Norfolk Community Primary School
Science Policy

The Nature of Science

The contribution which science makes to pupil's education is significant. It teaches knowledge which is relevant to everyday life, including environmental and health and safety issues. It also teaches skills of objective investigation, enquiry, questioning of ideas and communication, which can be applied across a range of subjects.

Aims

Through studying science pupils will:

- Develop skills of planning experimental work through both practical experience and the use of primary and secondary sources of information.
- Develop questioning skills related to obtaining and interpreting evidence.
- Draw conclusions from their evidence, giving reasons and making comparisons and record and communicate these in a variety of ways.
- Develop systematic investigative skills taking into account fair testing.
- Consistently refine their knowledge and understanding of Life Processes, Humans as organisms, Green plants as organisms, Variation and classification, Living things and their environment, Grouping and changing materials, Separating mixtures of materials, Electricity, Forces and motion, Light and sound and Earth and beyond.
- Use appropriate scientific vocabulary.
- Understand and use standard measures and SI units in their work.
- Be able to relate their understanding in all areas of the subject.

This is going to help us fulfill the whole school aims of creating a school community with a positive atmosphere in which children learn to value themselves, each other and the world in which they live, where positive attitudes towards learning are developed and where the individual is encouraged to reach his/her potential through first hand experience and a meaningful curriculum.

Areas of Knowledge

We will ensure the requirements of the National Curriculum are met through the structuring of the curriculum to provide continuity and progression throughout the school in the skills and understanding of the subject. Areas of the subject are revisited in different years, but at a level appropriate to the pupil's understanding.

Particular emphasis should be placed on the skills, knowledge and

understanding associated with experimental and investigative science. These skills should underpin all areas of the subject.

How To Plan Science

Foundation Stage

The Foundation Stage base their planning on the objectives laid out in the Knowledge and Understanding section of the Early Learning Goals. Science can be integrated into cross curricular themes however; it should be planned for as a subject in its own right, with clear scientific learning objectives stated. Science in the Foundation Stage should link to the QCA curriculum taught in Key stage 1.

At Foundation Stage children are encouraged to:

- Participate in activities based on first hand experiences;
- Take part in exploration, observation, problem solving, prediction, decision making and discussion;
- Explore and question;
- Communicate ideas orally and in other ways.

Key Stage 1/2

The Science Matrix attached shows which units of work are covered by each year group at different times of the school year. Each unit of work is in line with the QCA Science Schemes of Work and therefore provides consistency and progression across the whole school.

Planning in both Key Stages follows the QCA Scheme of Work. It is imperative that teachers take ownership of the document adapting lessons to meet the needs of their class. We should ensure when planning we take into account the National Curriculum Levels our pupil's are at and what they are expected to achieve.

At Norfolk we plan using a themed approach; therefore science should, where possible, link to other subjects being taught. Science should also be taught as a discrete subject when necessary. This will help to ensure subject knowledge is reinforced for our children. There are also separate planning sheets for KS1 and KS2 that can, if teachers require, be used for investigative work.

Planning should include: key questions and key vocabulary with an emphasis on scientific enquiry skills.

Children should be given the opportunity to select their own equipment for investigative purposes; this could be used as an extension activity for more able pupils.

At Key Stage 1 pupils will be taught to:

- Ask questions and decide how they might find the answers to them;

- Use first hand experience and simple information sources to answer questions
- Think about what might happen before deciding what to do;
- Recognise when a test or comparison is unfair;
- Explore uses the senses;
- Communicate what happened in a variety of ways;
- Make simple comparisons;
- Review their work and explain to others what they did.

At Key Stage 2 pupils will be taught to:

- Establish links between causes and effects;
- Ask questions that can be investigated scientifically;
- Consider which sources of information they will use to answer questions;
- Decide which evidence should be collected and what equipment and materials should be used;
- Make a fair test or comparison by changing one factor and keeping other factors the same;
- Make systematic measurements and observations;
- Use a wide range of methods for recording;
- Decide whether conclusions agree with predictions; use their scientific knowledge and understanding to explain.

Resources

Science Leaders will work with the Head teacher to ensure that there are sufficient resources for Science. It is the responsibility of every teacher to alert the Science Leaders to resource needs. Science Co-coordinators will ensure that the annual review of the School Improvement Plan adequately reflects the current needs of the subject and will prioritise accordingly.
Science resources are currently stored in moveable and lockable cupboards under the stairs and are easily accessible for all staff. Resources are organised into boxes for each QCA Scheme of work. Each box contains a unit file with paper resources and stock sheets. Staff are requested to note any resources needed. There are also whole school resources, e.g. batteries that are stored in labelled trays.

Teaching and Learning Principles

There needs to be a balance of teaching styles but teachers should introduce the subject matter, including key questions and key vocabulary. The pace of the teaching and learning should be maintained throughout and opportunities given to discuss and closely question the children whilst they are investigating. Learning outcomes and teacher expectations should be made explicit and should be high. Pupils should be brought together to share ideas,

result and conclusions. Sometimes formal direct teaching of knowledge to the whole class will be necessary, on other occasions activities could be carried out in small groups or by the individual.
Pupils should be taught how to use equipment correctly and safely, they should be encouraged to develop skills in observation, prediction and fair testing. They should be able to record results in a variety of ways and interpret their findings.
Differentiated work should be provided for pupils of different abilities with all pupils given the opportunity to show their knowledge and understanding. Higher attaining pupils should be given the opportunity to benefit from planned extension work. This will help to ensure an inclusive curriculum.
Relevant IT programmes should be used to support all areas of science.
It is recommended that Science teaching should be taught for 2 hours in Key Stage 1 and 2—3 hours in Key Stage 2 per week although with themed approach teaching this may not always be the case, Science teaching can be blocked to ensure continuity and progression.

