



Science Policy

The Importance of Science in the Curriculum

Science stimulates and excites children's curiosity about phenomena and events in the world around them. It also satisfies their curiosity with knowledge. As science links direct practical experience with ideas, it can engage learners at many levels. This is a spur to critical and creative thought. Through science, pupils understand how major scientific ideas contribute to technological change – impacting on industry, business and medicine and improving the quality of life. Children recognise the cultural significance of science and trace its world-wide development. They learn to question and discuss science-based issues that may affect their own lives, the direction of society and the future of the world.

Aims:

The school aims to:

- Stimulate and excite children's curiosity about changes and events in the world;
- Satisfy this curiosity with knowledge;
- Engage children as learners at many levels through linking ideas with practical experience;
- Help children to learn to question and discuss scientific issues that may affect their own lives;
- Help children develop, model and evaluate explanations through scientific methods of collecting evidence using critical and creative thought;
- Show children how major scientific ideas contribute to technological change and how this impacts on improving the quality of our everyday lives;
- Help children recognise the cultural significance of science and trace its development.

Strategy for Implementation

Science is a core subject of the National Curriculum and children undertake science activities in all year groups. The work covered in Key Stage 1 builds on the national Early Years Foundation Stage Curriculum, which is provided until the end of their Reception year in school.

Planning takes into account that the school places a high emphasis on the development of children's skills of scientific enquiry. In the substantial majority of lessons these skills are taught alongside the knowledge and understanding in life processes and living things, materials and their properties and physical processes. In this way there is an equivalent emphasis on scientific knowledge and conceptual understanding through the specific disciplines of chemistry, biology and physics.

At Foundation Stage

Children in our Reception class develop their knowledge, understanding and skills through self-initiated activities and adult directed tasks. At Colehill we seek to develop children's natural curiosity in the world around them and encourage children to explore and investigate their learning environments (both indoor and outdoor) using all their senses as appropriate. Children are encouraged to observe, question and identify similarities, patterns and change.

At Key Stage 1

The principal focus of science teaching in key stage 1 is to enable pupils 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. They begin to work together to collect evidence to help them answer questions and to link this to simple scientific ideas. They begin to 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 with the help of digital tools if it is appropriate.

At Key Stage 2

Children learn about a wider range of living things, materials and physical phenomena. They make links between ideas and 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 think about the 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, using a wide range of scientific language, conventional diagrams, charts, graphs and digital media to communicate their ideas.

Learning and Teaching

All lessons have clear learning objectives which are shared and reviewed with the children effectively. A variety of strategies, including questioning, discussion, concept mapping and marking, are used to assess progress. The information is used to identify what is taught next.

Activities inspire the children to experiment and investigate the world around them and to help them raise their own questions such as "Why...?", "How...?" and "What happens if...?".

Activities are challenging, motivating and extend children's learning. They develop the skills of enquiry, observation, locating sources of information, selecting appropriate equipment and using it safely, measuring and checking results, making comparisons and communicating results and findings.

Children have frequent opportunities to develop their skills in, and take responsibility for, planning investigative work, selecting relevant resources, making decisions about sources of information, carrying out activities safely and deciding on the best form of communicating their findings.

Science Across the Curriculum

Science lessons make effective links with other curriculum areas and subjects, especially English, Maths, Computing, PSHE and PE.

English

In particular, in the foundation stage and Key Stage 1, the children are encouraged to use their speaking and listening skills to describe what they see and explain what they are going to do next. At Key Stage 2 the children are encouraged to develop their skills of writing to record their planning, what they observe and what they found out. In relation to science, they should be applying their English skills at levels similar to those which they are using in their English work.

Maths

In all year groups the children are expected to use their knowledge and understanding of measurement and data handling at appropriate levels. In science, they should be applying their numeracy skills at levels similar to those which they are using in their mathematics lessons.

Computing

In all year groups this may involve our children using digital media to: locate and research information (internet); record findings (using pictures, text, data and tables); log changes to the environment over time (sensing equipment); gain confidence in using calculators, digital cameras and digital microscope, and microphones, as well as the computer.

Personal, Social, Health and Citizenship Education

Health education is taught as part of the units on ourselves, health and growing, teeth and eating, moving and growing, keeping healthy and life cycles.

The teaching of science provides numerous opportunities for the development of higher order thinking skills. Scientific enquiry demands a range of different types of thinking and processes that can be developed through thoughtful questioning. Questions for thinking may be included in science plans and can be further developed by the teacher.

Spiritual development is also encouraged through reminding children of the wonder of science and the effect of scientific discoveries on the modern world. Topical scientific issues are also discussed as appropriate.

Physical Education

Physical Education plays an important part in supporting the science curriculum and links with the units of work on ourselves, health and growing, moving and growing and keeping healthy.

