Mathematics Curriculum

Our Our approach to Mathematics has three key principles: deep understanding, mathematical thinking and mathematical language, with problem solving at the heart of our curriculum. The 'mastery approach' to teaching maths is the underlying principle of ours. Instead of learning mathematical procedures by rote, we want pupils to build a deep conceptual understanding of concepts which will enable them to apply their learning in different situations. We avoid teaching procedures and instead get pupils to develop a deep understanding of Mathematics.

The approach is based around three principles, known as the 'Dimensions of Depth':
1. Conceptual Understanding supports *all* pupils to deepen their understanding by representing concepts using objects and pictures, and more abstractly, with words and symbols, and making connections between these. **2. Language and Communication** supports pupils to deepen their understanding by explaining, creating problems, justifying and proving using mathematical language. This acts as a scaffold for their thinking and deepening their understanding further. **3. Mathematical Thinking** supports pupils to deepen their understanding by giving an example, by sorting or comparing, or by looking for patterns and rules in the representations they are exploring problems with. **These three 'Dimensions of Depth' are deeply intertwined throughout the programme, with Mathematical Problem Solving at the heart of the curriculum.**

INTENT

Alignment to National Curriculum

The school follows the Mathematics Mastery programme, which is fully aligned to the National Curriculum. Based on effective research, the programme places emphasis on connectionist pedagogies and research to highlight how interconnected mathematics is, to build the deep understanding in pupils.

End Points

We are very clear about being ambitious in all year groups and the programme is designed to take the children to greater depth within the statutory assessment frameworks. The aim is for all children to become confident mathematicians, who have the skills to approach, tackle and solve a range of problems.

Sequencing

The Mathematics Mastery curriculum is cumulative, where each school year begins with a focus on the concepts and skills that have the most connections. These are then applied and connected throughout the school year to consolidate learning. This gives pupils the opportunity to 'master maths'; by using previous learning.

Addressing Social Disadvantage

A key principle of our teaching is about belief that every child can engage with the curriculum for their year group, unless they have a significant developmental delay. Pre-teaching and same day intervention are in place to ensure that all children can engage with the key learning. Home learning is shared via Google Classroom which includes opportunities to review previous learning and pre-learn concepts from upcoming topics.

Local Context

For a proportion of lower attaining pupils, language and development is a key focus. Through highlighting of key, precise mathematical vocabulary and a high expectation for all pupils to ask and answer in full sentences, as well as a large emphasis on teaching modelling and appropriate scaffolding, pupils develop and broaden their vocabulary, which supports them to articulate their responses and reasoning skills. Vocabulary is also shared with families through half-termly newsletters.

IMPLEMENTATION

Pedagogical Approaches

The school follows a six part lesson sequence: engage, introduce, consider and practise, going deeper, independent task and reflect. The lessons are carefully designed to ensure pace of learning as well as to regularly check for understanding. Maths Meetings are a vital part of the programme, used to consolidate key learning for 10-15 minutes every day outside of the maths lesson.

Teachers' Expert Knowledge

Teacher development is central to the success of Maths teaching. All teachers are fully trained in the programme with key professional development highlighted on lesson guides. Whole School workshops and Subject Knowledge Enhancement workshops can be delivered by the Maths Lead in a tailored approach.

Promoting Discussion and Understanding

Our Maths programme includes both knowledge and vocabulary that are specific to the concepts that the pupils are studying. The six part lesson structure, especially the Talk Task, promotes regular discussion and this is structured to lead to building understanding. Language and Communication underpins every lesson.

Knowing More and Remembering More

Curriculum maps have been carefully constructed to present the content in a logical progression. The school's approach builds on current research into metacognition. This is evident in the six part lesson and Maths Meetings, which includes carefully crafted check points in between each stage, for example using recall and retrieval practice of key skills.

Teacher Assessment

Each part of the lesson is an opportunity for the teacher to assess the learning before moving onto the next part. Misconceptions can then be immediately addressed. The Practise/Deepen method of marking the pupils' work each day also allows for teachers to assess pupils' understanding of the key learning.

IMPACT

Approach to Assessment

Teachers review pupils' work on a daily basis to identify any pupils who need same day intervention and to inform planning. Assessment is against the key constructs. Star assessments are used throughout the year to provide standardised scores and to identify gaps.

Performance Data

The school uses FFT to set ambitious targets for all children, which are at least in line with the top 20% of pupils nationally. The most recent pupil performance data can be found on the school website. FFT tracking is used to compare the current scaled scores with the pupil estimates.

Pupils' Work

The school has really high expectations of all children in terms of the quality and presentation of their work, which we believe leads to a sense of pride. Emphasis on precision of number and symbol formation supports pupils to think logically, organise their reasoning and represent the maths accurately. Photographic evidence is used frequently in mathematics lessons.

Talking to Pupils

All members of the senior leadership team and, particularly, the maths leader talk to the pupils as part of the regular monitoring. The purpose is to explore what they have learnt and what they can remember as well as how much they have enjoyed it. In mathematics, this is generally based around conceptual understanding. Key improvement actions can be identified as a result.

Links / References

www.mymastery.org.uk