



Mathematics Policy 2022 - 2023

St. Michael in the Hamlet Primary School

Context

Mathematics teaches children how to make sense of the world around them through developing their ability to calculate, reason and solve problems. It is a core subject with a range of cross-curricular links but, most often, is best taught discretely, using opportunities from other subjects to practise and hone skills in a context. Mathematics involves developing confidence and competence in number work; shape, space and measure; handling data and the using and applying of these skills. We aim to support children in achieving economic wellbeing by equipping children with a range of computational skills and the ability to solve problems in a variety of contexts using the Development Matters statements for Mathematics in Foundation Stage and the revised Primary Framework for Mathematics and existing National Curriculum to guide planning in Key Stages 1 and 2.

Intent

We aim to inspire all of our pupils, irrespective of their ability, to reach their full academic potential in all subjects. We recognise that mathematics is a critical area of skill and knowledge that impacts on the quality and value of the lives we lead. Therefore, our objectives in the teaching of the maths curriculum include:

- the promotion of the enjoyment of learning through practical activity, exploration and discussion;
- the development of confidence and competence with numbers and the number system;
- developing the ability to solve problems through decision-making and reasoning in a range of contexts;
- the development of a practical understanding of the ways in which information is gathered and presented;
- the exploration of the features of shape and space, and developing measuring skills in a range of contexts;
- helping children to understand the importance of mathematics in everyday life.

Our curriculum directly supports the following intent of the National Curriculum, in particular the belief that all pupils deserve the same high-quality, ambitious curriculum:

1. All pupils become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
2. All pupils reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
3. All pupils can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Implementation of our **S.M.I.T.H.** Mathematics Curriculum

Maths No Problem (MNP)

MNP is founded on expert learning theories and is fully aligned with the 2014 English National Curriculum for maths. In particular, Jerome Bruner's Concrete, Pictorial, Abstract approach lies at the heart of MNP as it builds on learner's existing knowledge by introducing abstract concepts in a concrete and tangible way. The MNP approach has a built-in progression that supports pupils when they are learning new ideas, starting with the 'doing' stage that uses concrete manipulatives, real-life examples or activities to allow learners to discover the mathematical concepts for themselves. Pupils are then given visuals or they can draw diagrams to represent the same ideas. They are encouraged to visualise the concrete objects or real-life examples and make connections with the pictorial representations. This progression from seeing and then drawing models allows learners to move to the abstract 'symbolic' stage where learners have a solid understanding of the concrete and pictorial stages of the problem, strong visualisation skills and can now access abstract mathematical concepts and use symbols to model problems.

Maths lessons at **S.M.I.T.H.** are always delivered using the same lesson structure to ensure continuity, challenge and progression. Following a brief retrieval activity, the lesson structure is as follows:

- Step 1: Exploration. The teacher starts the lesson by presenting the whole class with a real-life problem to explore. Pupils work with their partner to explore the task however they see fit, learning informally through exploration and experimenting to discover their own coding system rather than being told it by an adult.
- Step 2: Structured discussion. Groups share their ideas in a teacher-led whole class discussion. The teacher uses targeted questions to draw out different methods and to rectify any misconceptions. Children also reflect on modelled methods in their textbook to discuss which are most effective and why.
- Step 3: Guided practice. Children begin to apply their learning to a series of questions with their partner. The teacher will continue to check learners' understanding systematically, identifying misconceptions immediately in order to provide clear, direct feedback at the point of learning.
- Step 4: Independent practice. Once children are confident in the skill, they answer questions independently in their workbook and then 'journal' their thought process separately demonstrating deeper understanding, problem-solving and reasoning.

