BROOK FIELD PRIMARY SCHOOL

Science Policy Statement

INTRODUCTION

At Brook Field, we give children a range of diverse scientific experiences to enable them to raise and answer their own questions about the world around them. We promote scientific enquiry, exploration and curiosity through a multi-sensory, cross-curricular, inclusive approach to engage, challenge, excite and motivate. We teach children to use metacognition in science. Metacognition is embedded through regular 'meta-moments', where pupils reflect on how they learn in science

Children experience objectives in line with the National Curriculum (2014) ensuring that they have covered both the 'Knowledge and Understanding' and 'Working Scientifically' objectives. 'Working Scientifically' specifies the disciplinary understanding of the nature, processes and methods of science for each year group and is taught alongside substantive Knowledge and Understanding in small steps.

AIMS

At Brook Field, we want our children to look at the world as a scientist.
We aim to develop the following areas:

- Scientific knowledge and understanding through the teaching of biology, chemistry and physics.
- The understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them using disciplinary skills.
- The ability to question, hypothesise, predict, observe, test ideas, find solutions, measure and evaluate evidence.
- The scientific knowledge required to understand the uses and implications of science, today and for the future by drawing on a range of diverse perspectives and theoretical understanding.
- The ability to be curious about the world, sustainability and the challenges faced by modern science, be open-minded and challenged to evaluate results critically.
- The ability to use a wide range of metacognitive and oracy skills and scientific vocabulary when discussing, making predictions or evaluating their work.

At Brook Field, we embed both metacognition and oracy throughout our science curriculum. Metacognition is fostered through regular 'meta-moments', where pupils reflect on how they approach scientific tasks, such as planning experiments or evaluating evidence. These moments help children become more strategic and self-aware in their learning. Oracy, meanwhile, is central to our teaching practice, with pupils encouraged to articulate their scientific thinking using precise vocabulary. Through structured discussions, debates, and presentations, children gain confidence in explaining complex scientific ideas and justifying their reasoning. Together, metacognition and oracy help pupils develop the skills to think critically and communicate effectively in science.

ATTITUDES

The study of science will assist in the development of positive attitudes towards scientific enquiry: *Observing over time, Pattern seeking, Identifying and classifying, Comparative/fair testing, and Research using secondary sources.* through inclusive activities which foster curiosity, originality, responsibility, independent thinking, co-operation, perseverance, open-mindedness, self-criticism and self-discipline. These activities are underpinned by our Challenge for All approach and the use of metacognition.

THE FOLLOWING DISCIPLINARY SKILLS ARE TAUGHT IN EYFS/ KS1:

- Asking questions and recognising that they can be answered in different ways.
- Observing closely using simple equipment.
- Performing simple tests.

- Identifying and classifying.
- Using their observations and ideas to suggest answers to questions.
- Gathering and recording data to help in answering questions.
- Using ICT where appropriate.

THE FOLLOWING DISCIPLINARY SKILLS ARE TAUGHT IN KS2:

- Planning and setting up practical enquiries, comparative and fair tests, controlling variables where necessary.
- Taking accurate measurements and observations using a range of different scientific equipment.
- Gathering, recording and classifying data in a range of different ways.
- Reporting, explaining and presenting scientific findings.
- Making predictions and drawing conclusions in order to suggest improvements and raise further questions.
- Using scientific evidence to answer, support or refute ideas.

SPIRTUAL, MORAL, SOCIAL AND CULTURAL AND BRITISH VALUES

Spiritual, Moral, Social and Cultural development is an inclusive element of our science curriculum with every opportunity taken within our sessions to develop our children's skills within this area further.

One method of developing Cultural Capital is through a wide range of opportunities for children to see themselves as the scientists of the future, which are infused throughout our multisensory curriculum. With a focus on raising aspirations within STEM fields, we provide experiences such as British Science Week to introduce children to the careers of parents within our school community, who help them to see and celebrate the role of science within their everyday experiences, and through revised Bloom's questioning, develop a sense of curiosity about the integration of science and technology within the world around them. Sustainability and opportunities for working scientifically in the outdoors are available through our Forest Schools provision. Brook Field's legacy partnership with the Ogden Trust supports the school to develop these opportunities for the wider school community, with a significant focus on diverse and challenging physics provision.

Our teaching ensures that the children are made aware of the important role that science plays in bringing us together and how we can use it to help one each other. For instance, Genes for Jeans day shows our determination to develop a greater scientific awareness of how we are all different and unique; children take this opportunity to celebrate positive differences within and beyond our school community. Visits from experts such as wildlife specialists, palaeontologists and STEM support inspire our children to conserve and develop a sense of social responsibility and celebrate cultural diversity. Please also refer to the SMSC section on our website.

ORGANISATION

Our Science curriculum is fully aligned with the statutory requirements of the National Curriculum for Science (2014). We ensure that all year groups cover the appropriate 'Working Scientifically' and 'Knowledge and Understanding' objectives through a carefully sequenced progression of skills and knowledge.

Science teaching and learning begins in Early Years Foundation Stage, where our thematic curriculum exposes children to working scientifically in a range of fields such as biology and chemistry (please refer to the progression of skills in science at Brook Field) in order to help them reach *Early Learning Goals* for *Understanding the World*. Our Early Years curriculum dovetails with the learning for Year 1, where pupils begin learning science as a core subject. For instance, essential vocabulary is taught through our multi-sensory, oracy approach so that all pupils can work scientifically through a range of enquiry types. This includes activities such as pattern spotting or grouping and classifying species of penguins during the study of Antarctica, for example or whilst collecting, observing and classifying leaves during 'welly walks'. This provides our youngest scientists with the fundamental skills which help them to take their first steps to success in science.

