

Market Harborough Church of England Academy



Maths Policy

This policy replaces	Previous policy
Date policy approved by Governing Body	Feb 2019
Date of next review	3 years later
Reviewer	Outcomes for Pupils

Introduction

In September 2015, Market Harborough Church of England Academy 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 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 school uses the White Rose Schemes of work alongside the Nrich website, Maths Hub, ISee Maths, Third Space Learning and NCETM materials to support the mastery approach.

Our teaching for mastery is underpinned by the NCETM's 5 Big Ideas.

1. Mathematical Thinking
2. Representation and Structure
3. Coherence
4. Variation
5. Fluency

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.

1. Teachers believe in the importance of mathematics and that the vast majority of children can succeed 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 emphasised. 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 coached 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. Conceptual variation is where the concept is varied. Procedural variation is where different procedures and/or representations are used to bring about understanding. For example, teachers may collect several solutions for a problem (some right, some wrong) before guiding the class towards the most efficient method. It also involves highlighting the essential features of a concept or idea through varying the non-essential features.
6. Sufficient time is spent on key concepts to ensure learning is well developed through fluency, reasoning and problem solving, and deeply embedded before moving on.

Features of Lesson Design

1. Lessons are short but intense; teacher input usually lasts around 30 minutes giving ample time for independent practice whilst the teacher/LSA delivers **rapid intervention** should somebody require it. Independent practice includes reasoning, problem solving and higher-order thinking activities.
2. Lessons are sharply focused with one new objective introduced at a time.
3. Difficult points and potential misconceptions are identified in advance 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 and tasks to support learning and provide access to the mathematics is integrated into lessons.
5. There is regular interchange between concrete/pictorial/abstract ideas and their symbolic representation.
6. Making comparisons is an important form of developing deep knowledge. The questions **“What’s the same? What’s different What do you notice?”** 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. Formative assessment is carried out at the ‘hinge point’ and throughout the lesson; the teacher regularly checks pupils’ knowledge and understanding and adjusts the lesson accordingly. This forms part of the mastery process.

Formative Assessment

We use daily assessment sheets that teachers use as they teach and mark. Children are identified for support during the task (rapid intervention) or for intervention work outside of the lesson. Teachers then use small step trackers to record who has achieved the learning objective for each session. The data is 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 questions taken from the White Rose Maths Hub planning and NCETM Mastery Assessment Materials, help triangulate our teacher judgments alongside work in books at the end of each term.

Summative Assessment

Pupils are assessed against their year group objectives every half term. O-track Assessment system is updated after each half term based on teacher assessment. At the end of each first half term we use the **Rising Stars:PUMA** tests to back up our teacher assessments. 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.

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 concrete/pictorial/abstract approach to conceptual development.

Resources

We use a variety of practical resources including Numicon and Cuisenaire rods, counters and Dienes. Further resources relating to key whole school topics for example 'measures' are kept in main corridor or the maths subject leader's classroom. Reference materials and White Rose documentation is kept electronically on our server and in teacher planning folders.

Information and Communication Technology

ICT is used in various ways to support teaching and motivate children's learning. Each classroom has a laptop connected to an interactive whiteboard and a visualiser. All teachers are provided with a laptop and an iPad to support their planning and provision and are encouraged to use ICT to enhance teaching and learning in mathematics where appropriate. The Third Space Learning one to one tuition also give us an online subscription to their maths hub which gives us access to lots of interactive resources.

As a school we subscribe to Times Tables Rock stars in Years 2, 3 & 4. We also use Mathletics in Year 5 & 6.

Monitoring

Throughout the school year the planning, books and lessons are monitored by the subject leader and the Senior Leadership team. Learning walks focus on key areas for development and feedback is given to all staff and individuals as necessary. Books are looked at to ensure coverage of curriculum, progress, a balance of fluency, reasoning and problem solving and

the quality and quantity of work. Plans are monitored to ensure that the LTP is being followed, that LO and SC are clear and precise. We look carefully to ensure that the mastery lesson design is evident and that activities match LOs. We also compare plans and books with assessment documents to ensure that lessons are matched to the needs of the cohort. We use coaching strategies and lesson study to support staff in the teaching of Maths.