



Eton Wick C of E First School Policy Document

MATHEMATICS POLICY	
Category: Statutory	Approved by Headteacher:
To be reviewed by: Mathematics Leader	 Date: July 2020
To be reviewed: annually/as required	Overviewed by FGB:
Next review due by: N/A	D. Stacey

This policy should be taken as part of the overall strategy of the school and operated within the context of our vision, aims and values as a Church of England School.

Shared Vision for Mathematics

To make sense of the world around us, maths is a fundamental skill which is developed from an early age through a child's ability to calculate, problem solve and reason mathematically. For this reason, we want all pupils at Eton Wick First School to have a maths curriculum that encompasses the three areas above, and promotes maths as an enjoyable, fascinating subject that is crucial for life outside of the classroom.

At Eton Wick First School our maths curriculum aims to ensure:

- That everyone CAN do maths
- Our pupils understand that maths is an integral part of daily life. Pupils develop transferable skills which are vital to function as part of the wider world, as well as forming the foundations for many other concepts across the curriculum
- Learners are curious and encouraged to ask questions; making connections, spotting patterns and reasoning through exploratory learning opportunities
- That pupils are confident and resilient mathematicians who value mistakes and become well equipped to navigate their way through problems they encounter
- Pupils learn from each other through collaborative investigation and acquire well developed vocabulary that underpins their understanding

Which results in a deep understanding that will stay with them for life.

Purpose of study

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. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.



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.

Mathematics is an **interconnected** subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make **rich connections** across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.

Spoken language

The National Curriculum for mathematics reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their mathematical vocabulary and presenting a mathematical justification, argument or proof. They must be assisted in making their thinking clear to themselves as well as others and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions. There will be an emphasis on maths talk, where children discuss a problem or misconception in pairs, which will feed into a whole class discussion, and the use of sentence stems and answering in full sentences will be actively encouraged.

Intent:

At Eton Wick School, we are adopting a mastery approach in the learning and teaching of mathematics. In the Year 2019-2020, selected members of teaching staff embarked on the local Maths Hub's '*Mastery Readiness*' programme, where they were closely supported by the programme lead to develop a secure understanding of the principles underpinning teaching for mastery and developing the necessary skillset. They will continue onto the next stage of the programme by joining a *Teacher Research Group*, again closely supported by the programme lead. This approach to teaching mathematics has been piloted in Year 1 and Year 3, with all classes beginning to implement the approach in September 2020.

The main aim of such an approach and development of a curriculum model that values 'going deeper' is to ensure that the children develop a secure knowledge of mathematical concepts, so that those pupils beginning their education at school are able to access age-appropriate ideas and do not see gaps open in their learning over time. Integral to this is the school's vision for mathematics, which amongst other ideas, rejects the belief that a large proportion of people 'just can't do maths,' and aligns with the notion 'that by working hard at maths they can succeed.' *NCETM – '[The Essence of Maths Teaching for Mastery](#)' (2016)*

As a result of this approach being taken, it is likely that those undertaking learning walks and/or monitoring lessons will see more whole-class teaching than may have been evident before. Pupils progress through curriculum content at broadly the same rate, although support/intervention and broader opportunities are provided to move groups of children on so that they are able to:



- Grasp concepts and methods, e.g. through more varied use of practical equipment – in the case of lower prior attainers
- Be challenged through exposure to greater depth in their learning, e.g. through tackling more complex problems in different contexts - in the case of higher prior attainers/rapid graspers

As a result, differentiation is sometimes likely to appear to be more subtle than before. Practise and consolidation play a central role in pupils' learning experiences. Although the 'quantity' of work may appear less, this could mask development of deep understanding of mathematical concepts through use of small-steps. Further challenge is provided to all children through use of problem solving.

Implementation:

All of the above decisions taken in terms of curriculum design and learning/teaching are inextricably linked to necessary Continuing Professional Development (CPD) for teaching staff. School leaders ensure a range of CPD is made available for staff, which means that increasing consistency is gained across Years 1-4, whilst colleagues in Early Years are aware about the mastery agenda and with the remaining year groups, will adopt relevant teaching strategies to support the development of practice in due course.

In terms of assessment, and in order for the mastery approach to work, we understand the particular need for children to achieve key objectives for their current stage of learning. Such assessment links with day-to-day Assessment for Learning, which informs teachers about the elements of learning pupils need to develop further. In lessons, teachers use precise questioning to check conceptual and procedural knowledge. They formatively assess how misconceptions can be used as growth points in learning, whilst also diagnosing who requires intervention, meaning that all children are expected to 'keep up' rather than 'catch-up.' Assessment gathering is kept meaningful and is viewed as a diagnostic tool whereby collated information is used purposefully when planning pupils' next-steps.

Through their lessons, teachers aim to promote connections within and across National Curriculum domains, so that children are taken deeper with their learning over time and recognise the interconnectedness of concepts. It is also intended that pupils revisit concepts, for example, multiplication within area when presented as an array model, which means that pupils absorb learning within their long-term memory.

It should be noted that varied use of practical resources, structures and representations, plus questioning that requires deeper reasoning is used to ensure all children are supported/challenged appropriately. A progression in key representations and structures, leading to understanding of sometimes complex and abstract concepts, has been defined and is exemplified in the school's calculation policy. This in turn supports the delivery of consistent approaches and equity of access for learners.

A Mastery approach is a new concept for many staff members. It challenges previous pedagogy in relation to what 'good' teaching looks like and requires a shift in mind-set from staff and pupils alike. With this in mind, it is important that we do not rush the process and view it as a journey, implementing in phases and allowing time to embed and reflect. You may not see a coherent mastery lesson from beginning to end, but certainly the elements that we have implemented during the year.

Impact:

The attainment and progress of pupils' learning is tracked by class teachers and senior leaders, so that personalised next steps and support can be delivered.

In cases where children's learning is most effectively being deepened, the following descriptors can be seen in their learning:



Depth:

- *describe it in his or her own words;*
- *represent it in a variety of ways (e.g. using concrete materials, pictures and symbols – the CPA approach)*
- *explain it to someone else;*
- *make up his or her own examples (and non-examples) of it;*
- *see connections between it and other facts or ideas;*
- *recognise it in new situations or contexts;*
- *make use of it in various ways including in new situations*

Greater Depth:

- *solve problems of greater complexity (i.e. where the approach is not immediately obvious), demonstrating creativity and imagination;*
- *independently explore and investigate mathematical contexts and structures, communicate results clearly and systematically explain and generalise the mathematics.*

NCETM – ['Teaching for Mastery: Questions, tasks and activities to support assessment'](#) (2015)

The school's Marking and Feedback policy allows children's levels of independence to be evident, as instances where pupils have the most secure knowledge and skills can most easily be recognised when they've applied learning independently and in a range of ways.

Other policy links

The policy is intrinsically linked with and is informed by other school policies, including:

- Calculation policy
- Pedagogy policy
- Marking and Feedback policy
- Early Years policy
- Special Educational Needs and Disabilities policy

