Maths – Intent, Implementation, Impact

Intent

In Maths, we aim to give the children necessary skills to prepare them for life in modern British Society. As an inclusive primary school, our curriculum reflects both the context of the school and the experiences of the children. This enables the children to be develop a passion and be aspirational, to fulfil their potential and reach the highest of expectations that we have of them.

Maths is a long-term journey. A deep understanding of Maths is achieved through exploration, clarification, practice and application over time. At each stage of learning, children should be able to demonstrate a deep, conceptual understanding of the topic and be able to build on this over time.

There are 3 levels of learning:

Shallow learning: surface, temporary, often lost.

Deep learning: it sticks, can be recalled and used.

Deepest learning: can be transferred and applied in different contexts.

The deep and deepest levels are what we, at St Mewan, aim for by teaching maths using the Mastery approach. We aim for all children to be fluent in key declarative and procedural knowledge. Once they are able to apply this knowledge rapidly and accurately, we teach our children to reason, solve problems and apply these skills in other subjects.

We intend to do this by:

- Quality-first teaching will ensure that our children have access to a high-quality maths curriculum that is both challenging and enjoyable
- Providing our children with a variety of mathematical opportunities, which will enable them to make the connections needed to enjoy greater depth in learning
- Developing independent learners with inquisitive minds who have secure mathematical foundations and an interest in self-improvement
- Encouraging curiosity and a passion to learn maths
- Developing the behaviours Mathematicians need to succeed

<u>Metacognition in Maths</u>

In our Maths lessons, we aim to develop pupils' independent learning skills using metacognitive approaches. We will:

- Develop pupil self-esteem to create confident, resilient learners that are not afraid to take risks
- Ensure all children are engaged in lessons with no passive learners
- Develop children's self-awareness as learners
- Develop fluent number fact knowledge that children can transfer and apply in other areas of maths, thus reducing cognitive overload

Implementation

Our mastery approach to the curriculum is designed to develop children's knowledge and understanding of mathematical concepts from the Early Years through to the end of Year 6. Our curriculum is designed to develop Substantive and Disciplinary Knowledge.

Teaching and Learning, Content and Sequence

Lesson planning follows the objectives laid out in the St Mewan Maths Curriculum Overview which is fully in line with the National Curriculum. Our approach focuses on fluency, reasoning and problem solving: it gives children the skills they need to become competent mathematicians and build a deep understanding of maths concepts. Teaching is progressive within and across year groups, with a focus on number and place value at the start of each academic year. Our progression document has split the objectives and skills into declarative, procedural and conditional knowledge. We have a clear focus on ensuring all children are secure with declarative and procedural knowledge before being able to apply it through conditional knowledge.

Maths teaching strategies are in line with our Calculation Policy which uses a range of concrete, visual and abstract approaches.

Declarative Knowledge

Children are explicitly taught key number facts and mathematical concepts so that they are fluent. They have time to explore relationships between number facts. Over time, children are able to instantly recall and retrieve mathematical concepts taught. Children can demonstrate this knowledge by verbalising methods used.

Procedural knowledge

Children are taught a series of steps and procedures to solve a range mathematical questions. They learn about the criteria used to determine when to use various procedures.

Conditional Knowledge

Children will apply their Declarative and Procedural Knowledge through reasoning and problem solving activities. Teachers model the use of mathematical vocabulary and children are encouraged to develop their mathematical thinking by 'Talking like mathematicians'.

Maths lessons

Whole class math lessons take place daily using the following structure:

- Flashback
- Fluency time
- I do
- We do
- You do

Flashback

At the start of each lesson, classes reactivate prior learning through a short retrieval activity called a 'Flashback Challenge'. This short retrieval activity asks children to use a skill they have learnt from the last lesson, from the week before and the term before. This gives pupils the opportunity to recall previous learning from their long-term memory and ensures all learning is fully embedded. Children will 'know more and remember more'.

Fluency time

As part of our daily twenty minutes Maths fluency time, Years 2-6 teach **Times Tables** using the St Mewan Times Table Planner document and the strategies out lined in our Five Day Teaching timetable.

All year groups from EYFS to Year 6 follow the **Winning with Number** maths programme which aims to ensure all children are fluent and confident with number. It is a structured and systematic number curriculum which identifies, sequences and builds key number knowledge throughout the school. It is taught through a systematic and synthetic approach. This develops children's number knowledge automaticity, ensuring children have the necessary background knowledge in processing number before teaching a new skill.

KSI and KS2

Whole class maths lessons are taught in mixed ability classes from Reception to Year 6. All planning is completed as a year group so that every child's experience of Maths at St Mewan is consistent across classes.

I do

'I do' is the phase of the lesson where teachers share the learning intentions, explicitly teach the new knowledge to the children and explain content clearly.