Assessment and Recording

At Foundation Stage

The majority of science is taught under the area of Knowledge and Understanding of the World and assessments are made in accordance with the Foundation Stage Profile

At Key Stages 1 and 2

Teachers' assessment takes place at the end of each unit of work which notes any attainment and progress which is significantly lower or higher than age related expectations. Teachers analyse progress in the units of work they have completed at the end of each school year to complete an end of year assessment sheet showing the levels attained. All assessment relies on observation and the collection of written evidence of investigative skills.

An annual report to parents is made for all children and this takes the form of a summary of the teachers' observations and continued assessment of the children at work thus giving parents a view of what their children know, understand and can do.

Expectations

By the end of Key Stage 1, the performance of the great majority of the children should be at age related expectations in line with the national level. Some children should show a greater depth of understanding in the subject.

By the end of Year 4, the performance of the great majority of the children should be at age related expectations in line with the national level. Some children should show a greater depth of understanding in the subject and apply their understanding across the curriculum.

Curriculum Organisation

Long term planning: Science is taught through termly or half termly topics or themes that are relevant to The Early Years Foundation Stage and National Curriculum.

Medium term planning: The Early Years Foundation Stage Curriculum forms the basis for the medium term planning in our Reception class, which is pupil led. In Key Stage 1 and Key Stage 2 the 2014 National curriculum is used to support the planning of science activities. It identifies within each topic or theme the expected statutory requirements such as learning objectives, science activities, assessment opportunities,

the vocabulary to be taught and used, health and safety issues and how digital resources could be used.

Short term planning: This contains the immediate learning objectives and the science activities in greater detail for the theme or topic.

Most of the learning will take place through first hand practical experiences along with the use of secondary sources. The children will be expected to be 'Working Scientifically' using the skills required to take on the content and understand the concepts learnt.

Continuity and Progression

The school ensures curriculum continuity for science by following the themes and topics as outlined in 'Our Connected Curriculum' document. There is close liaison between staff throughout the school to ensure children's learning is built upon each year.

Inclusion

Planning at all levels ensures that the interests of boys and girls are taken into account. The children work individually, in pairs, as part of a small group and as a whole class each term. They use a variety of means for communicating and recording their work.

Teaching Assistants, when available, work as directed by the teacher to support science learning.

All children, including those with special educational needs, undertake the full range of activities. Teacher assessment determines the depth to which individuals and groups go during each unit of work.

Enrichment Opportunities

There are opportunities for children to visit to places of scientific interest which links with their topics and for visitors to come into the school in order to support the learning objectives for units of work where relevant.

Parents/Carers Involvement and Home Learning

Parents and carers have an important role to play in helping their children learn about science. Their role is enhanced by the use of science displays around the school to raise their interest and the interest of their children in the subject. Throughout the school, teachers may choose to involve the children, parents and carers in small investigation activities of topical scientific interest. Some of this work may link to class assemblies to which parents are invited to attend.

Learning Environment and Resources

Classrooms will have displays of science topics within their classrooms or on school display boards when appropriate, reflecting upon the profile of science as a core subject. Resources for the unit of work being covered should be appropriately accessible and any relevant scientific vocabulary being introduced within science activities displayed in a prominent place.

Learning resources are kept in the science cupboard. Relevant equipment is taken to the class by teachers or other responsible adults as and when needed and then returned. The Science Subject Leader is responsible for the maintenance of this area.

The scheme of work covers training the children in the safe and considerate use of resources and equipment. Children are taught not to be careless and to use consumables efficiently.

Health and Safety

Safe practice as indicated in The Association of Science Education publication, "Be Safe!" must be promoted at all times. Teachers must also take into account the school's Health and Safety policy. Particular attention must be given to avoiding the use of anything that aggravates individual children's allergies. Risk assessments must be completed in when activities are identified that are unusual and beyond the scope of normal safety practice (e.g. outdoor and off-site field centre activities).

Leadership and Management

The role of the Science Subject Leader is to:

- To have an overview of the standards across the whole school for science and identify key areas of development to ensure continued improvement within this subject.
- Take the lead in policy development and review, including the continuing successful implementation of the science curriculum.
- Support colleagues in the planning and delivery of the science curriculum.
- Keep up-to-date on local and national initiatives and disseminate information.
- Take responsibility for the purchase and organisation of scientific resources.
- Arrange INSET and CPD as appropriate to meet the professional development needs of staff.

Staff Development and Training Opportunities

The Headteacher discusses staff development needs and, where appropriate, these are built into the school's staff development programme. The needs of individual members of staff (teaching and non-teaching) are identified as a result of the school's performance management programme. Staff attending training are expected to share the useful points with other relevant staff. The school allocates an annual budget for

science equipment. KS1 & KS2 teachers discuss needs with the Science Subject Leader and Headteacher and ensure planned units of work are adequately resourced.

A governor is allocated to take a specific interest in science and will discuss developments with the Science Subject Leader on a regular basis.

Signed.....

Position Chair of Local Governing Body

Date of adoption 6th June 2017

Date of next review Summer Term 2020