

BARTON PRIMARY SCHOOL AND EARLY YEARS CENTRE.



SCIENCE POLICY

DATE: SPRING 2010
TO BE REVIEWED: SPRING 2012



Science Policy

Introduction

This document is a statement of the aims, principles and strategies for teaching and learning of Science at Barton Primary School. It was reviewed in 2010 and will be reviewed again in 2012.

Rationale

Science stimulates children to consider the way in which things operate in the world around them. It aids the development of their understanding, by encouraging children to raise questions and find answers through a discovery-based approach which involves prediction, practical exploration, experimentation and analysis. Children are encouraged to think creatively in order to develop their own means of enquiry and engage in thoughtful discussion concerning their findings and ideas. They are also provided with the opportunity to consider the practical application of scientific knowledge and recording strategies.

Principles

Science is important because it:

- fosters curiosity, awe and wonder
- enables the development of an appreciation and understanding of the World around us
- teaches methods of enquiry including observation, prediction, hypotheses, fair testing, drawing conclusions, evaluating results, recording and communicating findings
- is a core subject in the National Curriculum, formulated into four key areas or attainment targets, which are:
 1. Scientific Investigation
 2. Life and living Processes
 3. Materials and their Properties
 4. Physical Processes
- Within the new APP process it is divided in to 5 different assessment focuses.

Aims

Through the teaching of Science, we aim to:

- stimulate appreciation for and curiosity about the World in which we live.
- encourage scientific questioning and creative thought.
- teach methods of enquiry and investigation which are mainly practical; based on first-hand experience, backed up by research.
- foster an understanding and an appreciation of the way in which scientific understanding can be applied practically and has enabled technological advances
- develop the children's ability to communicate their ideas and findings
- promote co-operative learning and discussion

Objectives

Our objectives are to enable children to:

- ask and answer scientific questions
- plan, carry out and evaluate scientific investigations, using equipment correctly
- use scientific methods including:
 - making close and accurate observations
 - making and testing hypotheses
 - designing and executing fair and controlled experiments
 - evaluating evidence
 - recording and communicating findings in verbal explanation writing,
 - diagrams, tables and graphs clearly and accuratelyresearch into areas of study
- use ICT in order to aid observation, investigation, recording and research where appropriate
- work co-operatively, sharing ideas and listening with respect to the ideas of others
- know and understand the life processes of living things
- know and understand the physical processes of materials, electricity, light, sound and natural forces
- know about the nature of the solar system, including the earth

Strategies for the teaching and learning of Science

In Key stages 1 and 2, a cross-curricular approach has been adopted. The science curriculum has, where possible, been integrated into topics and links have been made to other subjects in order to enhance enjoyment and understanding by contextualising what is being learned. This often means that science is taught in chunks, not necessarily in weekly set amounts of time.

Where it has not been possible to integrate Science within the topics, it is taught as a discrete subject, in order to ensure coverage of the National Curriculum Programmes of Study, as outlined by the Q.C.A. The curriculum is taught within a two year cycle across each Key Stage. Within the Reception it is taught in the context of the Early Years Foundation Stage Framework which underpins the curriculum planning for children up to the age of five.

A variety of teaching and learning styles are employed; whole-class, group work, working in pairs or independently, according to the nature of the enquiry being pursued. The emphasis is placed on learning through first-hand experience, where possible. This should involve practical experiments, problem solving and close observation, based in real scientific enquiries as occasion allows, including use of the outside areas of the school, particularly the Environmental Area and links with the Forest School programme.

Opportunities to undertake school trips are also provided, subject to risk assessments. These compliment the learning that is taking place within the environment of the school. Children may also be encouraged to research knowledge, through various means, including books, CD Roms and the Internet, in order to enhance and aid their understanding of what is being learned.

Children are provided with the opportunity to engage in communicating and recording ideas and findings in a variety of ways, including the use of ICT. Ideas and findings may be presented in various ways, including graphs, charts, drawings, photographs, diagrams, and writing, but also verbally and through role-play.

Quality first teaching informs and focuses our approach in terms of the varying needs and levels of attainment present within our class groupings. We share learning objectives with the children in Key Stage 1 and 2, in order to focus their attention on what is being learned.

We recognise that there is a wide range of scientific ability within all our classes and we endeavour to provide suitable learning opportunities for all children, by matching the approach and challenge of the task to the ability of the individual child. We achieve this by the following means, as required by the occasion:

- eliciting current knowledge through concept mapping and discussion
- setting tasks which are open-ended
- matching the task/resources to the ability of the child
- grouping children by ability
- providing additional adult support to individuals or groups through the use of classroom assistants
- providing peer support through mixed ability pairing
- displaying suitable vocabulary
- setting appropriate targets for individual children (K.S. 2)

Excellence and achievement

Excellence and achievement is celebrated through:

- written feedback on work
- awarding of stickers
- verbal recognition/praise, within the class environment
- certificates presented within the weekly Sharing Assembly
- recognition published in the weekly newsletter
- wall displays
- reporting to parents

Children recognised with particular gifting within this area of the curriculum, will be recorded on our Gifted and Talented Register.

