Laurel Avenue
Community Primary School

Science Policy

Science stimulates and excites pupils' curiosity about phenomena and events in the world around them. It also satisfies their curiosity with knowledge. Because science links direct practical experience with ideas, it can engage learners at many levels. Scientific method is about developing and evaluating explanations through experimental evidence and modelling. This is an ignition 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. Pupils 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 pupils' curiosity about changes and events in the world*
- *Satisfy this curiosity with knowledge*
- *Give every opportunity to relate Science to everyday life and to consider the sensitivity needed when working with living things and the environment*
- *Engage pupils as learners at many levels through linking ideas with practical experience*
- *Encourage every child to investigate, question and discuss in order to acquire scientific knowledge, understanding and skills*
- *Encourage children to hypothesise and to find ways of testing their ideas to provide evidence to support their ideas*
- *Help pupils develop, model and evaluate explanations through scientific methods of collecting evidence using critical and creative thought*
- *Teach scientific vocabulary and to use a variety of ways to present the results of their investigations*
- *Promote key skills by offering a range of contexts for the development of:*
  Literacy – communicating facts, ideas and opinions
  Mathematics – application of number through collecting, considering and analysing data.
  ICT – through using a wide range of ICT
- *Show pupils how major scientific ideas contribute to technological change and how this impacts on improving the quality of our everyday lives*
- *Help pupils recognise the cultural significance of science and trace its development*

Objectives

We will fulfil these aims by:

- *Using the environment that surrounds our school to enable us to provide opportunities for learning about life processes and living things, through observation, questioning and wonder.*
- *Providing a wide range of interactive, practical activities for individual and group work that encourage the children to explore and find out and develop their understanding of key scientific ideas and make links between different experiences.*
- *Developing the children's investigative skills and understanding of Science through the use of questioning and giving them opportunity to express their findings and ideas to their peers and a wider audience.*

- *Planning opportunities to develop skills in predicting, asking and answering questions, making inferences, drawing conclusions and making evaluations based on evidence and understanding.*
- *Teaching scientific and mathematical language, including technical vocabulary and conventions, and drawing diagrams and charts to communicate scientific ideas.*
- *Planning opportunities to extract information from sources such as reference books and ICT, as well as through science visits and visitors to school providing Science experiences.*
- *Working collaboratively in pairs or groups, listening to and sharing ideas and treating these with respect.*

Strategy for implementation

Science is a core subject of the National Curriculum and pupils undertake some Science activity every week at both Key Stage 1 and 2, as well as taking part in special events such as British Science Week and themed Science days. Science objectives are covered throughout topics in each class and the Science Subject Leader monitors the completion of objectives and ensures continuity across mixed age classes. Planning takes into account that the school places a high emphasis on the development of pupils' skills of scientific enquiry. The skills of enquiry and investigation are taught alongside the knowledge and understanding in aspects of Science related to Biology, Chemistry and Physics.

Foundation Stage

Pupils in the Foundation Stage develop their knowledge, understanding and skills through practical activities and direct teaching based on the Understanding the World section of the EYFS. This prepares children for scientific learning in Key Stage 1 and is consistent with the National Curriculum. This learning is assessed against the EYFS Outcomes.

National Curriculum

At Key Stages 1 and 2 the programmes of study set out what children should be taught and the scientific skills they need to learn.
Working Scientifically is extremely important, and is embedded within the teaching of strands of the curriculum related to Biology, Chemistry and Physics.

Organisation

Science is planned as part of a two-year rolling programme of topics, ensuring that full coverage is given to the National Curriculum for Science, allowing time to revisit and reinforce skills and concepts.

At Key Stage 1

The work covered in Key Stage 1 builds on the Curriculum Guidance for the Foundation Stage. Pupils observe, explore and ask questions about living things, materials and physical phenomena. They begin to work out how to answer questions by using their own observations and ideas, by collecting and recording data and performing simple tests. They use simple scientific equipment appropriately. They share ideas and communicate them using scientific language, drawings, charts and tables with the help of ICT as appropriate.

At Key Stage 2

In Key Stage 2 pupils broaden their scientific view of the world and develop a deeper understanding of scientific ideas. 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 ICT to communicate their ideas.

Teaching and learning

All lessons have clear learning objectives that are shared and reviewed with the pupils effectively. A variety of strategies, including questioning, discussion, concept mapping and marking, are used to assess progress.

Teachers assess children's knowledge and skills on a regular basis that informs next steps in learning. Activities inspire the pupils 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 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. Lessons make effective links with other curriculum areas and subjects, especially literacy, maths and ICT. Activities are challenging, motivating and extend pupils' learning. Pupils 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.

