



**St Bonaventure's Catholic Primary School  
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**Science Policy 2016**

<b>Policy Owner</b>	Headteacher
<b>Governing Body Committee</b>	Standards
<b>Version no.</b>	1
<b>Issue Date</b>	13.07.16
<b>Last Review Date</b>	06.07.16
<b>Next Review Date</b>	Term 6 2017/18

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<http://www.st-bonaventures.bristol.sch.uk/>

### Version History

<b>Version</b>	<b>Date</b>	<b>Page</b>	<b>Description of Change</b>	<b>Origin of Change</b>
1	28/11/13		General Update	Standards

**“Science is an integral part of modern culture. It stretches the imagination and creativity of young people.” *Professor Malcolm Longair.***

## **Rationale**

Through observation and investigation, Science makes an invaluable contribution to our children's understanding of the world's physical, chemical and biological aspects. The scientific process can be challenging and rewarding for all pupils and can help to develop a deepening understanding of the underlying scientific concepts involved.

## **Purpose**

- 1) To nurture the children's inherent curiosity and investigation to acquire the scientific practice, recognising that active investigation and enquiry are at the heart of the scientific process.
- 2) To use focused teaching, exploration and investigation to acquire the specific scientific knowledge, understanding and skills as set out in the National Curriculum
- 3) To help children gain an increasing understanding of the underlying scientific concepts encountered within everyday life.

Science at St Bonaventure's is about living things, materials and phenomena. It is intended to be relevant to pupils' everyday lives, helping them to learn about the world around them through 'hands-on' investigation and exploration, with opportunities for making observations and measurements.

Concepts tend to be introduced through familiar contexts and concrete examples. As understanding develops, pupils are given the chance to apply their knowledge to new and unfamiliar contexts, begin to make links between ideas and give explanations using simple models and theories.

Systematic investigations allow for working alone and with others and making use of a range of reference sources. Pupils are encouraged to talk about their work and its significance, and to communicate ideas using increasingly precise subject-specific vocabulary. Pupils are encouraged to think about the 'Big Questions' of science and are encouraged to use modern technologies to have an enquiry approach to their questioning.

## **Objectives**

- 1) To nurture the children's inherent curiosity and channel this towards good scientific practice, recognising that active investigation and enquiry are at the heart of the scientific process.
- 2) To use focused teaching, exploration and investigation to acquire the specific scientific knowledge, understanding and skills as set out in the National Curriculum.
- 3) To enable children to gain an increasing understanding of the underlying scientific concepts encountered within everyday life.

## **What is Science?**

Primary science learning is about living things, materials and phenomena. It is intended to be relevant to pupils' everyday lives, helping them to learn about the world around them through 'hands-on' investigation and exploration, with opportunities for making observations and measurements. Concepts tend to be introduced through familiar contexts and concrete examples. As understanding develops, pupils are given the chance to apply their knowledge to new and unfamiliar contexts, begin to make links between ideas and give explanations using simple models and theories. Systematic investigations allow for working alone and with others and making use of a range of reference sources. Pupils are encouraged to talk about their work and its significance, and to communicate ideas using increasingly precise subject-specific vocabulary.

## **Aims**

Our aims in teaching Science are that all children will:-

- retain and develop their natural sense of curiosity about the world around them
- develop a set of attitudes which will promote scientific ways of thinking, including open-mindedness, perseverance, objectivity and a recognition of the importance of teamwork
- come to understand the nature of "scientific method" involving: meticulous observation, the making and testing of hypotheses, the design of fair and controlled experiments, the drawing of meaningful conclusions through critical reasoning and the evaluation of evidence
- become effective communicators of scientific ideas, facts and data
- begin to build up a body of scientific knowledge and understanding which will serve as a foundation for future enquiry
- build on the knowledge, understanding and skills acquired at earlier stages
- foster a sense of wonder, enjoyment and enthusiasm in Science.

## **Equalities**

Science at St. Bonaventure's will be taught across the key stages and the curriculum in ways that enable each child to access the National Curriculum for Science. Each child regardless of ethnic group, age, ability, special educational needs and gender will have access to the Science curriculum.

## **Principles of the Teaching and Learning of Science**

The class teacher chooses a central theme and planned 'big' questions around the key ideas they want the learners to explore. The 'big' questions enable the teacher to focus learning aims on the relevant areas of the science, experiences and outcomes and other curricular areas. By involving the learners in the next stage of the planning the teacher models planning skills with them, involving the learners in an enterprising approach to learning and teaching. This in turn leads to ...

