WYE FOREST FEDERATION
ST.BRIAVELS AND REDBROOK
PRIMARY SCHOOLS

MATHEMATICS POLICY
(Teaching for Mastery in Mathematics)

Approved Full Governing Body:

Review period: Annually/ Bi-Annually

Signed_____(Executive Headteacher)

Signed_____(Chair of Governors WFF)

Date of Review: May 2019

Date of Review:_____

Date of Review:_____

Date of Review:_____

WYE FOREST FEDERATION

Mastery for Mathematics Policy

Introduction

This policy has been developed to ensure that the teaching of Mathematics contributes to the fulfilment of the school's vision statement:

Striving to be the best that we can be.

The policy is underpinned by all four of the school's core values:

Courage ~ Compassion ~ Resilience ~ Respect

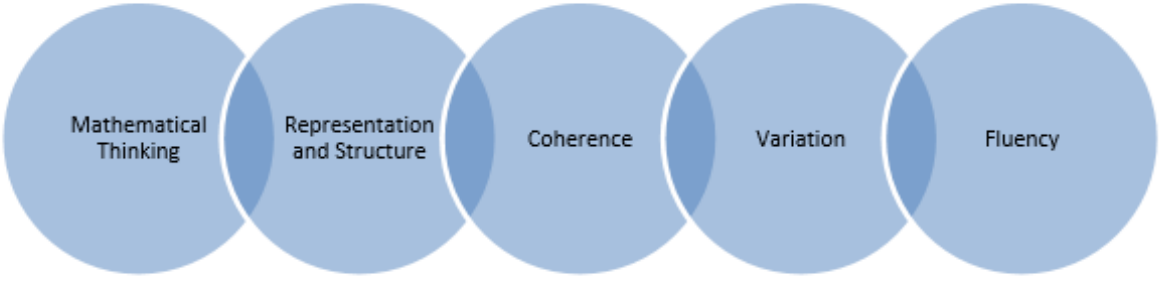
It should be read in conjunction with the following school policies:

- Calculation Policy
- Marking and Feedback Policy
- Assessment policy?

In September 2017, Wye Forest Federation slowly began transitioning towards a mastery approach to the teaching and learning of mathematics. We understood that this would be a gradual process and take several years to embed. The rationale behind changing our approach to teaching mathematics lay within the research of Guskey (2009) and Skemp (1976), the Mathematics Specialist Teacher Programme GLOW, the NCETM/Maths Hub led Mastery Specialist Programme as well as the 2014 National Curriculum, which states:

- *The expectation is that most pupils will move through the programmes of study at broadly the same pace.*
- *Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content.*
- *Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.*

The big idea



Our teaching for mastery is underpinned by the NCETM's 5 Big Ideas. Opportunities for **Mathematical Thinking** allow children to make chains of reasoning connected with the other areas of their mathematics. A focus on **Representation and Structure** ensures concepts are explored using concrete, pictorial and abstract representations, the children actively look for patterns as well as specialise and generalise whilst problem solving. **Coherence** is achieved through the planning of small connected steps to link every question and lesson within a topic. Teachers use both procedural and conceptual **Variation** within their lessons and there remains an emphasis on **Fluency** with a relentless focus on number and times table facts.

Teaching Principles

1. Teachers believe in the importance of mathematics and that the vast majority of children can succeed in learning mathematics in line with national expectations.

2. The whole class is taught mathematics together, with no differentiation by acceleration to new content. We do not group children by ability. The learning needs of individuals are addressed through careful scaffolding, questioning and appropriate rapid intervention where necessary, to provide the appropriate support and challenge.

3. The reasoning behind mathematical processes is emphasized. Teacher/pupil interaction explores how answers were obtained as well as why the method worked and what might be the most efficient strategy.

4. Precise mathematical language, often couched in full sentences, is used by teachers so that mathematical ideas are conveyed with clarity and precision. We value 'mathematical talk' and children get lots of opportunity to talk about and evaluate their mathematics during lessons.

