

Askwith Primary School

Science Rationale

'Children are naturally curious. Science at primary school should nurture this curiosity and allow them to ask questions and develop the skills they need to answer those questions.' (*Louise Stubberfield Primary science programme lead, Wellcome*)

Intent

Science at Askwith Primary School nurtures curiosity and equips pupils to understand, explain and question the world. Our intent is that pupils know more, remember more and can do more, developing as scientifically literate citizens who value science in everyday life.

The curriculum is deliberately sequenced from EYFS to Year 6 so that essential knowledge, skills and attitudes build cumulatively. Substantive knowledge includes understanding concepts, facts, models and laws (e.g., forces, states of matter, classification, evolution). Disciplinary knowledge includes how scientific knowledge is established - observing, measuring, controlling variables, analysing data, evaluating evidence, and communicating findings. Scientific attitudes and dispositions include developing intellectual curiosity; evidence-informed reasoning; and the recognition of the limitations of science and its implications for society.

Attitudes in science are explicitly taught to encourage pupils to:

- challenge the idea that science provides absolute truth; understand that claims are provisional and refined by evidence.
- appreciate the importance and influence of science in everyday life and in society.
- engage positively with scientific developments while recognising their limitations and ethical dimensions.
- develop critical, open-minded thinking and a readiness to ask questions and test ideas.

Science is taught in purposeful blocks at least once per term to create immersion, ensure sufficient rehearsal and enable high-quality practical work. Each lesson begins with a daily diet routine to strengthen retrieval and scientific oracy so that new learning connects to secure prior knowledge.

Implementation

A whole-school progression map shows the essential knowledge, skills and vocabulary from Reception to Year 6. Units build deliberately from prior learning and revisit knowledge to secure long-term memory and use explicit instruction of core ideas, purposeful practice and structured enquiry. Adaptive teaching ensures the pupils with SEND can access all elements of science

through small steps of knowledge acquisition; chunked instructions; and additional adult support where necessary. Practical work is used to connect scientific concepts with observable phenomena. Pupils undertake practical activities only when they have sufficient connected knowledge to interpret results to avoid unfocused discovery tasks. Deliberate spacing and interleaving of key ideas across the year groups (e.g., materials → states of matter → changes of state → reversible/irreversible changes) underpins the science curriculum at Askwith.

In science, declarative knowledge is the skill of working scientifically to ask and answer questions. All enquiry types are covered across an academic year:

- Comparative/fair testing (e.g., effect of surface on friction).
- Pattern seeking (e.g., relationship between shadow length and time of day).
- Observing over time (e.g., plant growth in different conditions).
- Identifying, classifying and grouping (e.g., sorting materials by properties).
- Research using secondary sources including high-quality text and adapted articles (e.g., habitats of endangered species).

Impact

Impact is measured through ongoing questioning, observations, mini knowledge checks and end-of-unit assessments. Daily diet tasks (Explorify/Concept Cartoons) provide a timely opportunity to address any misconceptions. Pupils' work demonstrates a progression in knowledge, use of increasingly scientific vocabulary, enquiry records and data representations.

Inclusion

We ensure equity of access and ambition for pupils with SEND, disadvantaged and vulnerable pupils. Adaptations may include visual scaffolds; chunked tasks; pre-teaching of vocabulary and core ideas; sentence stems and partially completed diagrams; additional adult support and deliberate groupings. Flexible outcomes (oral explanations, annotated photos) are used to evidence understanding where writing is a barrier. High expectations are maintained for all learners.

Personal Development & SMSC

Spiritual development in science involves the search for meaning and purpose in natural and physical phenomena. It is the awe and wonder about what is special about life and the interdependence of all living things and materials of the Earth. Moral development involves pupils' ability develop to an open mindedness to the suggestions of others alongside evidence-based decision making. Social skills are built through teamwork in investigations. Cultural development includes developing and understanding of diverse scientists and global

contributions; challenging stereotypes in STEM careers. Careers information is developed for all pupils and signpost real-world applications; visitors and virtual links to STEM professionals.

Leadership & Professional Development

Subject leadership evidence is gathered through professional dialogue, classroom visits, book looks, pupil voice and planning reviews. Findings inform CPD, resource allocation and curriculum adjustments. Staff meetings provide opportunities to model good practice and share resources.

Staff CPD includes modelling techniques and concepts, explicit vocabulary and oracy strategies and independent CPD using online providers such as RSC and ReachOut CPD (Imperial College, London). Subject leader CPD includes PSQM (gilt) quality mark and current research shared with staff. CPD evidence demonstrates improved consistency and accuracy in teaching.

Enhancements

All pupils are exposed to a wide range of opportunities that enhance their knowledge and cultural capital. Visits, STEM visitors and enrichment weeks focus on real-world problems and enable children to apply their knowledge and be taught by 'experts' in the field. Enhancements that include targeted role-models are used to challenge gender and other stereotypes in STEM. Clubs and competitions are used to further embed knowledge.

Science Priorities for Improvement 2025-2026

Intent	Implementation Actions
Further improve opportunities for oracy in science through Explorify and Concept Cartoons	<ul style="list-style-type: none"> • Review and amend essential knowledge documents in light of pupil/teacher conversations • Update the rationale • Amend short-term planning to show the daily diet of science • First drop-ins focus on daily diet • Second drop-ins focus on outdoor opportunities • Review opportunities for extended learning and enquiry types • Third drop-ins focus on enquiry types

Reviewed September 2025