- encouragement of analytical thinking
- prompt scientific thought and activity through questioning
- address scientific misconceptions
- support children in developing scientific language.

### **Using questions and dialogue that promote deep learning Questioning**

Questioning is essential to the success of science learning. Different types of questions include: effective questions, open questions, questions for finding out misconceptions and questions as part of feedback to prompt further learning. Questions for a range of purposes:

- comparing
- categorising
- grouping
- recognising exceptions
- predicting

### **Prompting scientific thought and activity through questioning**

Questioning is an important feature of science talk and a 'key feature of scientific activity and of teaching science'. Diagnostic questions can reveal clear and precise information about what a pupil understands. They can be used to prompt investigative science work because pupils are inclined to want to find out the answers for themselves.

### **Eliciting scientific misconceptions**

Concept cartoons can prompt questions that motivate investigative work in science. For example, a cartoon showing parachutes and the thoughts of cartoon children could stimulate a discussion and an investigation into which parachute will fall the slowest. In this way, pupils discover for themselves if answers suggested in the cartoon are true or false. This can lead to a shift in thinking as pupils demonstrate for themselves that their original thinking was either right or wrong.

### **Supporting children in developing scientific language**

Pupils with experience of exploratory talk, where [they] share information, all are invited to contribute, opinions are respected and considered and reasoning must be clear, scored significantly better in assessments of science knowledge than pupils without this experience. Pupils can benefit from developing and presenting their understanding of scientific ideas and concepts in a variety of ways beyond writing, such as through extensive talk with teachers emphasising the use of simple and visual stimuli. It is important to highlight language in science learning by explicitly teaching pupils how to talk about natural phenomena in a scientific way.

### **Science should:**

- encourage analytical thinking
- prompt scientific thought and activity through questioning
- elicit scientific misconceptions
- support children in developing scientific language.

Science is important because:-

- it is a body of knowledge essential to our understanding of the world around us
- it has built up a methodology for thinking which helps to form the basis of intellectual enquiry
- the skills and knowledge of Science have wide applicability in everyday life and nature.
- Science is a core subject in the National Curriculum. The fundamental skills, knowledge and concepts of the subject are set out in the National Curriculum.

### **Strategies for the Teaching of Science**

Science teaching in the school is about excellence and enjoyment. Planning for science (The Big Questions) is a process in which all teachers are involved to ensure that the school gives full coverage of National Curriculum Science and science in Reception. Each unit is developed and built on as the children progress through the school. We have adopted the Hamilton Trust Science units which are in line with the New Curriculum, and have adapted these to our circumstances, ensuring good coverage of each programme of study and progression within each. Scientific Knowledge, Conceptual understanding and Scientific Enquiry are incorporated within each unit of work. Children will develop their range of scientific vocabulary. Science will be taught to the whole class with opportunities to carry out investigative work in small groups. Where appropriate, all teaching staff are encouraged to develop their knowledge and skills in the teaching of science.

### **Resources**

Central resources in Science are the responsibility of the Science co-ordinator. All staff are responsible for using resources and returning them to the correct place. Any requests for consumables need to be directed to the Science co-ordinator as should any breakages or requests for resources.

### **Marking & Evidence**

All new work begins with a 'big question'

Objectives are linked to N.C and smart AT1 objectives (stickers can be used to save time)

Mark to the '*smart*' objective

Diagrams and data gathering are used with children's interpretation where appropriate

Scientific language is always used

Children reflect on previous science learned and respond to teachers marking

Where appropriate teacher adds a further 'challenge' question (this can be generic)

Evernote is used especially when evidence of work done does not appear in books and can be used for:

Pupil conferencing

Pictures of work done

Short (5-10sec) videos etc...

## **Computing & Monitoring**

Ipads are used in Science for:-

- communicating information (word processing and graphics/drawing packages)
- handling information (databases and data capture equipment)
- Gathering evidence of progress using Evernote in all year groups
- Annual testing producing three strands; working towards, working at and working above expected levels for all year groups so children can be tracked.

## **Health and Safety**

- Health and Safety issues are of the utmost importance in Science and clear guidance will be given to all pupils by all adults teaching them.
- There is awareness of appropriate handling of equipment and materials.
- There is awareness of appropriate storage of equipment and materials.
- Health and Safety information/policies issued by the L.A. are used to enhance the safety, and well being of pupils in their working environments. All staff have access to copies of the 'BE SAFE' booklet regarding 'Health and Safety in Primary School Science'.
- St. Bonaventure's receive monthly CLEAPSS newsletters which contain up-to-date Health & Safety guidance.