually through a written report. Reporting in Science will focus on each child's: -

- attitudes to Science
- progress against the Early Years Framework
- progress in scientific skills, knowledge, and ability
- ability to apply scientific knowledge to new situations
- Teacher Assessment
- outcomes of in-house testing.

FORMAL SUMMATIVE ASSESSMENT is carried out in line with Government Policy in Reception, Years 2 and 6 using Teacher Assessment.

Strategies for the Use of Resources

CENTRAL RESOURCES IN SCIENCE are the responsibility of the Science Co-ordinator who has a budget available. They are stored in the resource area in the Infant Hall.

INFORMATION COMMUNICATION TECHNOLOGY is a major resource which is used in Science for: -

- data handling (use of databases and graph drawing packages)
- communicating information (word processing)
- controlling and modelling (datalogging)
- finding information from the Internet.

THE LIBRARIES have some books on science subjects and are used for reference. Sets of books can be borrowed on a termly basis from the Schools' Library Service to support work.

HEALTH AND SAFETY ISSUES IN SCIENCE are explained in the BeSafe document and risk assessments should be made in respect of: -

- appropriate handling of equipment and materials

- appropriate storage of equipment and materials.

The CLEAPPS book of Health and Safety in Science is in the keeping of the Science Co-ordinator.

Pupils are taught to be aware of possible Health and Safety risks in their planning and experimenting.

Appendices may include: -

- lists of centrally held resources for Science
- booklists
- examples of investigation sheets
- guidance notes for teachers on various aspects of Science teaching
- lists of available reference books for teachers on the teaching of Science
- schemes of work.