Science Curriculum Intent

Why is it important to study Science?

Science is all around us and in everything we do – in a sense, **we are science**! Studying science helps us understand and make sense of the world we live in. It also allows students to build resilience by using their knowledge to answer questions and solve real-life problems in practical ways. A strong foundation in science empowers learners to **ask questions, think critically, and apply their learning** beyond the classroom.

Our learning journey in science involves developing:

- **Scientific knowledge and understanding** through investigating broader questions, with opportunities for careful thinking (for example, using thinking maps to organise ideas).
- **Describing experiences accurately and explaining them using scientific knowledge**, supported by oracy scaffolding (e.g. structured talk and sentence starters) to communicate with clarity.
- **Taking accurate measurements and identifying errors**, using chunked instructions and frequent checks for understanding to ensure precision in practical work.
- **Identifying scientific variables and using formulae**, with teacher **modelling** to demonstrate problem-solving methods and calculations.
- **Memorable scientific experiences and experiments**, including collaborative, out-of-seat investigations and purposeful fun activities that engage multiple senses.
- **Presenting information in different formats** (diagrams, tables, graphs) by applying **dual coding** strategies to link visual representations with scientific ideas.
- **Planning, carrying out, and concluding experiments**, as well as identifying the variables involved – supported by scaffolded planning tools (like writing frames for lab reports) to build confidence and independence.
- **Transferable skills** that connect with other subjects, including analytical thinking and scientific literacy (for example, understanding and using key scientific vocabulary across the curriculum).

How we teach Science:

All lessons have a clear purpose and are guided by our Core Offer – a framework of teaching strategies that ensures consistent, high-quality education across subjects. We have woven this Core Offer into the science curriculum so that every science lesson is purposeful and accessible. The Core Offer emphasises supporting student **thinking**, **memory**, **literacy**, **expression**, **multi-sensory learning**, and regular **review**, and these elements shape how we teach science.
In practice, this means science teachers give students time to think deeply about concepts, often using **thinking maps** and **modelling** to visualize ideas. We **chunk** complex information and instructions into manageable steps and frequently check for understanding, helping students process and remember new content. To support literacy, we explicitly teach key scientific vocabulary and use **dual coding** (combining words with diagrams or symbols) to reinforce understanding of important concepts.
We also scaffold students' communication with sentence starters and **oracy scaffolding**, enabling them to articulate scientific ideas clearly in both speaking and writing. Our science lessons are interactive and **multi-sensory** – for example, students engage in collaborative experiments, hands-on **out-of-seat learning**, and purposeful fun activities that make scientific concepts memorable. Finally, each lesson connects to prior knowledge through quick recap and review tasks (such as a "Do Now" starter or an exit-ticket **quiz**) to reinforce learning over time.

As students become more competent, we see students' progress by …

- The use of ever more abstract ideas and the application of these ideas to new settings, as learners connect concepts to novel situations without the need for prompts or models.
- Having a broad and secure scientific knowledge to explain the world around them, with precise use of scientific terminology when articulating their explanations.
- Moving from simply describing observations to giving detailed explanations for phenomena, reflecting improved scientific communication skills (both spoken and written).
- Calculating using formulae to solve problems, tackling increasingly complex quantitative questions with less step-by-step guidance from teachers.

Devising experiments to test a hypothesis, planning and carrying out investigations independently without the need for provided templates or writing frames.

Attributes that help in this subject are:

The following learner attributes help students succeed in science:

- Striving for accuracy
- Curiosity (asking "why?")
- Communicating with clarity and confidence
- Gathering data from all the senses and observing interactions
- Problem solving
- Questioning and posing problems

These attributes are actively nurtured in our science lessons. For example, curiosity and questioning are encouraged by giving students time and support to pose their own questions, while communicating with clarity is developed through explicit vocabulary instruction and structured opportunities for discussion. By embedding PACA's Core Offer strategies throughout the science curriculum, we ensure that students develop these qualities alongside their scientific knowledge – ultimately growing into resilient, confident learners who can apply their science skills in the wider world.