



# **St. Margaret's-at-Cliffe Community Primary School**

## **Science Policy**

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**Signed : \_\_\_\_\_ Chair of Governors**

**Signed : \_\_\_\_\_ Headteacher**

## Equality

We recognise our duty and responsibility to establish equality for all pupils, staff, other members of the school community and service users regardless of their ethnicity, gender, disability, sexual orientation; age or beliefs as defined within existing equalities legislation (please see 'Single Equality Scheme).

## Science Policy

At St Margaret's at Cliffe CP school the main aspects of science to be studied will be determined by the programmes of study of the National Curriculum 2014. In addition we have adopted the Kent Science Scheme of Work written by Andrew Berry.

The following text is taken from the 2014 Science National Curriculum. This captures the rationale behind and approach we take to science teaching and learning at St Margaret's at Cliffe CP School.

## Purpose of study

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

## Aims

The national curriculum for science aims to ensure that all pupils:

- 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.

## Scientific knowledge and conceptual understanding

The programmes of study describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. Insecure, superficial understanding will not allow genuine progression: pupils may struggle at key points of transition (such as between primary and secondary school), build up serious misconceptions, and/or have significant difficulties in understanding higher-order content.

Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting

and analysing data. The social and economic implications of science are important but, generally, they are taught most appropriately within the wider school curriculum: teachers will wish to use different contexts to maximise their pupils' engagement with and motivation to study science.

## **The nature, processes and methods of science**

'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand. The notes and guidance give examples of how 'working scientifically' might be embedded within the content of biology, chemistry and physics, focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should seek answers to questions through collecting, analysing and presenting data. 'Working scientifically' will be developed further at key stages 3 and 4, once pupils have built up sufficient understanding of science to engage meaningfully in more sophisticated discussion of experimental design and control.

## **Spoken language**

The national curriculum for science reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and articulating scientific concepts clearly and precisely. They must be assisted in making their thinking clear, both to themselves and others, and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

## **School curriculum**

The programmes of study for science are set out year-by-year for key stages 1 and 2. Schools are, however, only required to teach the relevant programme of study by the end of the key stage. Within each key stage, schools therefore have the flexibility to introduce content earlier or later than set out in the programme of study. In addition, schools can introduce key stage content during an earlier key stage if appropriate. All schools are also required to set out their school curriculum for science on a year-by-year basis and make this information available online.

## **Attainment targets**

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

*Science National Curriculum 2014*

## **PRINCIPLES OF TEACHING AND LEARNING SCIENCE AT ST MARGARET'S AT CLIFFE CP SCHOOL**

### **Differentiation and Special Needs**

The study of Science will be planned to give pupils a suitable range of differentiated activities appropriate to their age and abilities. Tasks will be set which challenge all pupils, including the more able. For pupils with SEN the task will be adjusted or pupils may be given extra support. The grouping of pupils for practical activities will take account of their strengths and weaknesses and ensure that all take an active part in the task and gain in confidence.

### **Variety**

Pupils will be involved in a variety of structured activities and in more open-ended investigative work including:

- Activities to develop good observational skills.
- Practical activities using measuring instruments which develop pupils' ability to read scales accurately.
- Structured activities to develop understanding of a scientific concept.
- Open ended investigations.

On some occasions pupils will carry out the whole investigative process themselves or in small groups.

### **Relevance**

Wherever possible, Science work will be related to the real world and everyday examples will be used.

### **Cross-curricular Skills and Links**

Science pervades every aspect of our lives and we will relate it to all areas of the curriculum. We will also ensure that pupils realise the positive contribution of both men and women to Science and the contribution from those in other cultures. We will not only emphasise the positive effects of Science on the world but also include problems, which some human activities can produce. Our Science curriculum has clear links with D&T, English (in terms of reading and writing), Numeracy (in terms of data handling) and Computing (in terms of researching information, recording results, datalogging and making observations). Where possible teachers will make creative links to other areas such as dance, drama and singing to fully embed Science into the creative curriculum.

### **CONTINUITY AND PROGRESSION**

By careful planning, pupils' scientific skills and knowledge gained during the Early Years Foundation Stage will be developed and extended throughout Key Stage 1 and Key Stage 2.

The Early Years Foundation Stage will introduce Science to children through a range of 'real life' situations as the children are encouraged to explore their 'Understanding of the World.' The Early Learning Goals (ELG14) will be met by encouraging the children to develop a curiosity about the world around them. They will be given various opportunities to make predictions and test their ideas.

Pupils in Key Stage 1 will be introduced to Science through focused observations and explorations of the world around them. These will be further developed through supportive investigations into more independent work at Key Stage 2.

The knowledge and content prescribed in the National Curriculum will be introduced throughout both Key Stages in a progressive and coherent way. How this is achieved is indicated in our scheme of work for Science based on the Kent Scheme of Work.

### **HEALTH AND SAFETY**

The LA has adopted the ASE book '*Be Safe*' as its model risk assessment and therefore this will be consulted if necessary. If an activity is not covered by '*Be Safe*' then we will contact CLEAPSS (School Science Service Helpline 01895 251496) for further advice.

### **ASSESSMENT, RECORDING AND REPORTING**

In EYFS focus will be on ongoing observations throughout the year as the children undertake teacher directed and self initiated tasks.

At Key Stage 1 statutory assessment for science is Teacher Assessment. Levels awarded will be related to the National Curriculum level descriptions and will be moderated within the school. (Some examples of work held in portfolios).

At Key Stage 2 similar arrangements will be followed but assessment will include end of topic assessments which will be used to determine pupils' retention of knowledge and vocabulary, (Kent Scheme of Work). The assessment of AT1 (working scientifically) will rely on a mixture of evidence from pupils' everyday practical work through the key stage and other more independent investigations carried out by the pupils.

#### **ROLE OF SUBJECT LEADER**

The subject leader will provide professional leadership and management for Science and will ensure that it is managed and organised so that it meets the aims and objectives of the school. The subject leader will monitor teaching and learning and standards within the subject and will initiate reviews of the scheme of work as well as identify CPD needs and organise how to meet these. The subject leader will manage the resources for Science and will maintain the stock to meet the needs of the curriculum.

#### **RESOURCING**

The majority of Science resources are kept in the Science Store in the main school corridor. The Science co-ordinator will see that this level of resourcing is maintained and will administer the allocated budget for Science agreed annually. Other teaching resources and books are stored in the Resources Room or in the relevant classroom. The Science section of the school library is also a useful resource.

#### **REVIEW**

The Science co-ordinator will monitor classroom teaching and children's work in all year groups on a yearly basis. The effectiveness of the Science curriculum will be evaluated in discussions with the Head-teacher and Science Subject Leader. The review will involve analysis of assessment results and reported KS1 and KS2 results. Priorities for in-service support and external review will be established. This evaluation will form the basis for the science contribution to the School Improvement Plan where necessary.