Samuel Allsopp

Primary & Nursery School

Mathematics Subject Policy

2024-2025

Schedule of review

Date written: **November 2024**

Shared with SLT/Governing body: **awaiting Ratification - November 2024**

Next review: **November 2025**

Samuel Allsopp Primary and Nursery School Intent Statement

At Samuel Allsopp Primary & Nursery School, our curriculum and all that we do intends to:

- Be supportive and inclusive of the needs for all learners
- Harness pupil independence & allows them to have a go at solving problems for themselves first
- Allow children to make their own 'informed' choices
- Develop their confidence
- Support them to be resilient and get into good habits for the future
- Prepare children for a life outside of school that enables them to make a positive contribution to British society
- Enable them to be proficient users of the English language – speaking and writing
- Widen their contextual vocabulary
- Work independently but also in teams
- Encourage children to go 'beyond their own normal' and experience new things
- Engage children in making a contribution and playing an active part
- Support parents to become active stakeholders in their child's learning
- Provide opportunities for the children to investigate, explore and play an active part in shaping their learning

Our Approach to Teaching for Mastery in Mathematics

An Overview

Teaching for mastery in maths, is used to describe 'the range of elements of classroom practice and school organization that combine to give [our children] the best chances of mastering mathematics'. While we recognize that rote learning can have its place, particularly in reducing cognitive load, the approach, which stems from high performing Asian nations, teaches children how to 'master' their mathematics so that they develop fluency without needing to rely heavily on rote learning and are able to solve unfamiliar problems without needing to rely solely on memorised procedures.

The essence of Maths Teaching for Mastery is that it rejects the idea that a large proportion of children 'just can't do maths'. At Samuel Allsopp Primary and Nursery School, we have implemented a whole-class approach, in line with DfE recommended 'Power Maths', that is underpinned by the belief that by working hard, all children can succeed.

We want our children to

- acquire a deep, long-term, secure and adaptable understanding of mathematics,

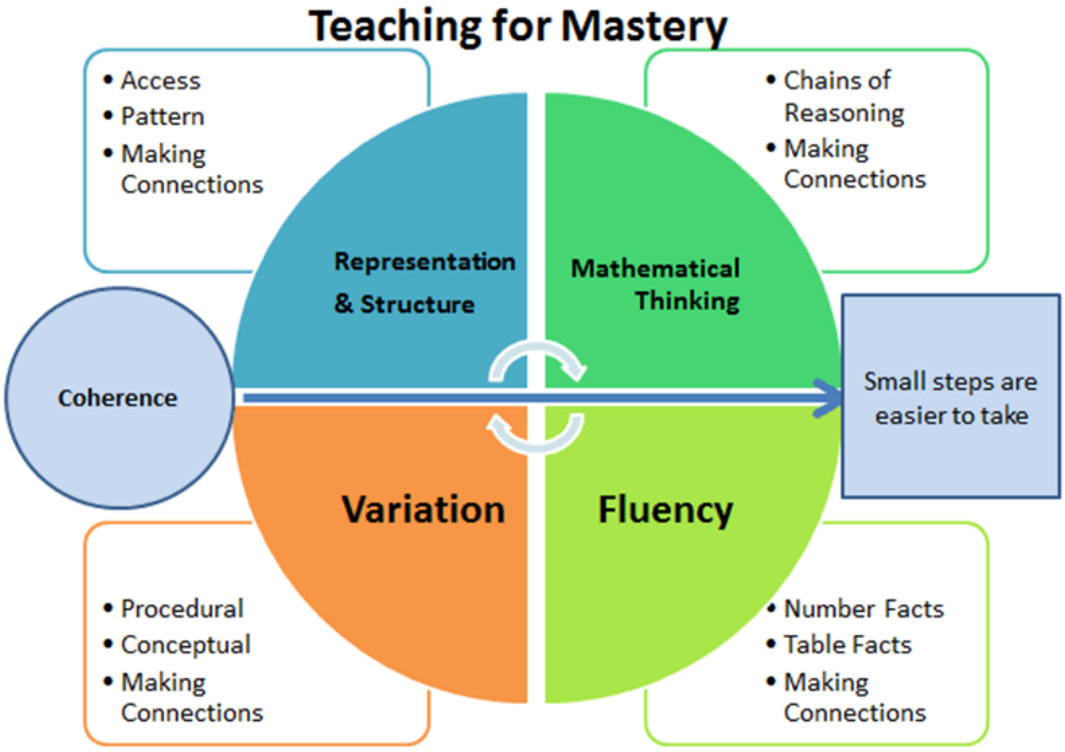
How do we achieve this? By moving children through the curriculum content at broadly the same pace. By allowing children time to think deeply about the maths. By making certain that every child masters each maths concept securely and deeply before we move on.

