



## St Michael at Bowes CE Junior School

**“An inclusive Christian community building on firm foundations for successful lives”**

### SCIENCE POLICY

At St Michael at Bowes we believe that our vision underpins everything we do and as such we strive for our children to ‘build on firm foundations’ and for them to lead successful lives. We believe that when taught well, a secure knowledge of scientific processes supports pupils’ understanding of the beautiful world created by God in which they live in, their place within it and their responsibilities to nurture and protect what they have inherited.

This policy outlines the teaching, organisation and management of the Science taught and learnt at St Michael at Bowes CE Junior School. The school’s policy for Science follows The National Curriculum 2014 for Science Guidelines and 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 a variety of different scientific enquiries that help them to answer 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.
- are encouraged to understand how Science can be used to explain what is occurring, predict how things will behave, and analyse causes.

#### **Aims:**

A high-quality Science education provides foundations for understanding the world. Through building key knowledge and understanding of concepts, pupils should be encouraged to recognise the power of rational explanation within a broadly Christian framework and develop a sense of curiosity about natural phenomena.

- For staff to work cooperatively to deliver a broad and balanced Science education which incorporates a range of teaching styles to suit individual needs.
- For children to have the right to equal opportunities in Science in our school regardless of their background, religion, race, gender, physical or intellectual ability.
- For children to become curious about the world around them and the things that they observe, experience and explore.
- For children to use their experiences to develop understanding of the key scientific ideas.
- For children to develop skills of sorting, classifying, planning, predicting, questioning and drawing conclusions from data.
- For children to acquire and refine practical skills necessary to investigate ideas and questions safely.
- For children to practice mathematical skills and enhance literacy skills (where possible) within real contexts.

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- For children to develop language skills through talking about their work and presenting their findings.
- For children to use progressively technical scientific and mathematical vocabulary and draw diagrams and charts to communicate scientific ideas.
- For children to use a range of media including ICT to extract scientific information.
- For children to work cooperatively with others, listening to their ideas and treating these with respect.
- For children to develop respect for the environment and living things, including themselves and each other.
- For children to develop responsibility for their own health and safety and that of others when undertaking scientific activities.

### **Teaching Science**

To provide adequate time for developing scientific knowledge, skills and understanding, each teacher provides weekly Science lessons. These may vary in length but will usually last for up to two hours. Where appropriate, topics are taught in structured 'blocks' and form the basis for extended writing in English.

There are a variety of ways in which the teaching may be effective and our school aims to encourage learning through investigation, with an emphasis on first-hand experience. The school uses Snap Science (Collins Connect) to structure the teaching of science but teachers are free to use their flair, enthusiasm and professional judgement to adapt or create their own lessons. Science lessons have no imposed formal structure but should typically contain some of the following elements:

**The Big Question:** A question about the world or a current/previously taught scientific topic to encourage deeper thought and connections.

**Discussion:** what they already know from experience, what they have learnt so far, what they will be finding out next. Where necessary, mind mapping and chocolate bars are appropriate methods for recording these discussions if desired.

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

**Practical tasks or investigative work:** working within groups or individually, practicing scientific skills, finding out answers, being encouraged to think scientifically. Where groups are required, the teacher should consider which type of grouping will best suit the needs of the children.

**Recording:** writing about what they have found out, drawing charts and tables and diagrams, sometimes using computers and other media to record what they have done or found out.

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

## **Out of class and Home learning**

The weekly Science lesson provides opportunities for the children to develop scientific skills, knowledge and understanding according to the National Curriculum. However, Science lessons should be a vehicle to motivate children to extend their learning beyond the classroom.

Although no formal regular home learning is given in this subject area, teachers encourage children to find out information and practice scientific skills out of school time. Science activities are regularly included in year group home learning grids.

## **School Overview of Science**

The programmes of study for Science are set out year-by-year for key stage 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. 'Working scientifically' specifies the understanding of the nature, processes and methods of Science for each year group and should not be taught as a separate strand. This element is embedded throughout the delivery of the Science curriculum.

