Greenways Primary Academy

A part of Windsor Academy Trust

Our Approach to Teaching Science

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 learn through deliberately planned opportunities to engage with working scientifically.. 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 are 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:

- Children are **excited and enthusiastic** about science, as they are taught to **know more and remember more.**
- Lessons are **carefully planned and delivered,** so that new material is delivered in a way that is **clear, interesting and useful.**
- **I**nstruction is focused on the learning intention and **pedagogical tools** do not detract from **the knowledge that needs to be remembered.**

- Through spaced-retrieval**,** previously taught content is revisited to ensure that **new content** can be understood and is retained in the **long-term memory.**
- **Formative assessment** is regularly used to check that children retain **knowledge** and that they can retrieve previously taught content from their long-term memory.
- Teachers enable children to access **a range of enrichment opportunities,** both within and beyond the curriculum.

Assessment

Assessment for Learning (AfL): At the start of each lesson, children will complete a 'Flashback 4' style activity – in science, this will be called: 'Thinking 3 and Can You Still?' The format of this activity is shown below, and will require children to activate prior knowledge from the last lesson, last unit, and last link to current learning. This is in addition to a 'working scientifically' skill. 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 judgement 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 in 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 always be taken.

Monitoring and Review

It is the responsibility of the Science Subject Leader and the Headteacher 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.

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 CPL.

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.