

# Old Bank Academy

## Science Policy



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<b>SLT Member Responsible</b>	Science TLR

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. (DFE 2014)

### **Aims of the curriculum**

The Science curriculum at Old Bank Academy 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.
- Foster a sense of curiosity and enjoyment about the subject.
- Encourage a cross curricular approach to the teaching of science and where possible pursuing links with mathematics and design technology.
- To develop personal qualities such as perseverance, independence, self-confidence and a sense of achievement and success.
- To develop the ability to apply knowledge, skills and ideas in real life contexts outside the classroom, and become aware of the use of science in the outside world.

We will achieve these aims through our consistent and robust curriculum which ensures continuity, progression and high expectations for attainment in delivering an in depth science education which will equip our children with the skills and understanding for the modern world.

### **National Curriculum Coverage**

#### **Scientific Knowledge and conceptual understanding**

The Programmes of Study for science are set out year-by-year for key stages 1 and 2.

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.

#### **Working Scientifically**

Working scientifically specifies the understanding of the nature, processes and methods for science for each year group. It should not be taught as a separate strand. Working scientifically should be embedded across the core areas of biology, chemistry and physics, focusing on the key features of scientific enquiry, so that pupils learn a variety of approaches to answer relevant scientific questions. Scientific enquiry should include; observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources.

#### **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.

### **Progression across the key stages**

#### **EYFS**

In EYFS children work towards the Early Learning Goals (ELGs);

Science in EYFS is embedded in the learning area 'Understanding of the world' and is delivered through a range of child-initiated, adult – initiated and adult directed activities in the indoor and outdoor learning

environment. Children learn about similarities and differences in relation to places, objects, materials and living things, which involves guiding them to make sense of their physical world. They will make observations of animals and plants and explain why some things occur, and also talk about changes.

### **Key stage 1:**

- Enable pupils to experience and observe different scientific phenomena;
- Encourage curiosity and questioning;
- Help to develop understanding of scientific ideas through different types of scientific enquiry;
- To encourage use of simple scientific language and communicate ideas in a variety of ways;
- Learning through first-hand practical experiences with some use of secondary sources.

### **Lower key stage 2:**

- To broaden children's scientific views and ideas of the world around them;
- To encourage pupil's own questioning and decision making about which lines of scientific enquiry to pursue, methodology for doing this and how to make it a fair test;
- Finding things out using secondary sources of information;
- Drawing simple conclusions, using some scientific language, through talk and then writing.

### **Upper key stage 2:**

- To enable pupils to develop a deeper understanding of a wide range of scientific ideas through a variety of methods;
- To encourage pupils to ask their own questions about scientific phenomena and analyse function relationships and interactions more systematically;
- To select the most appropriate ways to answer science questions using different types of scientific enquiry; carrying out comparative and fair tests and using a wide range of secondary sources;
- Drawing conclusions based on data and observations;
- Using evidence to justify ideas and scientific knowledge and understanding to explain findings;
- To introduce more abstract ideas and help children recognise how these ideas help to understand and predict how the world operates.

**During KS1 and KS2 working and thinking scientifically must always be taught through and clearly related to substantive science content in the programme of study.**

### **Use of ICT within science**

Teachers are encouraged to utilise computing to support children in science in the following ways by giving pupils the opportunities to support their work by being taught to:

- find things out from a variety of sources, selecting the information to meet their needs and developing an ability to question its accuracy and bias;
- develop their ideas using technology to amend and refine their work and enhance its quality and accuracy;
- exchange and store information both directly and through electronic media;
- review, modify and evaluate their work reflecting critically on its quality as it progresses.

### **Principles of teaching and learning**

Pupils should be provided with a variety of challenging, practical scenarios in which they can test their ideas and explore scientific enquiry. These opportunities will build on previous learning whilst setting appropriate challenge and extend scientific skills teachers should use a wide variety of teaching strategies to deliver a creative science curriculum helping children to articulate their ideas through:

- First hand practical activities
- Secondary resources

- Group work
- Paired work
- Whole class teaching
- Individual work

### **Teachers strive to:**

- Nurture a child's awe and wonder.
- Foster children's creativity and independence.
- Contextualise science through its everyday application in the wider world.
- Challenge children of all abilities to achieve their full potential.
- Encourage and explore children's own lines of enquiry when they arise.
- Develop children's ability to spell, read and write scientific vocabulary appropriate to their ability and key stage.
- Share good practice with their peers and be self-reflective practitioners acknowledging when something doesn't work and highlighting this with the Science Coordinator.

### **Our pupils should:**

- Have a well-developed sense of scientific concepts and principles.
- Understand what a fair test is and why it is important in relation to practical science.
- Be able to read and spell scientific vocabulary and use these to accurately articulate scientific understanding and enquiry relevant to their age range.
- Encourage children to explore their ideas and find answers to their questions through practical activities.
- Research using a wide range of resources.

### **Science Curriculum Planning**

Science is a core subject in the National Curriculum and we use these objectives to support planning and assessment of the different scientific concepts and principles within each year group, which helps us to map children's progress and understanding of scientific phenomena, dispel any misconceptions children may have and ensure children are building on in depth knowledge and understanding before acquiring new knowledge. Staff use long term planning to ensure coverage of the science objectives.

It is the class teacher's responsibility to complete the weekly plans for the teaching of the science objectives and to ensure that the content of these lessons has breadth and depth and caters for the range of abilities within their class. We encourage our children to draw links with science across the curriculum areas to extend and develop their understanding of scientific principles within areas such as; cooking, music, math (data handling), Literacy as well as ICT.

### **Health and Safety**

We aim to teach children to work safely with equipment and materials. Children will learn to recognise potential hazards in their investigations and will consider how to minimise the risks.

Safety issues will be guided by CLEAPPS guidelines as recommended by the LEA. Teachers should consider the 'Be Safe' manual and the 'Control of Substances Hazardous to Health' booklet regulations when assessing and evaluating the risk of their own classroom activities. When unsure of the risks involved in their Science activities teachers should seek advice from the Science coordinator and refer to the CLEAPPS. All mains electrical equipment used in School is subject to regular checks by the LEA. Other mains equipment should not be used.

### **Monitoring and Evaluation**

The Science Team will monitor teaching, learning and assessment through observations, work scrutinies, looking at planning, evaluations, discussions with children and learning walks. In depth monitoring of the subject will be in accordance with the Headteacher and SIP.

### **Professional Development**

The Science Coordinator will regularly evaluate the need for subject specific CPD by evaluating the teaching and learning of science across the different phases. This will highlight if there is a need for subject specific CPD and what type of CPD is required to enhance and support the teaching and learning of science at Old Bank so that it is effective and the level of challenge is appropriate for the children we teach.