Evidence of the following are found in our classrooms:

- *An active learning environment.*
- *Children working from first-hand experience.*
- *Children encouraged to ask questions.*
- *Children actively involved in exploration and investigation.*
- *Children working co-operatively.*
- *Children discussing with each other and adults.*
- *Children devising and conducting their own investigations.*
- *Children choosing their own materials and equipment.*
- *Children recording their findings in a variety of ways.*
- *Children drawing conclusions from their findings.*
- *Children showing enjoyment in the activities they are undertaking.*

Differentiation

By differentiation we mean the provision of work at different levels which meet a wide range of children's needs and which will keep pace with their developing abilities.

Differentiation by Task

- *By grouping the children according to ability and setting tasks accordingly.*
- *By giving a variety of tasks related to a curriculum theme: providing more concrete experience and discussion for children who are working at a basic level, while giving extension activities to provide depth of learning for those who are achieving well.*

Differentiation by Out Come

- *By setting a task which is virtually the same for the class, but providing greater support for the less able and giving more responsibility and challenge to the more able.*
- *By using mixed ability groups and asking children to plan and carry out practical work cooperatively, then for each child to record the work on their own, this provides opportunities for the teacher to assess what each child has learned. Different approaches will be needed for different classes, ages and activities.*

Assessment and Recording
Teachers' assessment is ongoing, based on observation of pupils and the work they produce. In the annual report to parents it is shred with parents in the form of a summary of the teachers' observations and continued assessment of what pupils can do.

Continuity and Progression
The school ensures curriculum continuity by following the two-year rolling program, linked to learning themes, and effective assessment and communication between staff at transition points.

Inclusion, Special Educational Needs and Gifted & Talented
Planning at all levels ensures that the interests of boys and girls are taken into account, as well as catering for the range of abilities within the class. The pupils 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. All pupils, including those with special educational needs, undertake the full range of activities. Children that are gifted or talented in Science are given extension work to challenge their thinking and understanding even further.

Learning resources
Learning resources are kept in the Science cupboard located in Class Two's Art Area. Relevant equipment is taken to the class by teachers or responsible pupils. The Science Coordinator is responsible for the maintenance of this area. The children are taught to take care of equipment, to respect animals and plants and to use consumables efficiently.

The Learning Environment
Classrooms will have displays of current science topics. The profile of science should reflect its place as a core subject. Resources for the unit of work being covered should be appropriately accessible. Other sources of information should be available.

Health and Safety
Health and safety is an integral part of teaching. As teachers and citizens in a dangerous world, we have a responsibility to encourage children to approach hazards in a safe way. There are few risks associated with Primary Science but children should be taught the importance of safety and the correct way of handling tools, materials and equipment.

Safe practice 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 pupils' allergies. Safety issues will have been identified in medium-term planning and risk assessments must be completed, when activities are identified that are unusual and beyond the scope of normal safety practice.

Existing advice about health and safety is stored in the Health and Safety file.

Science across the Curriculum
The teaching of Literacy, Maths and ICT is promoted strongly in Science as part of this school's drive to raise standards in English and Mathematics. Science is used to extend and enable the pupils to practice the skills of language and Literacy and Maths.

Literacy
In particular, at Key Stage 1, the pupils 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 1 and 2 the pupils 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 Literacy skills at levels similar to those that they are using in their English work.

Maths
At both Key Stages the pupils are expected to use their knowledge and understanding of measurement and data handling and number at appropriate levels. In Science, they should be applying their Maths skills at levels similar to those that they are using in their Mathematics lessons.

Information and Communications Technology
The pupils' ICT skills are applied as identified in the medium-term planning. At both key stages this should involve the pupils using ICT to: locate and research information and data, record findings, and choose appropriate ICT equipment for a purpose.

Thinking Skills
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.

Leadership and management
The role of the Science Coordinator is to:

- *Take the lead in policy development and review, including the continuing successful implementation of the science curriculum.*
- *Support colleagues in the development of plans.*
- *Keep up-to-date on local and national initiatives and disseminate information.*
- *Take responsibility for the purchase and organisation of scientific resources.*
- *Lead the professional development of staff.*

Staff development and training opportunities
The Headteacher discusses staff development needs and, where appropriate, these are built into the school's development plan. The needs of individual members of staff (teaching and non-teaching) are identified as a result of the school's performance management program. Staff attending training are expected to share the useful points with other relevant staff. The school allocates an annual budget for Science equipment. Teachers discuss needs with the Science Co-coordinator 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 Co-coordinator and the Headteacher, giving feedback to all Governors.

Equal Opportunities
All children are valued for themselves and taught as equals regardless of race, gender, ability or disability. Through planning the science curriculum with differentiated tasks, either by task or outcome, all children have access to the curriculum including children with Special Educational Needs. (See also Inclusion Policy)

Signed: C Lawson
Coordinator
Date: June 2017

Signed: N Dixon
Chair of Learning, Teaching and Achievement Committee
Date: June 2017

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Date of Review: June 2020