Teaching and Learning Style

Through MNP, **S.M.I.T.H.** has introduced and is developing a Mastery approach to learning in Mathematics. The mastery of the maths curriculum is something that we want all pupils to acquire. During our daily lessons, we encourage children to ask as well as answer mathematical questions. We develop their ability to independently select and use appropriate concrete apparatus to support their conceptual understanding and build procedural fluency therefore they regularly access and use a wide range of resources, such as bead frames, bead strings, number lines, Dienes/ Base 10 apparatus, place value counters, Numicon, multilink, place value cards, Cuisinaire rods and other small apparatus to support their work. We develop the children's ability to represent problems using visualisation skills, jottings and pictorial representations such as Empty Number Lines, bar modelling and their own ideas. The daily Maths No Problem focus task provides meaningful

contexts and encourage the children to apply their learning to everyday situations. At all times the policy intent is the driver behind the planning and delivery of lessons

Early Years Foundation Stage

We teach mathematics in our Foundation Stage through the 'Maths No Problem' scheme which is also used throughout the rest of the school. The objectives set out in the scheme underpin the Early Learning Goals and it is developed with a deep maths-mastery focus in mind. Every morning, Maths is taught directly to the whole class and then children explore concepts in smaller groups. Groups are mixed ability and teachers are able to adapt their questioning to support and challenge the children. Prior learning is then embedded into continuous provision for children to apply their learning independently. Through direct teaching, exploring, activities and play, there are many opportunities for children to develop their understanding and mathematical language as well as enjoying maths in everyday life.

Impact

Teachers assess children's work in mathematics from three aspects (long-term, medium-term and short-term). We use short-term formative assessments to help us adjust our daily plans. These short-term assessments are closely matched to the teaching objectives. We make medium-term summative assessments to measure progress against the key objectives, and to help us plan the next unit of work.

We make long-term assessments towards the end of the school year, and we use these to assess progress against school and national targets. We can then set targets for the next school year and make a summary of each child's progress before discussing it with parents. We pass this information on to the next teacher at the end of the year, so that s/he can plan for the new school year. We make the long-term assessments with the help of end-of-year tests and teacher assessments. We use the national tests for children in Year 2 and Year 6, plus the MNP tests for children at the end of Years 3, 4 and 5.

Marking of Work

The purpose of marking in maths is primarily diagnostic. It communicates to a child whether they have been successful, being motivational, and serves to inform a teacher's planning in terms of any misconceptions. Within the structure of the Maths No Problem lesson, children are encouraged to self-assess and self-mark in order to provide immediate feedback.

Assessment for learning

Assessment for learning is embedded into each lesson and teachers use assessment for learning techniques and strategies on a daily basis in order to identify pupils' strengths and difficulties, inform the next steps for each child's learning and improve the learning outcomes for each child. Short-term planning is reviewed and modified on the basis of these assessments.

Formative assessment

Teachers use a monitoring tracker to track pupils' progress through the objectives taught in that term. Their work is assessed as either working towards, achieved or at a greater depth level. This then informs future planning for the teacher to ensure gaps are filled and next steps are identified and met.

Summative assessment

We make termly summative judgements of each child's achievement against the objectives taught that term. We use the national tests for children in Year 2 and Year 6, plus the MNP tests for children at the end of Years 3, 4 and 5 triangulated with teacher judgement from performance in class and workbooks to form these judgements. Teachers consequently identify and target those children not making expected progress and intervene accordingly. This intervention is discussed and monitored by SLT during termly pupil progress meetings.

Monitoring and review

Monitoring of the standards of children's work and of the quality of teaching in mathematics is the responsibility of the subject leader. The work of the subject leader also involves supporting colleagues in their teaching, being informed about current developments in the subject, and providing a strategic lead and direction for mathematics in the school. The subject leader gives the head-teacher a termly summary in which she evaluates strengths and weaknesses in the subject, and indicates areas for further improvement in line with the School Improvement Plan.

A named member of the school's governing body is briefed to oversee the teaching of mathematics. At certain review points within the year, this governor meets with the subject leader to discuss progress.

[Reviewed:](#) July 2022 (Updated April 2023)

[Next Review:](#) July 2023