

Bonneygrove and Millbrook Primary Federation

Science Subject Guidance

INTENT

At Bonneygrove and Millbrook Primary Federation, we believe that Science should inspire curiosity, wonder and a desire to understand the world. Our Science curriculum is designed to develop pupils' scientific knowledge, conceptual understanding and enquiry skills, enabling them to make sense of the world around them and their place within it.

Our intent is firmly rooted in the **National Curriculum for Science (2014)** and shaped by the shared values and ethos of both schools. Through Science, pupils develop:

- Secure knowledge of biology, chemistry and physics
- Understanding of key scientific concepts and processes
- Skills in scientific enquiry and investigation
- The ability to ask questions, observe carefully, test ideas and draw conclusions
- An appreciation of how science impacts everyday life and future possibilities

In line with the **Ofsted Inspection Framework (November 2025)**, our Science curriculum is ambitious, inclusive and carefully sequenced from EYFS to Year Six so that pupils **know more, remember more and can apply scientific knowledge and skills with increasing confidence over time.**

WHY WE TEACH SCIENCE THE WAY WE DO

We teach Science through enquiry, exploration and practical investigation because children learn best when they are actively engaged and encouraged to question the world around them.

Our approach encourages pupils to:

- Ask scientific questions and make predictions
- Observe, test and investigate using appropriate equipment
- Record findings in a range of ways
- Use evidence to explain and justify conclusions

Science lessons are practical and hands-on wherever possible. This supports engagement, deepens understanding and ensures inclusion, particularly for pupils who may experience **digital poverty** or have limited access to scientific experiences outside school.

Hands-on practical investigations that allow pupils to explore scientific concepts through experiments, observations, and real-world problem solving.

STEM workshops and visits from scientists that inspire curiosity, deepen understanding, and provide insight into real scientific careers.

Outdoor environmental studies that encourage pupils to investigate nature, ecosystems, and seasonal changes beyond the classroom. Dedicated

Science weeks and themed days that celebrate science through focused activities, challenges, and whole-school engagement.

Regular use of scientific equipment to help pupils develop practical skills, accuracy, and confidence in scientific enquiry.

Cross-curricular science literacy that strengthens reading, writing, and vocabulary through meaningful scientific contexts.

Eco projects and sustainability work through our Eco Council that promote environmental responsibility and awareness of global challenges.

Local habitat exploration that enables pupils to study plants, animals, and environments within their own community.

Data collection and analysis activities that support the development of observation, measurement, and interpretation skills.

Scientific debates and discussions that encourage critical thinking, reasoning, and the clear communication of ideas.

Educational visits linked to science topics that enhance learning through real-life experiences and hands-on discovery.

Enquiry-based learning challenges that encourage pupils to ask questions, investigate independently, and think like scientists. Each lesson beginning with an open ended 'Big Question'.

EYFS

Children explore the world through play, observation and discussion. They investigate materials, plants, animals and seasonal change, developing curiosity and early enquiry skills.

Key Stage One

Pupils build foundational scientific knowledge through observation and simple investigations. They explore living things, materials and physical processes using practical activities.

Key Stage Two

Pupils develop deeper understanding of scientific concepts across biology, chemistry and physics. They plan and carry out fair tests, use scientific language accurately and evaluate evidence.

Through Science, pupils develop curiosity, resilience and a sense of responsibility for the natural world.

ROLE OF THE SCIENCE SUBJECT LEADER

The Science Subject Leader at Bonneygrove and Millbrook Primary Federation plays a key role in ensuring that the Science curriculum is ambitious, coherently sequenced and effectively implemented, in line with the **National Curriculum for Science (2014)** and the **Ofsted Inspection Framework (November 2025)**.

The Subject Leader:

- Provides strategic direction for Science across the Federation
- Ensures progression in scientific knowledge, enquiry skills and vocabulary from EYFS to Year Six
- Monitors the quality of teaching and learning through lesson visits, book looks and pupil voice
- Supports teachers' subject knowledge and pedagogy in line with the **Teachers' Standards**
- Ensures SEND and EAL provision is embedded within Science teaching
- Oversees the safe use of equipment and practical investigations
- Manages Science resources and equipment
- Contributes to whole-school self-evaluation and inspection readiness

Through effective leadership, the Science Subject Leader ensures pupils leave the Federation as confident, curious and capable scientists.

SEND INCLUSION

SEND inclusion is integral to the design and delivery of the Science curriculum. Guided by the **nasen Teacher SEND Handbook (January 2024)**, we follow the graduated approach of:

Assess → Plan → Do → Review

All pupils receive **Quality First Teaching**, with reasonable adjustments made so that pupils with SEND are not disadvantaged and can access the same ambitious Science curriculum as their peers.

SUPPORTING PUPILS WITH SEND IN SCIENCE

Pupils with SEND are supported through:

- Visual prompts, diagrams and models
- Simplified instructions and scaffolded investigations
- Pre-teaching and revisiting of key vocabulary
- Use of concrete resources and practical equipment
- Flexible outcomes and alternative recording methods
- Adult support and guided enquiry

These strategies reduce barriers and support confidence, independence and success in Science.

EAL SUPPORT

Pupils with English as an Additional Language are supported through:

- Visual representations and demonstrations
- Explicit teaching of scientific vocabulary
- Structured talk opportunities and partner discussion
- Opportunities to explain ideas orally before recording

Science provides rich opportunities for language development through discussion, explanation and enquiry.

