



Singapore Maths



In 2014 a revised Maths curriculum for Primary Schools was introduced.

- *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.*

Maths at Wargrave

To help us ensure our children develop fluency, reasoning and problem solving skills, we have embedded a mastery approach here at Wargrave. We have adopted a mastery approach called 'Singapore Maths'. Singapore Maths is an amalgamation of global ideas delivered as a highly effective programme of teaching methods and resources. The approach is based on recommendations from notable experts such as Jerome Bruner, Richard Skemp, Jean Piaget, Lev Vygotsky and Zoltan Dienes. The Singapore approach is evidence-based. It helps pupils to develop a deep, long-term and adaptable understanding of maths. Singapore Maths provides pupils with a means of making sense of the world in which they live. Building on experiences, it encourages thinking and reasoning skills to grow. It embraces natural curiosity and develops the confidence to tackle situations that arise in mathematics and other curriculum areas.

There are three key skills that underpin pedagogy in our new mastery approach:

Time to Think Deeply About the Maths

Students are given time to think deeply about understanding concepts at a relational level rather than as a set of rules or procedures. This slower pace leads to greater progress because it ensures that students are secure in their understanding and teachers don't need to revisit topics once they've been covered in depth.

Builds Self-Confidence in Learners



In a traditional primary school maths lesson, children are put in different groups and given different content based on their anticipated ability. This means that from an early age children are classed as those who can and can't "do maths". Teaching maths for mastery is different because it offers all pupils access to the full maths curriculum. This inclusive approach, and its emphasis on promoting multiple methods of solving a problem, builds self-confidence and resilience in pupils.

Differentiates Through Depth Rather Than Acceleration

Though the whole class goes through the same content at the same pace, there is still plenty of opportunity for differentiation. Unlike the old model, where advanced learners are accelerated through new content, those pupils who grasp concepts quickly are challenged with rich and sophisticated problems within the topic. Those children who are not sufficiently fluent are provided additional support to consolidate their understanding before moving on.

Within this new approach, we have created our own 5 Wargrave aims for our children in the academic year 2018/19:

1. Have a positive attitude towards mathematics.
2. Be able to think logically and independently.
3. Experience a sense of achievement regardless of age and ability.
4. Be able to apply previously acquired concepts, skills, knowledge and understanding to new situations both in and out of school.
5. Be aware of the uses of mathematics beyond the classroom.

We have also created 5 main aims for us and our parents at Wargrave Primary School:

1. Have a positive attitude towards mathematics being taught at Wargrave Primary School.
2. Ensure parents are given the opportunity to sign up to Marvellous Me where they can receive more frequent updates about their child's progress.
3. Ensure parents are invited at least one workshop for mathematical guidance.
4. Our parents to be actively involved in their children's mathematical learning both in school and at home.
5. Ensure parents understand and support the school's mathematics and homework policy and scheme of work.

Singapore Pedagogy at Wargrave:

Our expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress will be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly will be challenged through bring offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material will consolidate their understanding, including through additional practice, before moving on. Below (and via the link) are some fantastic videos, all about 5 minutes long, explaining the fundamentals of Singapore Maths.

<http://www.mathsnoproblem.co.uk/parent-videos>



Singapore Maths Lesson Structure:

Explore – At the start of the session children are presented with a problem (Focus). Using manipulative on the table, children try and solve the problem.

Structure – Children offer their methods to the teacher. The teacher models all methods on the board.

Journal – Children choose their preferred method to journal in their books.

Reflect and practice – Children are given the opportunity to review other methods given by their peers. Through guided practice, children become familiar with using their new skills to answer familiar problems.

Apply – Children have the opportunity to use their new skills to answer an unfamiliar problem.

Planning Singapore Maths

Each member of teaching staff has a maths planning journal, which requires them to plan in detail, each part of the Singapore lesson structure (outlined above). Using the online planning guide, teachers can receive guidance on: which methods children are most likely to come up with; questions to help promote deeper thinking; ideas to extend the learning of able pupils and also how to cater for less able children.

Recording Work

All maths work is completed in pencil and there is an agreed format to the setting out of maths work, which is detailed on the front of children's books.

Assessment and Record Keeping

Assessment is regarded as an integral part of teaching and learning and is a continuous process. At Wargrave, we are continually assessing our pupils and recording their progress, allowing us to match the correct level of work to the needs of the pupils and to identify children who are in need of additional / targeted support. . Each day, children will be awarded either a 1 (working below ARE), 2 (working at ARE) or 3 (working above ARE), depending on their chosen method and level of understanding demonstrated throughout the lesson. This grade will be displayed on the objective sticker which will be stuck in the top left corner of the child's journal.

Marking

Work is marked on a regular basis and this includes self-marking of the work in KS2, where possible with the child concerned. This informs part of the on-going teacher assessment. Comments are to be made on the child's book only when there is a clear misunderstanding. When a child has exceeded



teacher expectations, a challenge will be Pre Learning Challenge Post Learning Challenge Self-Assessment Self-Assessment set, which will focus on deepening the child, understands rather than accelerating their learning. See Wargrave's Marking and Feedback Policy for more detail.

Singapore White Space Lessons and Intervention

Due to the nature of the Singapore approach and the emphasis placed on the children becoming independent learners, teachers and teaching assistants are able to conduct more thorough assessment of children's understanding. Sessions have been timetabled in the afternoons, for teaching assistants to revisit objectives which children have found challenging. These sessions will focus on children who cannot confidently use method 1 or to move children, who are over reliant on method 1, on to a more efficient method. White Space time is built in through the Singapore approach. White Space lessons are for the teacher to focus on areas of the curriculum which they feel children need more practise. These lessons can also be used for the discrete teaching of basic skills.

Resources

A full audit of Maths resources was conducted in September 2018. Resources have been purchased to support the teaching of the Singapore approach. Everyday basic resources are stored in each classroom while topic specific resources e.g. scales; and weights are stored centrally. Singapore Textbooks and Workbooks have been purchased for each class.