Birdwell Primary Science Policy

EDUCATE. EMPOWER. INSPIRE.

Intent

We encourage children to remain inquisitive throughout their time at Birdwell and beyond. Our Science curriculum encourages pupils to have a healthy curiosity about the world around them and to appreciate both living and non-living things. Science teaching, through our approach, ensures the development of knowledge, key concepts, and Scientific enquiry skills.

Our approach to the Science curriculum ensures that it is taught discretely to ensure depth and rigour. Underpinned by the accelerated learning approach to teaching and learning, the Birdwell progressive curriculum document supports the progression of substantive content and concepts, which have been carefully selected and well-sequenced, so a child should know more and revisit knowledge and concepts to ensure depth and rigour over time.

The key concepts, principles and themes from the National Curriculum have been developed into a progressive schema through which the children are helped to grow and develop to succeed in 21st century Britain. This curriculum with a focus on knowledge acquisition allows a creative way of teaching and learning, enabling us to deliver a more meaningful and enquiry-based approach for the science curriculum.

The science curriculum we offer is designed to meet the needs of all our pupils by providing purposeful contexts which engage our children. It is rich, varied, imaginative and ambitious and meets the needs of individual learners but can easily be adapted for pupils with additional needs. Through regular assessment, tasks are matched to the ability of each child through differentiated activities, providing a level of challenge that is stimulating for pupils.

Children will learn and develop key knowledge that has been identified within each unit and throughout each year group. At Birdwell, we ensure that children's Working Scientifically skills are reinforced and improved throughout their school careers so that they can apply their scientific knowledge when performing experiments, constructing hypotheses, and confidently expressing key concepts.

Our school's Science curriculum is designed to foster a deep understanding and appreciation of the natural world through the lens of biology, chemistry and physics. In alignment with the National Curriculum for England, we aim to develop pupils' scientific knowledge and conceptual understanding across these key disciplines. Our intent is to equip students with the skills to explain scientific phenomena, predict outcomes and analyse causes, thereby cultivating a scientific mindset from an early age.

To achieve this, our school implements the Primary Science Quality Mark strands for the development of scientific enquiry. We place particular emphasis on observing changes, grouping and classifying, conducting research using various sources, carrying out fair tests, seeking patterns and encouraging students to ask probing questions. By fostering these essential scientific skills and knowledge, we aim to lay a strong foundation for our students' future academic and personal growth in an increasingly scientific and technological world.

Science is taught through AT1 (Scientific enquiry) which allows children to test and explore scientific theories. Birdwell celebrates Science Week each year and a whole school focus is given to developing specific skills and knowledge.

The HCAT progressive documents supports the progression of knowledge and skills a child should learn in Science throughout their time at school. The progressive skills have been enhanced from the National Curriculum to ensure coverage is appropriate for each year group.

Implementation

The HCAT progressive document ensures that appropriate coverage and progression is in place for biology, chemistry and physics and that children are building on their knowledge and skills over time.

Science is taught discretely in three categories: biology, chemistry and physics. It is delivered to raise interest, self-esteem, creativity and aspirations of all our children. The science curriculum is rich and varied, which provides our pupils with the skills required for life in the 21st Century.

The Accelerated Learning Cycle, based on the work of Alastair Smith, is applied in all lessons. It stems from the idea of a supportive and challenging learning environment. The cycle has active engagement through multi-sensory learning, encourages the demonstrating understanding of learning in a variety of ways and the consolidation of knowing.

A gather, skills, apply approach to planning and delivery of lessons is taken across school to ensure children develop a deep understanding of specific skills and are able to apply these in a range of scientific situations.

Ultimately, scientific knowledge and enquiry skills are at the heart of the learning process with the children exploring a wide range of topics, to prepare them for life.