5. Conceptual variation and procedural variation are used extensively throughout teaching. This helps to present the mathematics in ways that promote deep, sustainable learning. a. Conceptual variation is where the concept is varied and there is intelligent practice. Positive variation is showing what the concept is, and negative variation is showing what the concept isn't. This clears away misconceptions at the very start.

6. Sufficient time is spent on key concepts to ensure learning is well developed and deeply embedded before moving on.

Features of Lesson Design at WFF

(see Appendix A – Maths on a page)

1. Lessons are shorter but intense; teacher input usually lasts around 15/20 minutes giving ample time for independent practice through the Me, We, You model. Whilst working and after the lesson, the teacher delivers rapid intervention should somebody require it. Independent practice includes reasoning, problem solving and higher-order thinking activities (Do it, twist it, solve it)

2. Lessons are sharply focused using the NC objectives introduced in small steps at a time.

3. Difficult points and potential misconceptions ae identified and strategies to address them planned. Key questions are planned, to challenge thinking and develop learning for all pupils.

4. The use of high quality materials (White Rose Hub / Kangaroo Maths) and tasks (NRICH, NCETM Mastery Assessment materials) to support learning and provide access to the mathematics is integrated into lessons.

5. There is regular interchange between concrete/contextual ideas and their abstract/symbolic representation.

6. Making comparisons is an important form of developing deep knowledge. The questions "What's the same, what's different?" are often used to draw attention to essential features of concepts.

7. Teacher-led discussion is interspersed with short tasks involving pupil to pupil discussion and completion of short activities through the 'hook' and teaching. Formative assessment is carried out throughout the lesson; the teacher regularly checks pupils' knowledge and understanding and adjusts the lesson accordingly. This forms part of the mastery learning instructional process.

8. Maths 'mop up' time at the end of the maths lesson allows the teacher time to talk to those who may not have understood the concept fully before moving on. This is within the lesson time as a live marking / feedback session.

Classroom Norms to Establish

1. Everyone can learn mathematics to the highest levels.
2. If you 'can't do it', you 'can't do it **yet'**.
3. Mistakes are valuable – we learn from them.
4. Questions are important.
5. Mathematics is about creativity and problem solving.
6. Mathematics is about making connections and communicating what we think.
7. Depth is much more important than speed.
8. Maths lessons are about learning, not performing.

Assessment

Formative Assessment

(See Appendix B – Maths based research)

We use 'Daily 5' arithmetic challenges to support rigorous and regular assessment of basic skills in numeracy. Pupils complete a 'This week, last week, last term' mini assessment weekly, the results of which are analysed to identify key gaps in understanding which are providing a barrier to progress. These gaps are then addressed in class. Such tasks, as well as 'Maths Mop Up' time for live marking and daily assessment help teachers record pupil's level of understanding in our Federation tracking system Insight. Insight is then used to inform planning and recap areas that children may have missed.

Summative Assessment

National Curriculum tests are used at the end of KS1 and 2; teachers use past and sample papers to inform their assessments as they prepare pupils for these assessments.

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EYFS

We follow EYFS curriculum guidance for Mathematics. However, we are committed to ensuring the confident development of number sense and put emphasis on mastery of key early concepts. Pupils explore the 'story' of numbers to twenty and the development of models and images for numbers as a solid foundation for further progress. Teachers use the 'White Rose Maths Hub' EYFS materials when they feel appropriate, using their discretion to stretch and extend children if needed. The concrete – pictorial – abstract approach to conceptual development is key at this stage.

Role of the Subject Leader

- Ensures teachers understand the requirements of the National Curriculum and supports them. Leads by example by setting high standards in their own teaching.
- Leads the whole-school monitoring and evaluation of teaching and learning in mathematics by: observing teaching and learning in maths regularly; analysing assessment data in order to plan whole school improvement in mathematics; conducting teacher book conferences and Maths Moderations to inform evaluation of progress; conducting pupil interviews.
- Takes responsibility for managing own professional development by participating in external training, independent private study, engagement in educational research and scholarly reading.

- Ensures that the school's senior leaders and governors are kept informed about the quality of teaching and learning in mathematics.
- Keeps the Federation's policy for mathematics under regular review.