

Bilton Grange Primary School – Science Curriculum Rationale

INTENT

At Bilton Grange, our intention is to develop children who are curious, confident and capable scientists who understand the world around them and feel empowered to explore, question and explain natural phenomena. We deliver a knowledge-rich, sequential curriculum aligned to the National Curriculum that builds substantive and disciplinary knowledge progressively from EYFS through to Year 6.

Science is taught through an integrated thematic approach, enabling pupils to make meaningful cross-curricular links that support deeper understanding. Learning is exciting, practical and enquiry-led wherever possible so that children can observe closely, question, challenge and evaluate evidence scientifically.

We are committed to building children's Science Capital — the knowledge, experiences, confidence, aspirations and role-model connections that shape their relationship with science. Through real-world contexts, enrichment opportunities, visitors, career links and representation of diverse scientists, we ensure all pupils, regardless of background, develop positive scientific identity and believe science is 'for them'.

By the time pupils leave Year 6 they will:

- Have a coherent understanding of key scientific concepts
- Demonstrate competence in enquiry and investigation skills
- Use age-appropriate scientific vocabulary confidently
- Show curiosity and aspiration towards science and STEM pathways

IMPLEMENTATION

Our science curriculum delivers learning through three interconnected strands:

- Substantive knowledge – core scientific concepts that pupils must learn and remember.
- Disciplinary knowledge – 'working scientifically' skills that enable investigation, evaluation and reasoning.
- Structured progression mapping – progression documents that explicitly sequence enquiry types and working-scientifically skills across year groups to ensure consistent small-step development from EYFS to Year 6.

Learning sequences are guided by enquiry-type mapping and working-scientifically skills progression documents, ensuring all pupils experience repeated exposure to:

- Observation over time
- Pattern seeking
- Identifying, grouping and classifying
- Comparative and fair testing
- Research using secondary sources

Working-scientifically skills are taught and revisited progressively, including:

- Asking scientific questions
- Planning investigations
- Taking measurements
- Making observations
- Gathering, recording and classifying data
- Presenting findings

- Drawing conclusions
- Evaluating results

Early Years:

Science is delivered through Understanding the World using medium- and short-term planning that identifies:

- Pre-learning discussion opportunities
- Wow starters and clear learning endpoints
- Sequential lesson progression aligned to progression mapping
- Core vocabulary

Key Stage 1 & 2:

- Sequenced lesson plans guided by enquiry-type and skills-mapping documents
- Substantive (knowledge) and disciplinary (enquiry) objectives
- Knowledge sentences for retrieval practice
- Cross-curricular links

To support retention and long-term memory:

- Repetition of knowledge sentences
- Display and active use of essential vocabulary
- Block teaching for skill-immersion
- Retrieval practice as per assessment policy

Science Capital Development:

- Enrichment activities including science days, outdoor investigations and workshops
- Visitor talks and/or careers links to expose pupils to STEM pathways
- Representation of diverse scientists across teaching materials
- Application of science to everyday contexts

IMPACT

The impact of our curriculum is monitored through:

- EYFS observational assessment within Understanding the World
- Regular assessments and recall checks – recorded on subject tracking grid
- Analysis of retrieval results to close learning gaps
- Annual subject-leader monitoring including:
 - Learning walks
 - Book and planning scrutiny
 - Pupil interviews
 - Assessment evaluations
 - Moderation of teacher judgements annually to ensure accuracy and consistency

Outcomes:

Our pupils know more, remember more and think scientifically. They demonstrate increasing confidence in enquiry skills, apply scientific reasoning effectively, and develop positive attitudes and aspirations towards future STEM learning.