

## Introduction

This policy outlines the purpose and management of the Science taught and learned at Beckstone Primary School. The policy has been drawn up to reflect our whole school approach to Science and has been discussed with staff.

## The Nature of Science

Science is essentially a way of thinking and working. It includes the development of basic skills, the fostering of positive attitudes and the development of scientific concepts. Science stimulates and excites pupils' curiosity about phenomena and understanding the natural, physical and technological world in which they live. 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. Alongside this knowledge of the world Science also fosters a method for investigating, checking and finding out more. Scientific method is about developing and evaluating explanations through experimental evidence and modelling. This is a spur to critical and creative thought.

## Aims:

It is our aim to:

- Stimulate and excite pupils' curiosity about changes and events in the world;
- Engage pupils as learners at many levels through linking ideas with practical experience;
- Help pupils to learn to question and discuss scientific issues that may affect their own lives;
- Help pupils develop, model and evaluate explanations through scientific methods of collecting evidence using critical and creative thought;
- Give pupils the opportunity to develop methods of systematic enquiry (predicting, planning, doing, concluding);
- Help children acquire and develop the skills and confidence to undertake investigations and problem solving;
- Help pupils to understand findings through the use of correct scientific vocabulary and a wide range of data collection and presentation;
- 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.

## Strategy for implementation

Beckstone Primary will achieve the above aims by focusing on the development of skills, following the agreed scheme of work and giving children the opportunity to:-

- Ask questions, develop knowledge and understanding, obtain first hand information, develop skills and enquiry and use I.C.T.;
- Relate Science to their everyday experiences, learn the importance of Science to their health and of treating living things with care and respect;
- Understand that an idea comes from some sort of evidence and better evidence helps us develop better scientific understanding;
- Use scientific vocabulary consistently throughout school;
- Record children's' work in the form of drawings, diagrams, tables and charts, speech and writing;

- And finally we will recognise hazards and risks when doing Science activities and the importance of following instructions and using equipment correctly.

## Coverage

The work covered in Key Stage 1 builds on The Early Years Framework which is the nationally recognised curriculum for pupils aged under five. Pupils in Reception develop their knowledge, understanding and skills through play activities and direct teaching from which the pupils undertake planned tasks. At Key stage One and Two the programme of study is divided into two main areas:

- Scientific Enquiry
- Knowledge and Understanding

Planning takes into account that the school places a high emphasis on the development of pupils' skills of scientific enquiry (Sc1). In the substantial majority of lessons the skills for Sc1 are taught alongside the knowledge and understanding in life processes and living things (Sc2), materials and their properties (Sc3) and physical processes (Sc4). In this way there is an equivalent emphasis on Sc1 as there is on Sc2/3/4 together.

### At Key Stage 1

Pupils observe, explore and ask questions about living things, materials and physical phenomena. 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 ICT if it is appropriate.

### At Key Stage 2

Pupils 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 ICT to communicate their ideas.

### Expectations

By the end of Key Stage 1, the performance of the great majority of the pupils should be within the age appropriate assessment stage, e.g. Year 2 will be assessed within Stage 2.

By the end of Year 4, the performance of the great majority of pupils should be in the range of Stage 4. Most pupils are expected to achieve this unless specified, e.g. SEN.

By the end of Key Stage 2, the performance of the great majority of the pupils should be within the range of Stage 6. Most pupils are expected this unless specified, e.g. SEN.

### Teaching and learning

All lessons have clear learning objectives which are shared and reviewed with the pupils 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 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, numeracy 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.

### A Typical Lesson

Science lessons have no imposed formal structure but may contain the following elements:

Discussion: What they already know from experience, what they have learnt so far, what they will be finding out next.

Teaching: Directly to the whole class or through group or individual work.

Practical Tasks or Investigative work: Working in groups or individually, practising scientific skills, finding out answers, being encouraged to think scientifically

Recording: Writing about what they have found out, drawing charts and tables and diagrams, using the computer and other media to record what they have done or found out about.

Communicating: Sharing ideas, knowledge and what they have found out about with each other, the teacher, other classes and adults as appropriate.

### Inclusion

Planning at all levels ensures that the interests of boys and girls are taken into account. 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. The needs of gifted and talented pupils are developed as appropriate and educational support staff work as directed by the teacher.

All pupils, 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.

### Assessment and Recording

Assessment is a necessary and integral part of teaching and learning to ensure a balanced and relevant curriculum which supports high quality learning in Science. There should be a dynamic interaction between aims, objectives, curriculum planning, teaching and learning and assessment, in which each informs and helps the others improve.

Formative and Summative assessments in Science is a method developed to support day to day and periodic assessment. This is recorded in a Science Passport which follows each child throughout Beckstone.

Assessing Science is structured so teachers can track pupils' progress throughout the key stages and build diagnostic information about pupils' strengths and weaknesses. APP is based on the age related descriptions that underpin national curriculum assessment and has been proven to improve the quality and reliability of teacher assessment.

The APP Passport approach is straightforward, teachers review pupils' work using a range of sources to build a profile of their attainment. The information gained from the process allows teachers to analyse the relative strengths and weaknesses of each pupil, assign each pupil an overall national curriculum assessment for Science and then use this information to set curricular targets to strengthen pupils' learning. This will then be used to easily inform future teaching by making links to the relevant objectives as necessary.

### Beckstone's approach to Science Assessment

The school has developed a 'Beckstone Science Passport' based on the Stage 1 – 6 assessment criteria within the National Curriculum framework. Each child will be provided with a passport as they enter Year 1, which will then follow them throughout the school. Each year group will highlight the assessment statements as the children meet them through a degree of understanding. This will allow for clear progression to be easily identified and monitored within the school. At the end of the year levels and overall progress will be recorded by class teachers. This information will also be collected and evaluated by the coordinator in order to monitor progress.

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

#### Extra-curricular opportunities

There are opportunities for children to visit places of scientific interest and for visitors to come into the school in order to support the learning objectives for units of work where relevant. The pupils have access to courses provided by STEM (Science, Technology, Engineering and Maths development). Opportunities for environmental Science are taken by year 6 pupils at Kingswood Education Centre as part of a one week visit. Key Stage 2 pupils participate in Science and Technology challenges each year at The Lakes College and take part in the local Rocket Challenge. Workington Academy provides Science opportunities on request. The school aims to increase awareness of Science in everyday life and to encourage curiosity and enthusiasm for Science. A gardening club is open to all pupils one evening per week. The school has developed an allotment on the school premises to promote an understanding of food production and healthy living.

#### Science across the curriculum

The teaching of literacy, numeracy 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 numeracy.

#### 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 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 which they are using in their English work.

#### Numeracy

At both key stages the pupils 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.

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#### Information and Communications Technology

The pupils' ICT skills are applied and developed as appropriate. At both key stages this involves the pupils using ICT to: locate and research information (CD ROM, internet); record findings (using text, data and tables); log changes to the environment over time (sensing equipment); gain confidence in using calculators, VCR, video cameras, digital cameras, and tape-recorder, as well as the computer.

#### Leadership and management

**The role of the Science Subject leader 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 weekly plans from schemes of work.
- Keep up-to-date on local and national initiatives and disseminate information.
- Take responsibility for the purchase and organisation of scientific resources.
- Encourage 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 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 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.



Beckstone  
Primary School

# Science Policy

