

Peterhouse CE Primary Academy Science Policy



2024/2025

Our Vision for Science

The children of Peterhouse Church of England Primary Academy face a greater number of barriers to their learning than many of their peers nationally, and due to this they find that their opportunities in life are limited. Driven by the Academy's Christian vision and in order **meet the academic and spiritual needs of all**, the Peterhouse science curriculum has been designed to offer chances, widen horizons and break down barriers to learning. A curriculum that by design makes the Academy **a place where all can flourish, regardless of background or ability**. The National Curriculum 2014 states why we teach science in schools: *'A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics...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.'*

Barriers to Learning

We understand that our children face a greater number of barriers to their learning and through teaching science we aim to overcome some of these.

We aim to overcome the emotional barriers to the children's learning through science by instilling within the children that failures are useful for growth and to celebrate that some of the greatest scientific discoveries and inventions were a result of many failures and setbacks before being life changing.

To motive the children and to show them that a good education opens many opportunities, we celebrate the works of inventors, scientists, doctors, engineers and have visitors in, to discuss their roles and what it took to get where they are today.

Cognitive barriers will not stop the children of Peterhouse from succeeding and thriving within science. The investigative nature of the subject creates curiosity and an eagerness to explore.

We understand that the children of Peterhouse may not have experienced as much as their peers so within science we offer a wealth of experiences for the children. These include visitors in school and school trips.

A great focus is placed on the teaching and embedding of scientific vocabulary within science lessons. This supports the development of the children's language so by the time they leave Peterhouse they have a broad and rich vocabulary.

Our Aims for Science

Through high-quality science teaching, we aim to help our pupils understand how major scientific ideas have played a vital role in society. Develop a secure understanding of scientific concepts and how these help us to understand the world around us. We aim to prepare our pupils for life in an increasingly scientific and technological world; provide the

children with the skills to help them understand the issues that impact their lives now and in the future (climate change, sustainability of resources etc.).

At Peterhouse, we understand that children are naturally curious and we encourage this inquisitive nature throughout their time with us. We celebrate scientists and inventors who have impacted on our lives today and the opportunities the children could have in future careers. We ensure that the 'Working Scientifically' skills are built-on and developed throughout their school career so that they can use equipment, conduct experiments, build arguments and explain concepts confidently and continue to ask questions and be curious about their surroundings.

Key principles of quality Science at Peterhouse:

- Cross-Curricular opportunities are explored, particularly links with English and Maths
- Practical exploration of Science through investigations
- Science linked to the world around them.
- Teachers use strong subject knowledge to engage and enthuse pupils
- Vocabulary rich teaching
- Long term retrieval of knowledge
- Develop lifetime learners of science.

Implementation

To ensure our pupils receive a robust curriculum which enthuses and challenges them we ensure that:

- Teachers use the White Rose science scheme of learning to support their planning. The planning emphasises upon key questions that can be posed to children to develop their scientific understanding and reasoning skills. Misconceptions, common mistakes and key vocabulary for each step are highlighted too.
- Each unit of work has one enquiry question and there is coverage of the five enquiry types across a year.
- Teachers have a secure subject knowledge and have access to high quality online training from Whiterose for each unit of work.
- Teachers use a variety of planning and teaching resources.
- Teachers use the National Curriculum objectives to ensure they are teaching all objectives for their year group.
- Teachers have access to quality scientific resources to enhance the children's learning and understanding.
- Each year group will take part in a sustainability unit each term which focuses on the children understanding the current issues around sustainability and climate change. Identifying that they have a role to play in creating a more sustainable future for themselves and others. Thinking of ways to make a positive impact on their local and wider environments. Having a positive and proactive mindset when it comes to making sustainable changes.
- As a minimum, teachers are expected to teach 1 ½ hours of science each week. Either as two separate lessons across the week or as a double session.

Learning Sequences

These could be seen over one lesson or a series of lessons.

- **Assess/Review** – What do the children already know? How do you know? What can you do to check?
- **Teach** – teaching of the content and skills needed for success. Ensure there is modelling, checking, questioning and scientific vocabulary.
- **Practice** – children need to practice/learn the particular content through practice.
- **Apply** – apply the knowledge learned to different contexts.
- **Assess/Review** – check what the children know.