Science Language

Scientific language should be developed through interactive teaching. When planning each lesson key vocabulary will be identified. The scientific language is specific to year group and Scientific Enquiry (SCI) skills.

Special Educational Needs & Differentiation

There is a whole school SEN policy and science is taught according to its guidelines. Tasks are planned to meet each individual pupil's needs and teachers ensure that work is appropriately challenging to all abilities.

Equal Opportunities

To be read in conjunction with the Equal Opportunities, Inclusion and Race Equality Policies.
All pupils irrespective of ability, gender or cultural diversity are given the same opportunities in science. We organise working groups of mixed ability, mixed gender and mixed cultural backgrounds. Consideration will be given to regular monitoring of the above. It is the class teachers' responsibility to ensure equal opportunities. Consideration will be given to the role models, which the school provides for pupils and how these can be supplemented by visits and visitors from different backgrounds. Resources and displays will provide positive images, which motivate pupils and contribute to raising expectations.
The way in which pupils have equality of access to resources will be kept under review.

Health and Safety Guidance

There is a Health and Safety policy in school, in which science plays a part in the Personal and Social Health Education of pupils with reference to Drugs Awareness and Sex Education. There is a copy of 'Be Safe' in school which

is published by ASE and lays down the guidance for safety in science.

Assessment

Assessment needs to be informative, diagnostic and useful. Each class teacher incorporates formative assessment in their planning of science work. It is built in, ongoing and an integral part of their planning. We plan for assessment in our units of work by having clear learning objectives and targeting individuals or groups. Teacher assessment can be oral or written using ongoing records. Our objectives allow for different levels of achievement. At the end of each QCA unit scientific knowledge and understanding is assessed and is recorded on the target and objective sheet which should be placed on the inside cover of the Science books.
Summative assessments are, the Foundation Stage Profile, Y2 SATs teacher assessments and Y6 SATs (See Assessment Schedule).

Formative Assessment

- The class teacher assesses each lesson and significant comments should be recorded on the Short Term Planning format. Evidence of weekly assessments should directly inform teaching and be evident in the planning of following lessons through Assessment for Learning.
- Comments relating directly to Learning Objectives should be made in pupil's books. These should express how far an individual has gone to meeting the lessons objective.
- Each class teacher will also use question and answer techniques to assess children's understanding during plenary and introductory sessions.

Summative Assessment

- At the end of each Key Stage Standard Attainment Tests will be used measure attainment and progress.
- Each unit of work has a corresponding target and assessment record which staff can use as a tool to help set key questions and record outcomes of individual lessons. These should be stuck into the inside cover of children's Science/Topic books.
- QCA optional SAT's will be used in Years 3, 4 and 5. Year 6 pupils will use questions from previous SAT's papers as part of their assessments.

Recording and Reporting

There are two parents' evenings per year where pupil's progress is discussed. We write an Annual Report at the end of the summer term to send to parents. Strengths and areas for improvement in science are noted. Targets for individual pupils are identified. The parents of Y2 pupils also receive the results of End of Key Stage 1 Teacher Assessment.
The Head teacher and staff are always available to discuss a pupil's progress at any time. At Norfolk we work in partnership with parents and share information of pupils' progress with parents.

The Management and Leadership of Science

The Science Leaders will be responsible for:

- Reviewing the content and effectiveness of the policy and curriculum in partnership with and under the guidance of the whole school curriculum leader.
- Looking at half-termly/termly planning to ensure coverage of the POS in the National Curriculum.
- Having informal discussions with colleagues.
- Maintaining, organising and supplementing resources as appropriate.
- Attending relevant leader courses and briefings and reporting back outcomes.
- Ensuring that both the leaders and other teachers are made aware of relevant INSET according to individual's needs and in line with the school development plan.
- Ensuring feedback to staff from such courses.
- Monitoring SATs results each year and comparing them to previous years.
- Ensuring Governors receive an annual report on the school's achievement in the SATs.
- Monitoring of the levels of children's work in each class by collecting in sample pieces of work from below average, average and above average ability groups, which have been levelled each term.

The policy is to be reviewed and updated annually by the science coordinators.

Monitoring and Evaluation

The monitoring and evaluation arrangements previously stated in this document are in line with the issues raised in our OFSTED report.
The Science Leaders are responsible for monitoring Science Planning both Medium and Short Term. A portfolio of work will be set up to help the leaders keep abreast of levels of attainment and work coverage. Lesson observations will be scheduled by the leaders as appropriate to monitor various issues including planning, differentiation, assessment and resources.

Review of Policy

Written June 2007 by Lindsay Symonds and Sarah Birch

Date approved by Staff

Date approved by Governors

Date to be reviewed June 2008