

MASTERY MATHS APPROACH AT WOOLSTON INFANT SCHOOL

At Woolston Infant School we believe that every child should achieve to the best of their potential, and that children can master the mathematics they learn and are confident mathematicians as they progress.

By using **mastery maths** we want children to have deep and sustainable learning. The ability to build on something that has already been sufficiently mastered, alongside the ability to reason about a concept and make connections. Teaching for Mastery fully supports these aims through the belief that **all** pupils can achieve. The whole class works together, so that all can access and master mathematics. This enables the development **of deep** mathematical understanding alongside factual/procedural and conceptual fluency.

Lessons are broadly structured into 3 main parts:

Fluency Focus

A practice or revisit of those all-important facts/skills, which children need at their fingertips in order to learn new mathematics.

Guided teaching

This is a period of in-depth instruction by the teacher. It is an opportunity for learners to begin to acquire the new concept and for the teacher to extend their understanding through carefully structured questioning. Learners are very active, practicing or exploring the new ideas alongside the adult teaching, repeating stem sentences and using precise mathematical vocabulary. Often learners will be exploring a range of concrete resources to support their thinking and expose the key mathematical concepts. Partner or group-work is often employed in this stage encouraging discussion and collaboration.

Independent practice

This is where learners will apply their learning. During this time, adults may be working with a group who has been identified as requiring further support or extension. Tasks are carefully structured to scaffold and progress learners' understanding, exposing the mathematics and difficult points, to provide intelligent practice, not mechanical repetition. Depth is achieved through sophisticated, rich challenges available to all learners, in order to deepen understanding and develop reasoning and problem-solving skills.

Features of Planning for Mastery

Whole class together – We teach mathematics to whole classes whilst being careful not to make assumptions of learners by 'ability' grouping them. At the planning stage, teachers consider modifications or adaptations which may be required should learners need more support to grasp concepts. For those children who grasp concepts quickly within a lesson, the teachers plan greater depth tasks to challenge and deepen the learners' understanding further rather than simply accelerating to new content.

Longer but deeper – In order to address the aims of the National Curriculum, our long/medium term plans have been adjusted to allow longer on topics. We are using the White Rose materials and some DfE approved textbooks (Maths No Problem) to support this approach to the teaching and learning of mathematics. Each lesson develops the concept from the previous one in logically sequenced small-steps so that progress and understanding is enhanced.

Key learning points – These are identified during planning. **Deep questioning** will probe learners' understanding throughout and responses are expected in stem (full) sentences, using precise **mathematical vocabulary**.

Fluency – We recognise that ‘fluency’ is not just about remembering facts. Learners are provided with opportunities to develop their understanding of the relationships between numbers and properties of operations. They are also encouraged to learn useful number facts by heart to support this.

Concrete – Pictorial – Abstract

Concrete – children will have the opportunity to use concrete objects and manipulatives to help them understand what they are doing.

Pictorial – children will then build on this concrete approach by using pictorial representations. These representations can then be used to reason and solve problems.

Abstract – with the foundations firmly laid, children will be able to move to an abstract approach using numbers and key concepts with confidence.

Questions

To develop deeper understanding and the ability to reason and explain, teachers use effective questioning throughout every lesson to check understanding and prompt thinking. A variety of questions are used but common ones might include: *How do you know? Can you prove it? Why? What has changed/stayed the same? What’s the same/different about? Can you explain...? What if...? My friend says...Do you agree? What do you notice?* More complex questions are also used to challenge learners who have grasped the concept earlier. Learners are expected to listen to each other’s responses and may be asked to explain someone else’s ideas in their own words, or if they agree/disagree etc.

Talk

Discussion is a powerful and essential element of each lesson. Learners have frequent opportunities to talk to their partners so that they may explain/clarify their thinking throughout the lesson, as well as opportunities for discussion with the teacher which helps develop their reasoning skills and deeper understanding.

Reasoning and Problem-solving

We understand that developing strong reasoning skills is an essential process and teaching and capturing this is a developing element of our practice. Each lesson aims to provide the opportunity for all learners to solve problems and reason, encouraging deeper understanding, generalisation and building links to other concepts. Any children who appear to have grasped a concept quite quickly will be challenged to tackle more in-depth problems, which may be inspired by NCETM Mastery or White Rose materials They will be asked to explain and justify their answers, through use of precise mathematical language, verbally or written, or using pictures to demonstrate their understanding in a clear, logical way.

Intervention

For all learners, on-the-spot marking and feedback helps to ensure that most misconceptions and difficulties are picked up within the lesson and addressed there and then. For learners that need more support with a concept, intervention is often employed to reteach or practice the maths, thus trying to ensure all learners are ready to move on together.

SEND provision

Where appropriate, we involve SEND learners as much as possible in the whole class journey. However, we recognise that this is not always appropriate and, where they require a different curriculum and resources, these are fully planned and provided for.