- develop their self-confidence and build their resilience

How do we achieve this? By allowing all children access to the full maths curriculum. By promoting multiple methods of solving a problem.

- be continually challenged in their thinking,

How do we achieve this? By differentiating through 'depth' rather than acceleration: by allowing children who grasp concepts quickly the opportunity to experience rich and sophisticated problems within the topic whilst providing additional support for children who are not sufficiently fluent so that they are able to consolidate their understanding before they move on.



Coherence

Episodes of learning are broken down into small, connected steps that gradually unfold the concept. This helps provide access for all children, leading them to a generalisation of the concept and with it, the ability to apply the concept to a range of contexts.

Representation and Structure

Representations used in episodes expose the mathematical structure being taught, the aim being that children can do the maths without recourse to the representation.

Mathematical Thinking

If taught ideas are to be understood deeply, they must not merely be passively received but must be worked on by the children: thought about, reasoned with and discussed with others.

Fluency

Quick and efficient recall of facts and procedures and the flexibility to move between different contexts and representations of mathematics.

Variation

Variation is twofold. It is firstly about how the teacher represents the concept being taught, often in more than one way, to draw attention to critical aspects, and to develop deep and holistic understanding. It is also about the sequencing of the episodes, activities and exercises used within a lesson and follow-up practice, paying attention to what is kept the same and what changes, to connect the mathematics and draw attention to mathematical relationships and structure.

Intent

At Samuel Allsopp Primary and Nursery school, we believe that mathematics is an interconnected subject that is essential to everyday life. It is critical to science, technology and engineering, as well being necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a solid foundation for understanding the world around us. We want all children to feel confident and be fluent in mathematics and want to provide opportunities for them to experience the beauty, power and creativity of maths whilst developing a sense of curiosity about the subject.

At Samuel Allsopp, we want our mathematicians to foster positive attitudes and we promote the fact that ‘We CAN do!’ We believe all children can achieve in mathematics and our teaching aims to achieve secure and deep understanding of mathematical concepts

through manageable progressive steps. We use mistakes and misconceptions as an essential part of learning and provide challenge through rich and sophisticated problems.

At our school, we believe in the mastery approach where children are taught as a whole-class and encouraged to master each year group's content through activities that either strengthen or deepen their knowledge. We encourage collaborative learning as we know that shared sustained thinking produces team-working skills, divides the task and multiplies successes.

At the end of their time at Samuel Allsopp, we strive to ensure that every child has all the necessary knowledge and skills to be successful mathematicians in the next stage of their educational journey.

National Curriculum Aims

The national curriculum for mathematics aims to ensure that 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
- Reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- 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

Inclusion Statement

The Staff and Governors of Samuel Allsopp Primary and Nursery School believe that:

- Inclusion is an ongoing process by which the caring and learning environment is constantly monitored and adapted to meet the needs of all our pupils.
- All of our pupils are entitled to support in fulfilling their own potential in terms of academic, physical, cultural, social, emotional and moral development.
- We recognise that ALL our pupils are individuals with their own characteristics, strengths, weaknesses and learning needs.
- Our policies and practises will therefore, take account of the diverse needs and talents of our pupils.

- Pupils with additional emotional, social or learning needs should have access to high quality education and support appropriate to their needs.
- Pupils with Special Education Needs (SEND) should have access to high quality education and support appropriate to their needs.