We do

'We do' is the phase of the lesson where the teacher guides and supports the pupils' learning through the use of gradual release and frequent checks for understanding to assess when children are ready to move onto independent work. Strategies such as mini whiteboards and cold calling are used to inform teachers' formative assessments in this part of the lesson.

You do

You do is the phase of the lesson where children are ready to apply their new learning independently. Teachers use their professional judgement for what is appropriate for their class and cohort.

EYFS

In Reception, alongside Winning with Number, the children's maths skills are further developed through planned and child-initiated play and activities: communicating and modelling language, showing, explaining, demonstrating, exploring ideas, encouraging, questioning, recalling, providing a narrative for what they are doing, facilitating and setting challenges.

Planning is in line with the NCETM materials with a focus on developing a deep understanding of number through subitising and number recognition activities.

Inclusivity

- We are an inclusive school and so children with additional needs are included in whole class lessons where teachers provide scaffolding and relevant support as necessary. For those children who are working outside of the year group curriculum, individual learning activities and interventions such as Number Stacks are also provided to ensure their progress.
- Staff use resources from a range of sources including the NCETM Ready to Progress materials and the Maths Hub PD materials to support children and give them additional

maths teaching where necessary. These materials may be used whole class or in smaller sized groups. Adults use these materials to track back to previous year groups' objectives and learning where necessary.

- Small group Number Stacks interventions are used to support children working below expectations. This intervention focuses on the children acquiring key mathematical skills in a specific area of the Maths curriculum for a short and targeted period of time before they return to whole class Quality First teaching.
- Children move through a lesson's learning at their own pace. They will acquire the skill, apply the skill or deepen the skill within the lesson. Teachers continuously check for understanding within a lesson; they will use flexible grouping and adaptive teaching based on the needs of the learner and what a learner has demonstrated within an individual lesson (responsive teaching)
- Children who have shown their understanding at a deep level within the unit, will have opportunities to apply these skills in a greater depth activity. This should be challenging and ensure that children are using more than just one skill to be able to answer mathematical problems.

Maths beyond the classroom

Children are encouraged to make links between things in the outdoor environment and maths. This helps pupils to start making connections with the work they do in class and the how it connects with the real world.

Staff will make use of the local environment to teach Maths where possible. In EYFS, children are encouraged to see numbers all around them. Maths learning intentions are supported outdoors. Teachers identify opportunities for maths learning and enhancing provision outdoors, celebrating the unique qualities of the outdoor environment. Children use natural resources and are encouraged to learn maths through all their senses, including touch, smell, sound and taste.

KSI and KS2 use the outdoor school environment for the likes of shape hunts, angle hunts, position and direction challenges, and undertaking surveys and data analysis.

A love of maths is encouraged throughout school via links with other subjects, applying an ever-growing range of skills with growing independence, that will prepare them for adult life.

Maths themed days are arranged for throughout the year.

Leadership, Assessment and Feedback

- Assessment informs the teaching and learning sequence. Feedback is given on children's learning and acted upon quickly.
- Formative assessment within every lesson helps teachers to identify the children who need more support to achieve the intended outcome and who are ready for greater stretch and challenge. This is planned for via questioning, whiteboard assessment checkpoints or additional activities.
- Children do not progress onto a new concept until they have demonstrated that they have mastered the current learning.
- In order to support teacher judgments, children are assessed termly using current and reliable tests in line with the National Curriculum for maths. Gap analysis of any tests that the children complete is undertaken and fed into future planning.
- The Maths Lead has a clear role and overall responsibility for the progress of all children in maths throughout school. Working with SLT, key data is analysed and regular feedback

is provided, to inform on progress and future actions. Maths Learning Walks, pupil conferencing and monitoring of planning is undertaken regularly.

Impact

We will see the following impact in Maths:

- Children show independence in lessons
- Children will show confidence in believing that they will achieve. When confronted with challenging or unfamiliar tasks, children will exhibit persistence and confidence
- Each child achieves objectives (expected standard) for their year group
- Children will be able to talk about their previous and current learning
- The flexibility and fluidity to move between different contexts and representations of maths
- The chance to develop the ability to recognise relationships and make connections in maths lessons
- Children will develop as critical thinkers. They will think logically and rationally in their Maths lessons, understanding the connections between different areas of maths. Learners will have the confidence to tackle problems and engage in reasoning tasks independently
- Mathematical concepts or skills are mastered when a child can show it in multiple ways, using the mathematical language to explain their ideas, and can independently apply the concept to new problems in unfamiliar situations.
- Children show a high level of pride in the presentation and understanding of the work.
- The implementation of the St Mewan Times Table planning document and the Winning with Number programme will lead to fluency in number facts and to a deep understanding of number and number relationships
- Metacognitive skills will be developed amongst pupils to help them assess, plan and approach challenging mathematical problems.

These impact indicators will be assessed through: termly assessments, pupil tracking, pupil progress meetings, pupil conferencing, lesson observations and drop ins, performance management and moderation.