## **Planning**

It is the responsibility of the class teacher/ year group teachers to undertake the Science planning for their class, or oversee it where a student may be taking the class.

Long term plans:

-Long term plans are shown on the curriculum map for each year group.

Medium term plans:

-Medium term plans show an overview of what will be covered week by week. The specific National Curriculum objective for each week will suffice and specific details do not have to be included. Opportunities for scientific enquiry and formal summative assessment should be included wherever possible.

Short term plans:

-Short term plans (or weekly plans) should contain more detailed information about what will happen in the lesson. These include: objectives and success criteria (including working scientifically), key questions and scientific vocabulary, resources, differentiated challenges and plenaries. Where there are health and safety issues, these should be clearly shown on the planning and acted upon accordingly.

## **Assessment and record keeping**

It is the responsibility of the class teacher to maintain an overview of each child's progress in Science.

### **Formative assessment (informal):**

Informal assessment is done through observations of the children, looking at their work and questioning children to identify what they have understood. Children are encouraged, in line with the school's Fast Feedback policy, to assess their own and each others' work and identify their own targets for improvement.

### **Summative assessment (formal):**

Formal assessment is completed after each unit of Science learning. Teachers use Rising Stars end of unit tests to assess understanding and identify gaps in learning to be addressed through future Big Questions and lesson starters. Teacher assessment, informed by these tests, outcomes of scientific enquiries and looking at books, is recorded using the school's Target Tracker program and used to identify if a child is working towards, at or above age-related expectations. Individual progress is also reported back to parents on a termly basis either through parents' evenings or a written report.

### **Resources**

The school holds a central bank of teachers' resource books, consumable and frequently used resources. Children are encouraged to choose from a range of equipment and are trained in the safe and considerate use of animals, plants and consumable materials. Expensive and less frequently used items are also kept within the central resource area. The Science lead and team is responsible for maintaining this area and ordering any necessary items that have been identified as a need. All staff members should be responsible for collecting and returning necessary items to the correct place to ensure that resources are easy for all staff to find.

### **Health and Safety**

The safe use of equipment and consideration of others is promoted at all times. The Association for Science Education publication, "Be Safe!", should be used by staff as a point of reference for issues regarding health and safety. A copy of this is held in the Science cupboard and teachers are encouraged to use this as an aid. The school's "Health and Safety Policy" should be consulted for details regarding scissors, craft tools, electrical equipment, wet areas, heavy equipment and use of other tools. When planning activities, safety issues should be identified in detail in the weekly plans and acted upon accordingly. Children should be made aware of safety issues and, where appropriate, the reasons behind them. Activities which take place away from the school's premises (for example, a seashore outing) will require a risk assessment form to be filled in.

### **Management of Science**

Role of Science lead and team:

- To be enthusiastic about Science and demonstrate good practice.
- To work alongside colleagues in planning where needed (progress and activities).

- To work alongside teachers in the classroom (this will depend on release time and other available help).
- To coordinate and arrange staff in-service training as required.
- To audit resources, identify needs and order equipment in school after consultation with colleagues.
- To manage the Science budget.
- To “sample” the work of children across the age range (curriculum monitoring).
- To review and evaluate the effectiveness of teaching and learning of Science.
- To provide guidance on the implementation of the Science policy.
- To suggest appropriate assessment activities where needed.
- To provide support to those colleagues who request/require it, including help with planning and organisation.
- To monitor the planning and delivery of lessons.

**Role of the Head Teacher:**

- To lead, manage and monitor the implementation of the scheme of learning.
- With the Science coordinator and responsible governor, keep the governing body informed about the progress of the subject and the scheme of work.
- Ensure that Science remains a high profile subject in the school’s development work.

**Policy agreed:** March 2019

**To be reviewed:** informally as required and formally every three years