

# Greenways Primary Academy

## Science Policy



☆ Aim high & be a Star ☆

MAT Policy updated:	2021
Review Frequency:	Two years
Next review date:	2023

### Subject Vision

At Greenways Primary Academy, we believe that science inspires children. It encourages them to be inquisitive about the world, nurtures their curiosity and enables them to develop a range of skills that are required across their learning. By the end of their primary education, our pupils should be equipped with the scientific knowledge and skills to prepare them for their future learning.

At Greenways, we believe that science is a practical subject, where we learning through exploration. Through a range of practical investigations and through a range of scientific enquiries, we allow our children to explore, learn and develop their subject knowledge. Our pupils are challenged with, “What if?”, “How could you?” and “Why?”; they encouraged to use scientific vocabulary as they move through a broad range of experiences, which are designed to provide them with a progression of scientific understanding, skills and knowledge. Alongside our teaching and learning, science events across the school year ensure our children are given a range of opportunities to explore and investigate scientific phenomena in a range of contexts to develop their continually evolving knowledge.

These opportunities ensure our children are life-long learners, who have the confidence to question and explore the world around them.

### Principles of Outstanding Science:

These are the ‘Principles of Outstanding Science’ at Greenways Primary Academy. They were informed by the way we feel that science should be taught across the academy.

**Principle 1:** Children are **excited and enthusiastic** about science, as they are taught to **know more and remember more**.

**Principle 2:** Children **lead their own learning**, asking and answering their own scientific questions **using a range of enquiry types**.

**Principle 3:** Science is **practical and hands on** and children enjoy learning through exploration.

**Principle 4:** Teachers use a **range of effective assessment strategies** to inform the planning and teaching of science.

**Principle 5:** Teachers introduce children to a range of age-appropriate **scientific terminology**, and they use this confidently.

**Principle 6:** Children and adults appreciate the **awe and wonder of science**, making links to how, where and why it forms part of their everyday lives.

**Principle 7:** The **progression of enquiry, knowledge and conceptual understanding** is carefully planned for and clearly evident.

**Principle 8:** Teachers enable children to access **a range of enrichment opportunities**, both within and beyond the curriculum.

### **Science Curriculum:**

At Greenways Primary Academy, we aim to provide a science curriculum that is creative, inclusive, challenging and inspired by the real world. It inspires future thinkers, innovators and problem solvers in an immersive environment that stimulates curiosity and supports high-quality learning, allowing each and every learner to fulfil their potential. The areas of study are set out in the Early Years Foundation Stage (EYFS) Framework and National Curriculum 2014. Science units are planned and delivered in line with the year group long-term plans (see Science coverage) and the National Curriculum (2014). Some units may have been moved between years where appropriate, for example the Year 6 unit 'Electricity' is taught within the Year 5 curriculum. Science units have been planned so that each unit is built upon prior knowledge. The class teacher is responsible for planning a series of sequential science lessons, using the National Curriculum (2014), Greenways Progression and Assessment Framework for Science and the ASE Planning Matrices.

Practical experiments are deliberately and carefully planned into the sequences of lessons to ensure pupils have the prerequisite knowledge to fully engage with the experiment. This makes these investigations purposeful, as pupils have the opportunity to rehearse and retrieve previously learned subject content.

Science is taught for a minimum of two hours per week to ensure that the national coverage is met. Within this, there must be a minimum of one carefully and deliberately planned practical investigation to promote 'Working Scientifically'. These investigations must follow the agreed 'Investigation Structure' to ensure consistency of learning and language throughout the academy.

### **EYFS:**

In the Early Years Foundation Stage, we teach science through the Understanding the World strand of the Early Years Framework. Ongoing experiences and opportunities linking to children's developing understanding of the world are planned from the objectives set out in the Early Years Framework, which underpin the curriculum planning for children aged 3-5 at Greenways Primary Academy. The experiences that we provide ensure that children develop a secure understanding of the world around them. By the end of the Reception year, they will be able to:

### **ELG: The Natural World**

- Explore the natural world around them, making observations and drawing pictures of animals and plants;
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class;
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

## **KS1 and KS2:**

The Primary 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.

