Individually Strong, Collectively Stronger

Science Policy

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SCIENCE POLICY

AIMS AND OBJECTIVES

Science is about understanding natural phenomena. Science teaching aims to stimulate children's curiosity to find out why things happen in the way they do. It also satisfies their curiosity with knowledge. Science links direct practical experience with ideas and so can engage learners at many levels. It teaches methods of enquiry and investigation that involve developing and evaluation explanations through experimental evidence and modelling. This is a spur to critical and 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.

The aims of science teaching are to enable children to:

- 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.

CURRICULUM AND PLANNING

The science curriculum at Allen Edwards Primary School incorporates the requirements of the National Curriculum for science at Key Stages 1 and 2 and the Understanding of the World Early Learning Goals for the Foundation Stage.

Science is a core subject in the National Curriculum and pupils throughout the school undertake science activities on a regular basis. Science teaching is strongly linked to the thematic approach to teaching that we have developed and is linked (as far as possible) to the book used or topic covered in each term. Where this is not possible, it is taught as a discrete subject.

From January 2016, staff will use the Snap Science Teaching and Assessment Framework for Years 1 – 6. This incorporates all required topics and objectives in the new National Curriculum which will be fully covered to make sure that learning is deep. Teachers ensure that planning includes differentiated activities to ensure all children are making progress in their learning during each lesson.

Teachers use their professional judgement to organise their timetables. Science can be taught in weekly lessons or blocked but should be taught for the equivalent of 1 hour a week for KS1 and 1½ hours in KS2.

CONTENT

At the Foundation Stage science objectives are covered through 'Understanding the World' which involves 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. Children should be helped to know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.

At Key Stage 1 children are given the opportunity 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 should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.

In Lower Key Stage 2 the principal focus of science teaching is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

In Upper Key Stage 2 the principal focus of science teaching is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. They should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

TEACHING SCIENCE TO CHILDREN WITH SPECIAL EDUCATIONAL NEEDS

Science forms part of the school curriculum policy to provide a broad and balanced curriculum to all children. Science is taught to all children, whatever their ability. Teachers set suitable learning challenges and respond to each child's different needs, to ensure that all children make progress.

All children, including those with special educational needs, undertake the full range of activities. Teachers determine the level of understanding and knowledge expected of children according to their individual ability. Teachers aim to ensure all children access the curriculum by; using a variety of teaching techniques, planning appropriate activities for all children, using additional adult support to aid children's understanding.

Educational support staff work as directed by the teacher. Where educational assistants are assigned to children with special educational needs, they are well briefed beforehand.

Intervention through School Action will lead to the creation of a School Support Plan (SSP) for children with special educational needs. The SSP may include, as appropriate, specific targets relating to science.

TEACHING SCIENCE TO CHILDREN WHO ARE GIFTED AND TALENTED

Teachers identify children who show exceptional talent in science on the school's Gifted and Talented Register. Teachers provide opportunities for further challenge and extension for these children within class science lessons, for example through the use of open-ended tasks, setting more difficult tasks and the use of more complex resources.

ENRICHMENT ACTIVITIES

Wherever possible, the teaching and learning of science is enhanced by educational visits using the local area as a resource, organised class visits to other relevant locations or visitors to the school. Science Week and Science Evenings help to raise the profile of science in the school and allows the children to experience a range of exciting activities and mini projects.

ASSESSMENT AND RECORDING

At the beginning of each unit of work, teachers undertake formative assessment of their pupil's knowledge and understanding and this is used to adapt planning and teaching to match the children's needs.

A cover sheet grid detailing what children are expected to know (unit content) and be able to do (working scientifically) at the end of each unit is stuck into books at the beginning of a unit. At the end of the unit children will assess themselves against these criteria to show how happy they are with each area (this is done with smiley faces in KS1 and coloured boxes using the Traffic Light system in KS2).

During each unit children will carry out at least one experiment using an Experiment Planning board. There is also included in the planning an open-ended task which will give children an opportunity to demonstrate their level of understanding. These pieces of information, as well as contributions a child

makes during class are all taken into consideration when the teacher is assessing a child's progress at the end of a unit.

Teachers analyse children's progress in the units of work they have completed at the end of each school year to write annual reports to parents/carers for each child. At the end of each unit teachers are expected to complete the 'Working Scientifically' section attached to the cover sheet grid found at the beginning of each unit and use this to inform future planning.

Following the introduction of the Snap Science Assessment Framework in January 2016, teachers will be able to track the progress of individual children and whole classes by using the integral tracking system linked to the achievement of specific National Curriculum objectives.

Assessment information is monitored regularly by the science subject leader and passed to the next teacher at the end of the year, to ensure progression and continuity in learning.

MARKING

Science work is marked in accordance with our marking policy. Teachers are aware of the value of immediate feedback so endeavour to provide verbal feedback wherever possible. In depth marking, with a response in green pen from the child, is expected to happen at least once a unit.

RESOURCES

There are sufficient resources for all science units in the school. These are kept in a central store in clearly labelled boxes.

The library contains a good supply of science information books, including big books and sets of books. Each class also has science information books in their classroom. There are some resources available for use with the Interactive Whiteboard.

Children are taught how to use resources safely and appropriately. Teachers decide, based on the age and stage of their classes, which resources are appropriate for the children to use.

Classroom displays are Topic based and science work should be incorporated with these in cross-curricular links.

USE OF COMPUTING/ICT

We use ICT widely in our Science teaching. Children are given the opportunity to practice science skills and enhance their presentation using carefully chosen software, as well as the Internet. ICT equipment is used for enquiry work, including microscopes with digital cameras, data loggers, flip cameras and iPads.

HEALTH AND SAFETY

Safe practice must be observed and promoted all times.

The ASE publication *Be Safe*! has been adopted as the school's safety policy in science. Copies are kept in the central science resources area and the school office.

Following the guidance in *Be Safe*! teachers need to risk assess in their own classrooms, taking account of their particular cohort of children.

It is important that children are taught the rule of safety in science from a young age so that it becomes integral to their experiments and investigations. Materials and equipment need to be treated with respect and care and we endeavor to make sure all children do this. When carrying out scientific activities, children should treat their classroom as though it is a fully equipped science laboratory.

MONITORING

It is the responsibility of the science subject leader to monitor the standards of children's work and the quality of teaching in science. The science subject leader is also responsible for supporting colleagues in the teaching of science, being informed about current developments in the subject and for providing a strategic lead and direction for the subject in the school.

Reviewed: October 2017

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Signed by Headteacher: Louise Robertson