Across KS1 and KS2, science is taught in a variety of ways; taught as a lesson a week, for a series of days or as a theme week. For some terms, science is the main topic and other subjects are along a similar theme in a cross curricular manner. When science is not the main topic, teachers ensure that challenging science discussions and activities form the part of some lessons as an element of our spiral curriculum, encouraging children to 'know more and remember more'. For instance, writing non-chronological reports about the Amazon rainforest biome or the lifecycle of endangered species is supported by a broad and deep scientific, substantive knowledge that is interleaved throughout units of non-fiction writing. This is monitored by the Science Co-ordinator who retains an overview of all science teaching and assessment.

Our science lessons follow a 'teaching to the top' mastery style model, where small steps are made accessible to all learners through adaptation and scaffolding where appropriate. Metacognition through frequent modelling and the use of 'meta-moments' supports our ambition to raise the attainment of all learners with a relentless focus on the most vulnerable pupils.

RESOURCES

There is a science area full of resources in the mobile classroom for staff to access when needed. This is supported by The Ogden Trust, who annually supply support for the highest-quality, physics resources for light, sound, space and electricity. In addition, the science Co-ordinator has a range of teaching support materials that are readily available, some of which are saved centrally for all staff to access via the intranet. For some topics the use of visits and visitors enrich the curriculum, for example Explorer Dome, a local, physics-based experience that enables pupils to experience a planetarium. A rich oracy resource for discussing a range of science topics and themes has been created by the science co-ordinator and is accessible for all on the shared drive. Further resources include a range of website links that the co-ordinator shares with all staff.

Teachers have access to the 'Field-Lab' area, which is dedicated science space at Brook Field, built using grant funding from the Wiltshire Community Foundation. Profits obtained through the generation of solar electricity were donated to facilitate the building of the area. This space is full of science resources that are specific to the whole-school strategic drives, for instance, supporting reading in KS2 with a range of inclusive and diverse, high-quality science reference books. The area is used for interventions for groups of learners targeted by the science subject-coordinator. It may also be used to host science visitors for unique group based activities.

SPECIAL EDUCATIONAL NEEDS

Children with Special Needs are identified according to the school's Special Educational Needs Policy and teachers will provide inclusive, scaffolded multi-sensory provision according to their needs as an element of our Challenge For All approach. They will be taught in mixed ability groups when appropriate or in ability groups supervised by the teacher or teaching assistant. Careful questioning and observation will be used as the main form of assessing these children to ensure they achieve their maximum potential, which forms part of our inclusive, 'teaching to the top' approach. Multi-sensory opportunities alongside scaffolding and adaptations will be provided to develop other ways of recording other than always relying on written methods, as outlined within the *Science Challenge Proforma.*

MORE ABLE CHILDREN

Children who are more able in science will be identified by:

- Making close observations and predictions, that draw their own Scientific knowledge and understanding
- Demonstrating a strong enthusiasm and curiosity for science
- Being assessed as exceeding ARE in science
- Using the NACE identification criteria found in the Brook Field Teaching and Learning Compendium
- Their ability to make links and connections with prior learning and their own interests.
- Their mastery of planning, self-regulation and evaluation skills applied through embedded habits of metacognition

More able provision enables pupils to develop their scientific reasoning in greater-depth. Children will be challenged within science sessions through multi-sensory activities and inquiries which emphasise evaluative and analytical thinking, such as those supplied via NACE or through the use of graphic substantive knowledge organisers. Challenging questioning is used to develop their scientific understanding and vocabulary through

oracy as an element of our Teaching to the Top practice (please also refer to the More Able policy). More able pupils have the opportunity to read widely using our diverse range of subject specific texts, celebrating contemporary theory within physics, chemistry and biology.

More recently, more able pupils have begun to support the conservation of local, endangered species and evaluate changes to Brook Field with an emphasis on sustainability. This challenging work has been supported by Rolls Royce, through a special merit award, alongside the Wiltshire Wildlife Trust.

ASSESSMENT

Assessment is an integral part of our teaching and is used to inform the subsequent stages of teaching as part of our assessment for learning approach. In order to inform our planning, the children complete a 'cold task'. They are given a concept map with key words to elicit their current understanding and knowledge in order to identify misconceptions and gaps.

The same concept map is completed as a 'hot task' at the end of the unit to help assess the children's progress with substantive knowledge. This, alongside marking and feedback of the children's work and teacher judgement, is used to determine whether the child is entering, developing, secure or mastery within the objectives. Discussions, questions (linked to Revised Bloom's Taxonomy) and observations of children working scientifically also inform the teacher judgement, where an inclusive approach to assessment has been embedded. The Teacher Assessments in Primary Science materials (TAPS) may be used to support consistency in assessment. Assessment judgements are made in line with the school's Assessment Policy.

SCIENCE CO-ORDINATOR

The role of the science co-ordinator is to:

- Monitor the science carried out across year groups by scrutiny of work, planning, assessment and pupil voice. This includes monitoring of the frequency of science teaching across the year.
- Support colleagues in teaching the subject through sharing good practice and delivering staff meetings to ensure consistency of approaches and expectations.
- Renew, update and supplement resources needed to deliver the curriculum successfully.
- Involve Governors in the development and monitoring of the subject.
- Attend appropriate CPD and cluster meetings such as the MAT's Blue Kite Bricks to ensure up to date and relevant professional development in this subject.