Inclusion

Science is a critical area for promoting equal opportunities and counteracting stereotypes. All children are valued and encouraged to develop their full potential within the entire science curriculum, regardless of their

gender, ethnic origin or individual needs and abilities. Other whole-school policies have been created, which encapsulate our approach towards Special Educational Needs, Disability, Gifted and Talented and Racial Equality.

Planning for Progression

The school uses the framework of the Q.C.A. schemes of work as the basis of its curriculum planning, adapted where necessary, to the circumstances of the school. The guidelines provided by the Q.C.A. helps to ensure progression and we also seek to ensure opportunities for children of all abilities to develop their skills and knowledge within each unit.

Curriculum planning takes place in two phases:

- long term - provide an overview of the order of the topics and are worked out in conjunction with teaching colleagues
- medium term - generated by the teachers in each year group, these are based on the Q.C.A. for Key Stage 1 and 2, but presented in the school's agreed format. This set of plans provides details of the work covered within each half term. The Reception planning is worked out in relation to the Early Years Foundation Stage Framework. The Science Co-ordinator keeps monitors and reviews copies of planning to ensure balance, breadth and progression.

Assessment for Learning

Teachers assess children specifically at the end of Key Stage 1, but children are also assessed throughout the year, at the end of each unit, in accordance with our school's Assessment policy. In Key Stage 1 and 2 assessments are made in relation to the National Curriculum levels of attainment. Assessment in Reception is carried out in relation to the Early Years Foundation Stage Framework.

Assessment may take several forms, including:

- informal, during the context of the lesson
- judgements based on completed pieces of work
- observations of the child at work, or engaged in discussion
- formal tests
- specific tasks planned into schemes of work

Assessment is used to ascertain where children stand in regard to the National Curriculum levels of attainment, or Early Years Foundation Stage Framework and inform teachers in regard to planning for future teaching and learning. It is nationally expected that children will achieve Level 2 at the end of Key Stage 1 and level 4 at the end of Key Stage 2. Some children may not achieve these levels and some may achieve more, but children at the end of Key Stage 1 will not normally achieve more than level 3.

It is imperative that feedback be provided to children, in order to involve them in maintaining progress in their learning. Feedback may sometimes be provided in discussion with the whole class or even a group. It may be provided to the individual child in verbal or written form, which should be related to the learning objectives and progress of the child in relation to its personal targets. Older children are encouraged to reflect on how they can improve their work in relation to their individual targets. Younger children in particular will tend to receive more immediate verbal feedback.

During the year Assessing Pupils' Progress will come in to place, which will begin to be implemented in to the school during 2010 and 2011. This will aim to provide a clear and evaluative method for assessing pupils work and ensuring evidence is collected and work monitored and recorded clearly and regularly. The APP process for Science relates to the topic in 5 different assessment focus areas

AF1 - Thinking Scientifically.

AF2 - Understanding the applications and implications of science.

AF3 - Communicating and collaborating in science.

AF4 - Using investigative approaches.

AF5 - Working critically with evidence.

Recording and Reporting

Some work may be most appropriately recorded by photographs or on film. Teachers also keep records of progress within the APP file, throughout the year, in relation to the assessment focus, at Key Stage 1 and 2. In Reception, progress is recorded in relation to The Early Years Foundation Stage

Framework. Records are passed up through the school at the end of the year. Progress is reported to parents during Parents' Evenings and annually, through a written report.

Resources

The governors and Head Teacher are responsible for setting the budget, purchasing resources according to the school's current priorities. Resources include:

- boxes of topic based equipment and materials for use which are stored centrally in a designated area.
- videos stored in a cupboard in the staffroom
- CD Roms located in year groups and classes
- library books supplemented by schools library service
- digital cameras are kept in classes
- digital microscope is stored with I.C.T. equipment
- digital microscope available, one in each class
- Smartboards, computers and internet access is available in every class
- periodicals such as 'Child Education' and 'Junior Education' which are available in the staffroom and stored in the Work room, adjacent to the staffroom
- Books for teachers on the Resources shelves in the ICT suite.

Health and Safety

Science is a potentially hazardous subject, and so health and safety is of utmost importance at all times. All teachers and helpers should ensure awareness of potential hazards and also of safety procedures. Lessons should be conducted in a disciplined manner. Children should be encouraged handle equipment safely and appropriately, using only the materials appropriate for the task and restoring equipment to its rightful place once it has been used. They are encouraged to take an active role in identifying and safeguarding against hazards, particularly more so, as they progress throughout the school.

The School has a Health and Safety Policy, but additional guidance regarding good practice in relation to Science is available from CLEAPSS publications, copies of which are held by the Science Coordinator.

The role of the Science Coordinator

The Science Coordinator should:

- take a leading role in developing, implementing, monitoring, reviewing and updating the Science Policy and guidelines
- take a leading role in developing schemes of work designed to ensure progression and continuity in Science, throughout the school.
- monitor the quality of teaching and standards of children's' learning advise the Head Teacher/CPD Coordinator of development needed
- to organise, monitor and oversee maintenance and replacement of resources and equipment, removing outdated stock and advising the Head Teacher of resource requirements
- keep up to date with new developments (including Health and Safety) and current trends, disseminating knowledge to colleagues as required.
- liaise with other Science Coordinators
- to review and update the subject action plan, as part of the whole school development plan.