Teachers are expected to plan the following into each Science unit:

- **Knowledge organisers and vocabulary**
 - Teachers prepare a Knowledge Organiser (this should include the key pieces of knowledge for the unit and relevant to the age of the pupils) which includes a vocabulary list (these should be the most important words which will be learnt during the unit).

- The Knowledge Organiser and Vocabulary should be referred to throughout the unit of work (teachers are expected to upload their knowledge organisers to the server).
- Vocabulary should be embedded throughout the half-term and revisited regularly. These words need to be modelled orally in sentences and in writing so the children can develop an understanding on how to use them.

Misconceptions and revisiting of previous learning.

- Misconceptions are addressed during lessons and after lessons.
- Each lesson should build upon previous knowledge when new topics are introduced learning from previous year groups should be recapped.
- Each lesson should start with a question quadrant which focusses on previous learning. Progression of knowledge document aids teachers initially to support with questions for learning from previous year groups and then future questions tailored around gaps identified.

Writing opportunities and vocabulary

- Plan and write up at least one investigation/experiment. Teachers should use the writing progression document as a guide to the expectations for each year group.

Inclusive practice

Our inclusive approach and differentiation allows all pupils to learn regardless of race, gender, faith, culture or disability. To support this, we will do the following:

- Differentiation of tasks will be used to support where required.
- Pre-teaching of vocabulary and concepts to be used to support certain learners.
- Writing frames to assist when writing up investigations or experiments.
- Recap of previous learning to consolidate understanding both from previous lesson and previous year group.
- Children can record their learning in a variety of ways: using pictures; adults scribing; cloze activities and orally retelling what they have learnt. These are some examples of the different methods used.
- Knowledge organiser and vocabulary list referred to throughout lesson.
- Word banks and picture cards are available for children who require them.
- Clear instructions given and tasks broken down into stages.
- Adults model expectations.
- Support given by additional adult (when available).

Promoting Science at Peterhouse

- Visits and visitors are organised where possible in line with the current unit of work, to enhance and extend learning.
- Each year group participates in British Science Week (mid-March)
- Science displays around the school celebrate pupil's work.
- Children to receive science awards in good work assembly, to celebrate their work.

Resources

- Science resources are stored in the corridor cupboard near the Reception classrooms.
- Teachers are expected to maintain resources and use these within lessons where appropriate. Any additional resources which are required the science lead needs to be spoken to.

Health and Safety

- The safe use of equipment is to be promoted at all times. Children must be supervised while conducting investigations/experiments.

Impact

- Children will show enthusiasm and be curious in lessons and be willing to test their own predictions.
- Children will be able to articulate their learning and be able to show this in their work.
- Children will be able to correctly use scientific vocabulary in their writing and oral explanations.
- Children will have a deeper understanding of how science impacts our understanding of the world.
- Children will be able to present their learning in a variety of ways (knowledge maps, quizzes, verbal explanations, demonstrations to peers).
- Children will have a developing confidence and knowledge in complex scientific concepts as they progress through Peterhouse.
- Staff will have a secure subject knowledge and feel confident teaching science.

Assessment

- Formative assessments are used at the end of each science unit to support future planning. The formative assessments will also inform the retrieval practice questions each week.
- Marking sheets should be used throughout a unit of work. Any practical sessions should be evidenced in the science practical book and a marking sheet completed assessing the children's understanding.
- Questioning of the children should happen frequently to assess understanding and planning should be modified to suit the children's learning needs.
- Teachers will use knowledge maps, quizzes, quadrants and work completed in order to assess the children's understanding of a unit of work. For each unit of work, an end of unit feedback sheet will be completed.

Monitoring

Throughout the year, the Science leader will carry out a variety of monitoring activities. See below.

Autumn 1	Spring 1	Summer 1
Book look •high expectations (presentation & volume of work) •curriculum coverage (unit objectives)	Observations	Book look retrieval and assessment (lesson by lesson and end of unit). progress
Autumn 2	Spring 2	Summer 2
Pupil voice – vocabulary		Pupil voice

K. Hall

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