Kidmore End CE Primary School

Maths Policy

2021-2023

Owner:	**Kidmore End CE Primary School**
Type:	**Level 4**
Type:	**Non - Statutory**
Ratified by	**Curriculum and Standards**
Date Ratified:	**18th October 2021**
Date Policy to be reviewed:	**Autumn 1 2023**

Mathematics Policy

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

- Calculation policy
- Teaching and Learning policy
- Marking and Feedback policy
- Early Years policy
- Special Educational Needs and Disability (SEND) policy

At Kidmore End, we are adopting/have adopted - a mastery approach in the learning and teaching of mathematics. As things stand, this is developing/being embedded - across the school.

The main aim of such an approach and development of a curriculum model that values 'going deeper' is to ensure that our children develop a secure knowledge of mathematical concepts, as well as acquisition of skills such as reasoning, so that those pupils beginning their education at school can access age-appropriate ideas as detailed in the DfE *'Mathematics guidance: key stages 1 and 2'* (2020) publication, and do not see gaps open in their learning over time. Integral to this is the school's vision for mathematics which, '…rejects the idea that a large proportion of people 'just can't do maths,'' [and aligns with the] 'belief that by working hard at maths they can succeed.' *NCETM – 'The Essence of Maths Teaching for Mastery'* (2016)

Despite starting to develop a mastery approach in the learning and teaching of mathematics, we are aware that some children will have gaps in their pre-requisite knowledge, including 'number novices' who begin school having had fewer opportunities to think mathematically in comparison with some of their 'number expert' peers. Consequently, we aim to provide children with a wide variety of opportunities to engage with the cardinality, comparison and composition of numbers to ten in the Early Years, as well as providing opportunities for them to count to 20 and beyond. It is then intended that our medium-term planning in key stages 1 and 2 extends learning, plus accounts for cases where 'catch-up' is still required. In addition, this planning also involves longer being spent on each topic as mastery is an integral part of the system, which means a broadening of knowledge and skills can take place as part of pupils' learning experiences.

As a result of this approach being taken, it is intended that more whole-class teaching will be evident than before the implementation of the 2014 National Curriculum. Pupils should consequently progress through curriculum content at broadly the same rate, although support/intervention and broader learning opportunities provided can move groups of children on so that they are able to:

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

The above decisions taken in terms of curriculum design and intended learning/teaching practice are inextricably linked to necessary Continuing Professional Development (CPD) for teaching staff. School leaders ensure a range of CPD is made available, which means that strong consistency in practice is enabled across Years 1-6, whilst colleagues in Early Years are also aware about the mastery agenda and adopt relevant approaches. This supports the effective implementation of our mathematics curriculum offer.

In lessons, it is common for differentiation to appear in subtle forms. Practise and consolidation play a central role in pupils' learning experiences. Although the 'pace' in lessons may appear to be slow, this can mask development of deep understanding of mathematical concepts through use of small steps that encourage connections (for example, in derived number facts) to be made. Further challenge is provided to all children through use of problem solving, including those linked with real-life contexts.

In terms of assessment, and so the mastery approach can work, we understand the need for pupils 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 children 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 pupils' learning experiences, teachers promote connections within and across key stage 1 and 2 National Curriculum domains, so that children are taken deeper with their understanding over time and recognise the interconnectedness of concepts. Pupils revisit concepts, for example, multiplication within area when presented as an array model, which means they absorb learning within their long-term memory. To secure firm foundations in early mathematics learning, those children in Early Years benefit from daily adult directed teaching experiences, which are then supplemented through opportunities to further engage because of child-initiated learning.

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, is exemplified in the school's calculation policy. This in turn supports the delivery of consistent approaches and equity of access for learners.

The attainment and progress of pupils' learning is tracked by class teachers and senior leaders so that swift interventions can be put into place, including for children who have not always experienced a mastery approach in mathematics over time, and may include the use of pre-teaching.

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)[8]
- 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 and contexts;
- make use of it in various ways, including in new situations.[9]

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, including across different areas of the curriculum. On occasions when such extended depth has yet to be developed, an expected impact of our curriculum offer is that children are at least ready to move on to the next key stage of learning. This can be judged by each pupil's capacity to access age appropriate ready-to-progress criteria in Years 1-6 as detailed in the '*Mathematics guidance: key stages 1 and 2'* publication. In Reception, we implement the latest Early Years Framework, which became statutory in September, 2021, and the impact of our increasing emphasis on progressive learning is that increasing proportions of children secure understanding of all concepts and skills detailed in progression charts related to the six key areas of early mathematics learning. This is expected to further impact by in turn allowing them to attain the Early Learning Goals (ELGs) for mathematics.

Taking into account ACME's, *'Professional learning for all teachers of mathematics'* (2016) report, whereby it is stated, 'highly-effective teachers of mathematics have a positive disposition towards the subject and are comfortable in exploring mathematical ideas with their learners,' the most effective CPD experiences result in this being a key impact on our teaching staff.