

St. Paschal Baylon Catholic Primary School

Mathematics Policy

Intent

At St. Paschal Baylon, we believe that every child can master an understanding and love of maths with the right kind of teaching and support. Mathematics teaches children how to make sense of the world around them through developing their ability to calculate fluently, reason and solve problems as well as enabling them to understand relationships and patterns in both number and space in the world around them. We want to build our pupils' cultural capital so that by the time they leave us in Year 6, they are ready for the next stage of their future education, employment and everyday life. Through our curriculum, we instil a mathematical respect and understanding in all our pupils so they are deeply aware of the essential role of maths to everyday life, particularly financial literacy, as well as its critical relationship with science, technology and engineering.

Furthermore, the design of our maths curriculum allows pupils to develop and embed meta-cognition, problem solving and co-operative learning skills, all of which are essential for sustainable, successful future learning across all subjects. Our curriculum provides a rich variety of mathematical opportunities to explore, take risks and take the lead in exploring mathematical concepts thus ensuring all our children develop into confident, inquisitive mathematicians who are not afraid to take risks and who have secure mathematical foundations with an interest in self-improvement. Every classroom provides a safe environment in which mathematical thinking is valued and encouraged so that pupils can follow a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.

The aims for teaching mathematics at St. Paschal Baylon Primary School are:

- to become fluent in the fundamentals of mathematics so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately;
- to reason mathematically by following a line of enquiry;
- to promote enjoyment and curiosity of learning through practical activity, exploration, investigation and discussion;
- to understand the importance of mathematics in everyday life;
- to develop children's ability to move between concrete, pictorial and abstract/symbolic representations fluently and confidently;
- to promote confidence and competence with understanding and using numbers and the number system;
- to develop a practical understanding of the ways in which information is gathered and presented;
- to explore features of shape and space, and develop measuring skills in a range of contexts;
- to enable children to select and use a range of mathematical tools effectively;
- to promote and provide opportunities for children to develop core learning skills of confidence, determination, curiosity, aspiration, teamwork, independence, communication and focus;
- to develop cumulatively sufficient knowledge and skills for future learning and employment.

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

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 St. Paschal Baylon are always delivered using the same lesson structure to ensure continuity, challenge and progression.

- 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 journal their thought process in their journals.

Teaching and learning style

Through MNP, St. Paschal Baylon Primary School 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, Cuisenaire 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.

Maths Timetable

The National Curriculum places a great emphasis on mental recall. At St. Paschal Baylon, we have adapted the daily timetable to incorporate extra Mental Maths sessions to the daily Maths lesson so that every child accesses 1 x hourly maths lesson (MNP) and a 15 minute arithmetic and fluency based maths session. Within LKS2, particularly Year 4, this arithmetic session is often based around times tables in preparation for the National Multiplication Check.

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.

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

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 O-Track to monitor 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. In KS2, we use end of term NFER tests, 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.