Implementation

Teaching and Learning

Providing a coherent structure for each session of learning supports children on their journey to deeper understanding, the structure of our Power Maths lessons:

- **'Maths Meeting/ Flashback'** (15 minutes) = Teachers design this activity to provide the necessary steps that will allow all children to access the new learning episode. The emphasis is on the learning of facts, which are learnt to automaticity to avoid cognitive overload in the working memory and enable children to focus on the new concept being introduced.
- **Discover**-Teachers present children with a practical, real-life problem which they explore collaboratively, discussing potential strategies they may use to solve.
- **Share**- Strategies that children have used are shared and through discussion, teachers lead children to the most efficient.
- **Think Together**- For the first question, teachers provide a worked example7 which children discuss. Children then use this to help them collaboratively find solutions to the following given problems - those who do so quickly attempt the challenge questions to test their depth of understanding.
- **Practice-** The 'Practice Books' offer just the right amount of intelligent practice for children to complete independently in the final part of each learning episode – each question varies one small element to move children on in their thinking.

Where children are struggling, teachers form a guided group and use mathematical structures and representations to support understanding.
Where children have grasped the concept quickly, challenge questions are used to delve deeper into a concept.

- **Reflect**- Finally, reflect questions reveal the depth of each child's understanding before they move on to the next episode of learning. This way, we can ensure we've 'closed the door' on the episode.

Planning and teaching

EYFS rationale

At Samuel Allsopp Primary and Nursery School, we follow the DfE recommended scheme, Power Maths, which is carefully designed to provide our children with opportunities to master Mathematical concepts and ideas. This scheme is not simply something we follow as a programme of study but one which is core to our wider pedagogical understanding of what excellent maths teaching and learning looks like. Each year group is provided with a long term overview where suggested supplemented lessons are mapped out and consolidation week are planned in. We are beginning to implement a range of resources to supplement and deepen understanding for all learners such as the NCETM spine and RTP Materials, NCETM Mastering Number, White Rose Flashback in Four and the Gareth Metcalf 'I see Reasoning' materials. We do this, where needed, to ensure that ALL children gain a deep and secure understanding of Mathematical concepts alongside a procedural fluency. Underpinning our Power Maths scheme, are the 5 big ideas when teaching for Mastery.

- In our Maths Lessons we teach for mastery so we organise our lesson structure to give pupils the best chances of mastering maths. We also organise our classes so that children are in mixed ability groupings and this is fundamental to our belief that all children can achieve in Maths. Achieving mastery means acquiring a solid enough understanding of the maths that's been taught to enable pupils to move on to more advanced material.
- We use a variety of strategies to help support our children in their Maths and one of the most important is the use of concrete resources. Much of the Maths curriculum is based on abstract concepts and we therefore use carefully selected manipulatives to draw out the correct mathematical structures in our lessons. We use place value counters, ten frames, Numicon, number lines and dienes to enhance and scaffold our Maths teaching.
- Fluency is integral to the success of children in Maths - it is an essential tool in improving children's confidence when embarking on new mathematical concepts. By committing number facts and knowledge to memory, we can reduce the cognitive demands on children and allow them to solely focus on the new learning taking place in each lesson. Our children use Times Table Rockstars and Numberblocks to improve their number fluency skills and these are practised daily at the start of each lesson.
- Another fundamental part of our Maths teaching is our 'Flashback Four' where we revisit and revise previously taught material. This helps children to 'interrupt the forgetting' whilst also giving teachers opportunities to assess how well previously taught content has been committed to memory. We know future year groups rely on all Maths concepts being secure and 'Flashback Four' are a mechanism to ensure this.

Teacher Guides

Teacher Guides support staff in understanding the design of the learning episode and enable them to teach with confidence. They highlight key points and tricky areas and explain how to handle them. They also provide question prompts that enable staff to check children's understanding.

In addition, all staff are encouraged to watch the programme's unit videos to help develop their personal subject knowledge and ensure consistency in lesson delivery.

Organisation

Cross-curricular links

The development of cross-curricular links enables us to appreciate the important interaction between Mathematics and other areas of study. Opportunities for pupils to practise and extend their mathematical skills are planned and provided through our Creative Curriculum, as well as other curriculum areas wherever possible.