Our curriculum is designed with a core focus on retrieval practice, recognising its pivotal role in helping students know more and remember more. This intent is actualised through a dual approach: integrated retrieval within individual lessons and a structured, subject retrieval practice rota. In-session retrieval activities are carefully crafted to reinforce key concepts and knowledge, promoting immediate recall and application. Complementing this, our weekly retrieval practice rota systematically revisits content across various subjects, ensuring spaced repetition and interleaving of crucial information. This comprehensive strategy aims to strengthen neural connections, facilitate the transfer of knowledge to long-term memory and build increasingly complex mental models. By embedding retrieval practice as a fundamental aspect of our curriculum, we strive to enhance our pupils' ability to retain, recall and apply their learning effectively, thereby fostering deeper understanding and more robust academic progress.

Our curriculum is ambitious for all pupils, including those children with SEND. Curriculum designers and teachers have high expectations of what SEND pupils can achieve and the curriculum is not diluted or unnecessarily reduced for SEND pupils. Every pupil is different and so what works for each pupil varies. Pupil's individual needs are considered and adaptations are planned to ensure the success of pupils in all subjects.

The way that our curriculum is designed ensures that chunks of learning are sequenced in a coherent way to enable all pupils, including those with SEND, to build on prior knowledge. Too much information at once can be a barrier to learning which is one of the reason why we have chosen half termly curriculum drivers.

Where pupils are identified with having complex needs, it may be appropriate to provide a personalised curriculum which will be based on individual needs and will retain ambition for the pupil.

Where working memory is an issue for pupils, including those with SEND, we look to reduce extraneous load as much as possible as well as identifying key information when teaching. This helps pupils to pay attention to the content which they are expected to learn. Adaptations to support individual pupils will be recorded on personal school support plans.

We do not assume that pupils with SEND learn content better through practical work as this can cause distraction and cognitive overload rather than increase clarity or accessibility. The curriculum is not narrowed for any pupils. Knowledge is taught and then pupils are provided with opportunities for scientific enquiry to test and investigate the knowledge taught. Pupils specific needs determine the types of adaptations which are required. These adaptations are in how the subject is taught rather than the content

pupils are expected to learn. Where appropriate, learning will be chunked into smaller steps and pre-learning and consolidation time in planned in to support need. Time is also planned to ensure pupils with SEND are pre-taught vocabulary to support their understanding. Adaptations may include supporting pupils to pay attention to key aspects as well as reducing excessive or unhelpful demands on working memory.

Impact

Formative assessment is ongoing throughout each lesson. It judges progress and enables the teacher to make flexible adaptations to their planned teaching.

Through this regular ongoing assessment, tasks are matched to the ability of each child through adapted activities and including adult support, thus providing a level of challenge that is stimulating for pupils and questioning skills

Our schools are dedicated to providing a high-quality curriculum that is ambitious for all pupils. We have a robust system in place to ensure children are making strong progress in their foundation subjects using the Arbor MIS platform to conduct summative assessments at key points in the year. The purpose of these assessments is for our subject leaders and teachers to analyse pupil understanding against our assessment statements, which are progressively devised from our taught curriculum. This allows children to acquire knowledge that builds upon the fundamentals of their prior knowledge in a well-designed curriculum sequence.

Key Responsibilities for Science:

All staff

All staff will:

- Ensure that they are up to date with the school policy and curriculum requirements regarding Science.
- Attend and engage in professional development training around Science provision, including individual and whole staff training/inset, where appropriate.
- Attend staff meetings to be introduced to any new areas of work and review the effectiveness of the approaches used.
- Report back to Science Lead on any areas they feel are not covered or inadequately provided for in the schools Science provision.
- Tailor their lessons to suit all pupils in their class, across the whole range of abilities, including those pupils with special educational needs.
- Ask for support in this from SEND coordinator or the Science Lead, should they need it.

Subject Lead:

- Review the policy on a yearly basis.
- Keep staff up to date on any policy changes.
- Ensure that all staff re able to access and deliver the curriculum.
- Identify training needs and arrange or deliver said training.