## **Special Educational Needs**

Through the equal opportunities policy, pupils with special educational needs will be included in all science lessons. Staff, where appropriate, will modify activities to ensure children with special educational needs access the same science curriculum as their peers.

## **Assessment**

**Assessment for Learning (AfL):** During the teaching of each unit of learning in Science, children's subject knowledge and ability to work scientifically is assessed day-to-day through formative assessment by their class teacher. A range of low-stakes assessment activities are carried out in various forms, including the completion of post unit assessments, mind maps and class discussions. Many of the formative assessment tools that we use are done so at the teacher's discretion, therefore ensuring that they are appropriate for the age of the children and nature of the subject content.

**Assessment as learning:** This form of assessment draws on the cognitive principle that pupils are more likely to remember knowledge if they practise retrieving that knowledge over extended periods. For example, low stakes quizzes give teachers an idea as to how well substantive knowledge has been acquired and supports children to know more and remember more.

Examples of low stake quizzes in science lessons:

- Multiple choice quizzes
- Quick quiz – answers in book
- Keyword definitions
- Vocabulary quizzes
- Labelling a diagram from memory
- Recalling key facts from memory
- Hinge questions

To be most effective, research shows that retrieval practice in science lessons should always be followed with feedback so even incorrect answers can be correctly retrieved in the future.

**Summative Assessment:** At the end of each unit of learning, teachers also make a summative judgment relating to children's knowledge and understanding, as well as their ability to work scientifically within the associated context. This is recorded on each child's 'Pupil Progress Record' and this document stays with each child throughout their time at Greenways Primary, ensuring seamless tracking of progress and attainment in science across the academy.

**Statutory Assessment and Reporting:** In addition to the formative and summative assessment tools discussed above, teachers of children in years 2 and 6 and are also required to report the attainment of each child in their class to the local authority, based on the teacher assessment framework.

### **Enrichment**

Enrichment activities are carefully planned to enhance the science curriculum, giving pupils the opportunity to broaden their experience and take part science in a range of contexts. There is a healthy tradition of extracurricular activities at Greenways Primary, which are led by staff and outside agencies. Written parental permission must be given for a child to participate in after-school clubs and a register for attendance will be always be taken.

### **Monitoring and Review**

It is the responsibility of the Science Subject Leader, the Headteacher and trustees to monitor the standards of children's work and the quality of teaching in science. The Science Subject Co-ordinator is also responsible for supporting colleagues in the teaching of science, for being informed about current developments in the subject and for providing a strategic lead and direction for the subject in the academy. A Raising Achievement Plan is written and reviewed annually.

Science is monitored in a number of different ways. All subject leaders at Greenways Primary are given time throughout the year to monitor, in depth, the different areas of their subject. One of the main areas of monitoring is pupil interviews. Giving pupils a voice in how each subject is taught is a valuable way of understanding their likes and dislikes and ways to improve the science curriculum.

Lesson observations and book looks play another important role in providing valuable feedback about the quality of teaching and learning happening across the academy. This provides an opportunity for the science subject leader to evaluate the quality of education in a given subject area and identify priority areas for development, which subsequently inform future investment in CPD.

### **Health and Safety**

In all areas of science, health and safety guidelines will be strictly adhered to in order to promote safe practice; these are informed by CLEAPPS (Consortium of Local Education Authorities for the Provision of Science Services.) Relevant risk assessments are also available for all activities offered as part of the science curriculum and additional risk assessments are also completed for any events that children take part in off the academy site.

### **Resources**

We have a range of resources to support the teaching of science across the academy and all our resources are kept in the science cupboards. We plan to work within the academy trust to share resources. As applicable, Pupil Premium funding may be made available to ensure that children who are in receipt of this funding and who may normally miss out on opportunities to make progress are supported to do so.