IMPLEMENTATION

The Science curriculum is carefully planned, coherently sequenced and knowledge rich. Learning is organised so that key concepts are introduced early and revisited regularly, allowing knowledge and understanding to build cumulatively.

Across the Federation, pupils revisit:

- Working scientifically skills
- Biology, chemistry and physics concepts
- Scientific vocabulary and enquiry methods

Teaching is underpinned by:

- Clear learning intentions
- Practical investigations and enquiry-based learning
- Explicit teaching of vocabulary and concepts
- Regular retrieval opportunities
- Opportunities to apply knowledge in different contexts

Science is taught regularly and consistently, ensuring depth and retention of learning.

EXAMPLES OF WHAT WE TEACH IN SCIENCE

EYFS

- Exploring materials and their properties
- Observing plants, animals and seasonal change
- Talking about similarities and differences in the natural world

Key Stage One

- Plants and animals
- Everyday materials
- Seasonal changes
- Simple physical processes

Key Stage Two

- Living things and their habitats
- Forces, electricity and light

- States of matter
- Earth and space
- Evolution and inheritance

IMPACT

The impact of the Science curriculum is seen in pupils who:

- Enjoy learning about the world around them
- Ask questions and think scientifically
- Use scientific vocabulary accurately
- Apply enquiry skills confidently

By the end of Key Stage Two, pupils can:

- Plan and carry out fair tests
- Use evidence to support explanations
- Explain scientific concepts clearly

Pupils leave the Federation with a secure foundation for secondary Science and an understanding of the role of science in everyday life.

OUTCOMES – NATIONAL CURRICULUM 2014

By the end of the Federation, pupils meet the expectations of the **National Curriculum for Science (2014)**, demonstrating secure scientific knowledge and enquiry skills.

DESIRED OUTCOMES – BONNEYGROVE AND MILLBROOK PRIMARY FEDERATION

By the time pupils leave Bonneygrove and Millbrook Primary Federation, we want them to be curious, confident scientists who:

- Ask thoughtful questions about the world
- Investigate ideas through enquiry and evidence
- Think critically and logically
- Understand the impact of science on society and the environment
- Are curious, resilient, honest, ambitious, creative, kind and inclusive learners
- “It’s good to learn different languages...”
“... because then you will be able to go there and talk.”

PUPIL VOICE

EYFS

'We look at pictures of winter and we go outside.'

Key Stage One

'I really enjoy learning about nature.'

'Science is fun, I like learning about animals and nature.'

Key Stage Two

'In science we get to learn things we didn't know before like how day becomes night. '

SEND

'I like science. We have been learning about the planets and how they orbit the earth.'

'When you study potions and explore nature.'

EAL

'I enjoy learning about different living things and how they thrive in the world.'

Science – explored through topics and experience

Science plays a central role in many curriculum topics, particularly those linked to geography, design technology and sustainability. Learning is embedded through practical enquiry, investigation and real-world exploration. Immersion days, outdoor learning and extended investigations allow pupils to experience science as active learners rather than passive recipients. Scientific knowledge is reinforced through mathematical data handling, geographical fieldwork and technical design projects. Pupils enjoy science because they are curious, involved and challenged, and learning is memorable because concepts are explored through hands-on experience and revisited across subjects.

This document provides an extended, subject-specific overview of enrichment, cultural capital and experiential learning opportunities across Bonneygrove and Millbrook Primary Federation. These opportunities demonstrate a **STRONG** curriculum as defined by the Ofsted Inspection Framework (November 2025), showing how pupils build on prior knowledge, learn through doing, apply learning in real contexts and develop confidence, aspiration and character.

Science

Why Intent is STRONG

Science is prioritised because leaders recognise its importance in developing curiosity, critical thinking and understanding of the world. Leaders have deliberately designed a coherent and ambitious Science curriculum that reflects the needs of the Bonneygrove and Millbrook community, ensuring that all pupils develop secure scientific knowledge alongside enquiry and investigation skills.

Leaders recognise that many pupils may have limited access to scientific experiences beyond school. As a result, the curriculum places strong emphasis on practical enquiry, observation and investigation from EYFS onwards. Scientific knowledge and skills are built cumulatively across biology, chemistry and physics, ensuring equity, ambition and inclusion for all pupils regardless of starting point.

Why Implementation is STRONG

Teaching is consistent, structured and enquiry-led. Scientific knowledge is carefully sequenced so that pupils revisit and build upon key concepts over time. Leaders ensure teaching includes regular opportunities for investigation, discussion and application of scientific ideas, supported by explicit teaching of subject-specific vocabulary.

Assessment information is used carefully to identify pupils working below age-related expectations. These pupils are supported through adapted investigations, visual models, structured guidance and flexible methods of recording. Pupils working at ARE consolidate learning through practical application and explanation of scientific ideas.

Pupils working at GDS are challenged through designing investigations, evaluating evidence, drawing conclusions and applying scientific knowledge independently. SEND pupils access the same ambitious curriculum through adapted equipment, adult support and scaffolded learning. EAL pupils benefit from demonstrations, diagrams, modelling and explicit vocabulary teaching to ensure language does not limit scientific understanding.

Why Impact is STRONG

As a result, pupils develop secure scientific knowledge and the ability to think scientifically. Pupils who begin below ARE make sustained progress through targeted support and structured teaching. Pupils at ARE confidently explain scientific concepts and apply enquiry skills, while pupils at GDS demonstrate depth of understanding, independence and the ability to justify conclusions using evidence. Pupils leave the Federation well prepared for secondary Science, with curiosity, confidence and an understanding of how science explains the world around them.