

Maths Mastery

What is maths mastery?

Here in England, the NCETM, MathsHubs and the Government are now promoting mastery approaches to mathematics drawing on practices in east and south-east Asia. Whilst there are numerous descriptions of mastery in mathematics there are some common features of the different approaches. What the approaches have in common is an emphasis on success for all and that this can be achieved by developing conceptual understanding in mathematics, with a focus on mathematical structures. Maths Mastery advocates keeping the whole class together, using mixed ability groups, providing plenty of time for children to work with different concepts ensuring they are understood, a focus on discussion and the correct use of vocabulary which aids children's understanding and their ability to communicate their own thoughts and ideas. In addition, a mastery approach promotes understanding through a variety of concrete, pictorial and abstract representations which assist all children in progressing at a faster rate and to grasp key theories.

In line with the Government's wishes for the 2014 National Curriculum, Maths Mastery moves away from providing challenge by simply accelerating a child's progression through a year groups objectives and focuses on deepening their understanding of each underlying concept. Children are now not only expected to show basic understanding by answering simple linear questions, which rarely proves a child's deep understanding of a concept, but are now expected to show and explain how the mathematics behind the question works and to be able to apply their understanding through taxing, in-depth problems.

In summary, Maths Mastery is a method of teaching that, more often, promotes the application of higher order thinking skills, as seen in Bloom's Taxonomy. Objectives are tackled more slowly, allowing children to tackle problems using a variety of models and structures and providing them with the opportunity to investigate, appraise, justify and challenge the mathematics in front of them.

What are the benefits of Maths Mastery?

A mastery approach to mathematics has been proven to help children that, when taught using more traditional methods, would not reach age related expectations, would become disengaged and would be at risk of falling further and further behind their peers as they progress through school. It does so by differentiating the class in different ways. Instead of providing groups within the class with different activities based upon their perceived ability (which a recent PISA report sites as a reason the UK has a bigger gap between the highest and lowest attaining students compared to other developed countries), they all work on the same basic tasks. Children are assessed within each lesson and then differentiated using a variety of proven strategies:

- Skilful questioning within lessons to promote conceptual understanding (Drury, 2014, Jones, 2014, Guskey, 2009)
- Identifying and rapidly acting on misconceptions which arise through same day intervention (Stripp, 2014, MathsHubs, 2015a) (ARK, 2015).
- Challenging, through rich and sophisticated problems, those pupils who grasp concepts rapidly, before any acceleration through new content. (NCETM, 2014)
- Use of concrete, pictorial and abstract representations according to levels of conceptual development (Jones, 2014, Drury, 2014)
- Use of classroom support (teacher or teaching assistant support)

Mixed ability pairings and groups are supported by research that suggests that dividing a class or year group according to perceived ability, becomes a fulfilling prophecy concerning students' outcomes and suggests a link between mindset and attainment exists (Dweck, 2012). Mixed ability groups enable children to progress at a faster rate, demonstrate a deep understanding, feel more confident and gain a better understanding of how to work collaboratively. Those children who traditionally struggle with mathematics benefit from the support and explanations provided to them by their peers making the additional challenge provided by the new curriculum seem less daunting and more achievable. Those children who usually excel at mathematics also benefit. They have the opportunity to embed knowledge and show deep understanding by using higher order thinking skills (as defined in Bloom's Taxonomy). As part of this they may be required to

construct and develop their own examples, critique their peers work, spotting mistakes and helping them to correct these mistakes.

Maths Mastery also benefits children through its focus on deep conceptual understanding rather than the race to complete objectives and move on overcoming the criticism of the old curriculum and more traditional approaches that they did not give children the time to focus on the intricate patterns and connections often found in mathematics, instead focusing on the acquisition of method based skills that allowed children to move on at pace without understanding the maths behind the method. Whilst on paper this allowed children to make significant progress it often causes issues when, in late primary or secondary education, a deep understanding of the basics is required. Maths Mastery moves away from quick progression through new content and focuses on firstly, becoming able to understand key concepts, before ensuring children are conceptually ready by challenging them with 'rich and sophisticated problems'(DFE, 2013). As a result, it is now rare that a child will now be set tasks that relate to the objectives of year groups above their own.

Maths Mastery at Bubwith School

Maths Mastery is a new concept to education in England and as such the DFE and the government funded MathsHubs are still refining their approach, however it is agreed that its benefits cannot be ignored. Funding has been put in place to support schools in adopting mastery. Bubwith School is fortunate enough to be one of the first schools to partake in the Mastery Specialist Training Programme. As a result of this, elements of mastery were implemented into several classes over the last academic year as a way to assess its impact. In Hawthorn class pupils gained a much deeper understanding of vital concepts, became much more confident in discussions and in tackling challenging tasks, became more independent and in some cases made outstanding progress. Following mastery's success last year we applied for, and were lucky enough to be awarded, a place in a Teacher Research Group, which gives us access to our local MathsHub's mastery lead teacher who will, over the coming year, visit the school

to help us refine our practice. As part of the Teacher Research Group myself and Mrs Wiles will have the opportunity to partake in observations of model lessons taught by our MathsHub's lead teacher and to discuss mastery with other schools who are in our situation. It is our intention to have tailored the mastery approach to the needs of our children and to have fully implemented the approach across all classes by the end of the academic year. Once our practice solidifies and we are in a position where we can provide more information about what Maths Mastery looks like at Bubwith School and how you can aid your child at home, it is our intention to arrange a parent meeting, so please keep an eye on the weekly newsletter for further details.

Sc Parker

Mr Parker

Bloom's Taxonomy Verbs