Science - scientific investigation or experiment is likely to require one or more of the mathematical skills of classifying, counting, measuring, calculating, estimating, and recording in tables and graphs. In science pupils will, order numbers, including decimals, calculate simple means and percentages, use negative numbers when taking temperatures, decide whether it is more appropriate to use a line graph or bar chart, and plot, interpret and predict from graphs.

Computing - children will apply and use mathematics in a variety of ways when they solve problems using ICT. For example, they will collect and classify data, enter it into data handling software, produce graphs and tables, and interpret and explain their results. Their work in control includes the measurement of distance and angle, using uniform non-standard then standard measures. Using computer models and simulations pupils will draw on their abilities to manipulate numbers and identify patterns and relationships.

Health and Safety

Health and safety in Mathematics is maintained to a high standard to ensure pupils and staff are protected from harm whenever possible. This includes both their physical and mental health, ensuring that Samuel Allsopp Primary and Nursery School complies with the Health and Safety at Work etc. Act 1974.

Remote Learning

In the case of remote learning opportunities being necessary in the future, pupils at Samuel Allsopp Primary and Nursery School will continue to be taught Mathematics through live lessons, pre-recorded videos and online learning materials.

Impact

Pupils will leave us prepared for the next stage in their lives with:

- Quick recall of facts and procedures
- The flexibility and fluidity to move between different contexts and representations of mathematics
- The ability to recognise relationships and make connections in mathematics
- Confidence and belief that they can achieve
- The knowledge that maths underpins most of our daily lives
- Skills and concepts that have been mastered
- Have a positive and inquisitive attitude to mathematics as an interesting and attractive subject in which all children gain success and pleasure

Assessment

A variety of methods are used in order to provide a broad and balanced picture of pupils' skills and learning needs.

- Assessments are made in line with the school's *Assessment Policy.*
- Times tables tests for Years 2 to 6.
- Timestables Rockstars daily practice Year 2-6.
- Pupils are formally assessed at the end of EYFS, Key Stage 1 and Key Stage 2.
- Parents are informed about progress and attainment during Parents' Evenings (three times a year), through a progress report (February) and an end of year report (June).
- Identified children (children with SEND or children who have taken extended leave) are assessed at more regular intervals and planned for separately where appropriate using Mastering Number resources in order to secure number sense and develop fluency.

Assessment for learning (AFL) strategies are beginning to be used by teachers in order to inform teaching and learning in the Maths Meeting sessions and to adapt Power Maths sessions to ensure children are secure and ready to progress. Teachers are beginning to use the pre-requisite skills section of the Power Maths Teacher Guides in order to identify gaps and deliver session that work towards bridging these for identified learners. Where practice is more embedded, some teachers are beginning to use the NCETM RTP/Spine materials in order to break the learning down into even smaller steps which are easier to take.

Review and Monitoring- Role of the Subject Leader

- Lead in the development of mathematics and ensure fidelity, continuity and progression throughout the school.
- Monitor the planning, teaching and learning of mathematics throughout the school and provide timely and meaningful feedback in order to raise standard and attainment in maths.
- Identify priorities for whole school development which contribute to the School Development Plan (SDP).
- Provide 'in-house' training through staff meetings, team teaching, collaborative planning, peer observations and designated INSET days.
- Advise and support colleagues in the implementation and assessment of mathematics.
- Oversee and monitor end of Key Stage and end of year assessments.

- Co-ordinate the purchase of resources and ensure every year group has the resources needed in order to teach effectively.
- Liaise with the Headteacher on a regular basis.
- Liaise with the Subject Governor on an annual basis.
- Liaise with the SENCO concerning intervention strategies and children who are rapid graspers.
- Keep up to date with recent curriculum developments.

The Head teacher and Mathematics Subject Leader manage a programme of monitoring and evaluation based on the SDP through:.

- the monitoring of medium and short term planning
- lesson observations
- book looks
- analysis of SAT results
- analysis of termly assessments and pupil progress
- moderation of teacher assessments
- pupil voice
- staff voice

Monitoring and Review

This policy will be reviewed annually to reflect any necessary changes required and to ensure that staff are kept up to date with expectations relating to Art and Design.