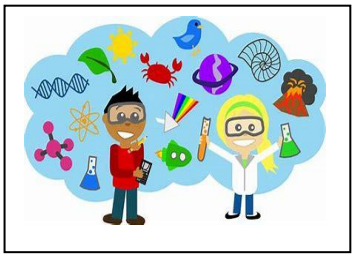
# Stowford School

# Curriculum Statement for Science



## Intent:

The Stowford Curriculum for science intends to ensure that all children:

develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics

develop 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

are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

## Implementation:

At Stowford School, Science is approached using the CUSP Science curriculum at its core. The CUSP Science curriculum is an ambitious curriculum that ensures full coverage of the National Curriculum. The sequencing of learning is progressive and ensures that modules build upon prior knowledge in Biology, Physics and Chemistry. It builds upon the EYFS learning within the Natural World, and People, Culture and Communities. The curriculum is evidence led and incorporates overlearning and continual retrieval to ensure long-term retention of both substantive and disciplinary knowledge.

Each learning module begins with demonstrating to children where the unit sits within the scientific disciplines and where new concepts sit within their existing knowledge and conceptual framework.

Detailed, dual-coded Knowledge Organisers ensure that children can continue to know where their knowledge lies within the subject. These are continually referred to throughout the unit in order to aid retrieval and deep learning of concepts. Each lesson has a dual-coded Knowledge Note which can be adapted to the needs of individual learners. This makes the key concepts and vocabulary easily referable to by the children and teacher throughout the learning process.

CUSP Science also provides high-quality models and diagrams which are used throughout to ensure that misconceptions are addressed and that substantive knowledge is demonstrated clearly.

Vocabulary and continual retrieval practise is at the heart of the curriculum. Throughout each unit, the curriculum embeds new vocabulary through explicit teaching of meaning, analysis and links of both subject-specific and high frequency words. These are highlighted each lesson through modelling, discussion and activities which encourage retention.

Retention and retrieval practise is used throughout a module to ensure all pupils are able to access and build upon prior learning. Each lesson begins with a 'Connect' where prior learning is revisited and misconceptions can be addressed. CUSP Science details the most common misconceptions within planning to ensure teachers know to address these. Cumulative quizzing is used throughout a unit in order to ensure key vocabulary and concepts have a high significance and are retained.

All CUSP lessons follow the structure of 'Connect – Explain – Example – Attempt – Apply – Challenge'. In other words, in every lesson pupils revisit prior learning, have explicit instruction and modelling in the key learning, have the opportunity to apply and discuss the new concepts and that every child has high expectations to challenge and extend their learning. During these phases, once children are secure in their substantive knowledge, pupils are given a wide range of opportunities to 'think like a scientist'. Disciplinary knowledge is taught and assessed through a range of thinking tasks that hone in on skills such as investigating, reasoning and observing.

The curriculum is enriched through whole school activities such as Science Week, as well as educational visits and guests from the community to enhance children's understanding. These, as well as scientists we study in lessons, are from a wide range of backgrounds and cultures.

The Science subject leader keeps up to date and develops subject knowledge for themselves and for staff. They monitor children's learning, progress and the development of the curriculum through regular book scrutinies, learning walks and professional discussions. The subject leader ensures that all school staff are provided with CPD and opportunities to share good practice.

## Assessment:

The CUSP Science curriculum provides frequent opportunities for high quality assessment. Through the careful consideration on 'Thinking Tasks' and 'Thinking Hard' tasks at the lesson planning stage, teachers can plan to assess children's knowledge and understanding (of both disciplinary and substantive concepts) throughout a lesson and unit. 'Thinking Hard' tasks provide opportunities for children to collaboratively assess and for teachers to gain insight into their understanding. They are then able to address misconceptions and use flexible blocks to ensure that any gaps in learning are addressed swiftly and effectively. The beginning part or 'Connect' of any lesson, provides teachers with the opportunity to assess children's prior knowledge and current understanding. Cumulative quizzing not only aids children's retrieval and retention, it is also a valuable tool for both ongoing formative assessment or can additionally be used as an end of unit summative assessment.

## Impact:

The Stowford science curriculum provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all children are taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, children are encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They are encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.