



All Saints Church of England Primary School
Wigston Magna

Subject Leadership



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Maths

2023 - 2024



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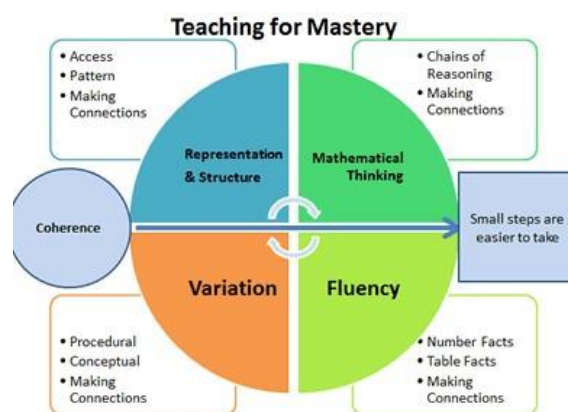
Intent

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. – Primary National Curriculum

The 2014 National Curriculum outlines a clear set of end of year expectations for each year group and has three main 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.

All Saints Primary School is on a journey towards Teaching for Mastery and our maths teaching and learning journey continues to grow with support The Maths Hub Sustaining Mastery Workgroup. Our teaching is based on the five key ideas of Teaching for Mastery: Coherence, Representation and Structure, Variation (procedural and conceptual), Fluency and Mathematical Thinking.



We embed the three aims of the National Curriculum in our teaching: fluency, reasoning and problem solving. We believe that all three are equally important to develop well-rounded mathematicians and therefore our aim of teaching mathematics is 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.

Children are encouraged to reason mathematically by following a line of enquiry, speculating relationships and generalisations, and developing an argument, justification or proof using mathematical language. They are taught to solve problems by applying their mathematical skills 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.

We stress the importance of knowing multiplication tables. By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 times tables. All pupils are taught to develop efficient strategies for mental and written calculations which are clearly outlined within The White Rose Calculation Policy. Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge.

At All Saints we aspire to provide quality first education in maths that provides children with the foundation for understanding the world, the ability to reason mathematically, an appreciation of the relevance of mathematics in everyday lives and a sense of enjoyment and curiosity about the subject. We want to instil a love of a mathematics in our children and staff and for pupils to understand how mathematics is essential to everyday life and that it is critical to science, technology, engineering and finance.

Implementation

How mathematics is planned and taught:

Mathematics is taught on a daily basis for approximately 60 minutes. Teaching methods include discussions between teacher and pupil, discussions between pupils, practical work, group activities, individual work, practice of basic skills and routines and investigative work.

Teachers use the White Rose planning scheme to support their long-term planning. White Rose suggests how long to spend on each block of learning, but the length of time spent is down to individual teachers to decide what is best for their classes' learning. Teachers look at what the prior learning was then build the current teaching upon that. Teachers use the White Rose progression maps for overall National Curriculum coverage.

To support our planning, we use various high-quality resources:

- NCETM PD materials <https://www.ncetm.org.uk/resources/50639>
- White Rose Schemes of learning <https://whiterosemaths.com/resources/primary-resources/>
- NCETM Mastery Assessment documents <https://www.ncetm.org.uk/resources/46689>
- Gareth Metcalfe's 'I See Reasoning' and 'I See Problem Solving'. <http://www.iseemaths.com/> • NRich resources <https://nrich.maths.org/>

Planning and Teaching in EYFS

Maths is taught as part of the Area of Learning designated as 'Mathematics' in the EYFS Curriculum. Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. By ensuring the six strands of the mathematics curriculum (1. cardinality & counting 2.comparison 3.composition 4.pattern 5.shape and Space 6. measure) are taught in depth, children leave reception able to count confidently, they will have developed a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. Teachers provide frequent and varied opportunities to build and apply this understanding - such as using manipulatives, for organising counting. Children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. Staff work hard to ensure that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes.

Each session takes the form of a short, engaging and practical input by the teacher followed by small focus group differentiated work led by an adult.

Key Stages One and Two:

At All Saints Primary School there are distinct parts to our maths lessons and the Rosenshine Principles of Instruction can be seen in a maths lesson in the following ways:

Rosenshine's Principles of Instruction	Mastery Maths Lesson Design
1. Daily review 10. Weekly and monthly review	<u>Retrieval Practice</u> What non negotiables for the year group need to be constantly recapped? What did they learn last year that needs to be reviewed? Are there any misconceptions from the previous lesson that need readdressing?
New material in small steps Ask questions 4. Provide models 5. Guide student practice 6. Check student understanding 7. Obtain high success rate	<u>Exposition</u> New concepts are introduced in small steps using a CPA approach. Teaching and practise interweaved so the teacher models new learning and children then have opportunity to practise skills (ping-pong). Key vocabulary is introduced Teacher may use concrete materials to model. Misconceptions are addressed. Quick questions where Teacher and support staff use AFL to assess further need. Teachers check for understanding through questioning Time is given to give feedback, model or reteach where gaps remain.
8. Scaffolds for difficult tasks 9. Independent practice	<u>Independent Activity</u> Variation in types of questions (both procedural and conceptual) All children should have access to fluency, reasoning and problems solving questions Opportunities are provided for children to work at a greater depth

Questioning and Reasoning Strategies

- How do you know? Justify Why?
- What's the same? What's different?
- Explain how you got your answer? What did you do?
- What do you notice?
- How many different ways can you show me?
- Think - Pair - Share
- Cold call (no hands up)
- No opt out (bounce back if a child isn't able to answer initially)
- Probing questions (staying with a child to probe deeper to check understanding)
- Say it again better (ask children to rephrase answers a second time to build a deeper, high quality answer)
- Agree, Disagree, Add your own... (to structure class discussion around a question)
- Whole class response: choral, whiteboard, ABCD, thumbs up + down for true or false

Classroom environment

Every classroom has a maths working wall where key concepts, representations, models, vocabulary and methods are developed with the children and displayed to develop the overall learning journey. This allows the whole class to have ownership of their learning and to be able to refer to key concepts through the learning journey.

Children also have access to manipulatives to support them in their learning: number lines, place value charts, multiplication grids, fraction walls, dienes, cubes, bead strings and other key resources.

Challenge

Children are challenged through the lessons with directed questioning but they can also be challenged through further Challenge tasks. These tasks focus on the Greater Depth skills of open ended challenge, creating own tasks and proving and justifying their reasoning.

Multiplication Tables

Throughout the year groups in All Saints Primary, children are developing and consolidating their multiplication knowledge in line with age-related National Curriculum expectations. This includes a variety of tasks:

- Counting stick
- Multiplication games
- MTC simulation practice
- TTRS online

Impact

2021-2022 results

EYFS

% at expected and above - Number	% at expected and above - Numerical Patterns
83%	83%

Key Stage 1

% at expected and above	% above expected
55.2%	13.8%

Year 4 Multiplication Tables Check

% of children 25/25	% above 20 marks
0	17.5

Key Stage 2

% at expected and above	% above expected
38.5%	11.5%

2022-2023 results

EYFS

% at expected and above - Number	% at expected and above - Numerical Patterns
75%	70%

Key Stage 1

% at expected and above	% above expected
66.7%	20%

Year 4 Multiplication Tables Check

% of children 25/25	% above 20 marks
27.3%	66.7%

Key Stage 2

% at expected and above	% above expected
53.2%	10.6%

