FENISCOWLES PRIMARY SCHOOL

'STRIVING FOR EXCELLENCE'

MATHEMATICS POLICY

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Contents

Revisions

Written by : J Taylor

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INTENT

Why do we teach this? Why do we teach it in the way we do?

Feniscowles Primary School has created a curriculum intent statement. This intent has been written to provide an overarching context for our school curriculum to allow 'A Feniscowles Child' to 'Live life in its fullest'. ***This document can be found on our website and should be read in conjunction with our subject specific intent statements.***

Our curriculum intent sets out our strong belief that 'A Feniscowles Child' will be highly literate, numerate and have the oracy skills to communicate with confidence. We recognise the important part that Mathematics has to play in ensuring that each child develops their fluency, reasoning and problem-solving skills; in order to embrace the opportunities that life brings, whilst navigating the uncertainties of an unknown future.

Mathematics is an important creative discipline that helps us to understand and change the world. We want all pupils at Feniscowles Primary School to experience the beauty, power and enjoyment of mathematics and develop a sense of curiosity about the subject with a clear understanding.

At Feniscowles, we foster positive can do attitudes and we promote the fact that **'We can all do maths!'** whilst **'Striving for Excellence'.** We believe all children can achieve in mathematics, and teach for secure and deep understanding of mathematical concepts through manageable steps. We use mistakes and misconceptions as an essential part of learning and provide challenge through rich and sophisticated problems. At our school, the majority of children will be taught the content from their year group only. They will spend time becoming true masters of content, applying and being creative with new knowledge in multiple ways.

We aim for all pupils to:

- become fluent in the fundamentals of mathematics so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- be able to solve problems by applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios
- reason mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language
- have an appreciation of number and number operations, which enables mental calculations and written procedures to be performed efficiently, fluently and accurately to be successful in mathematics

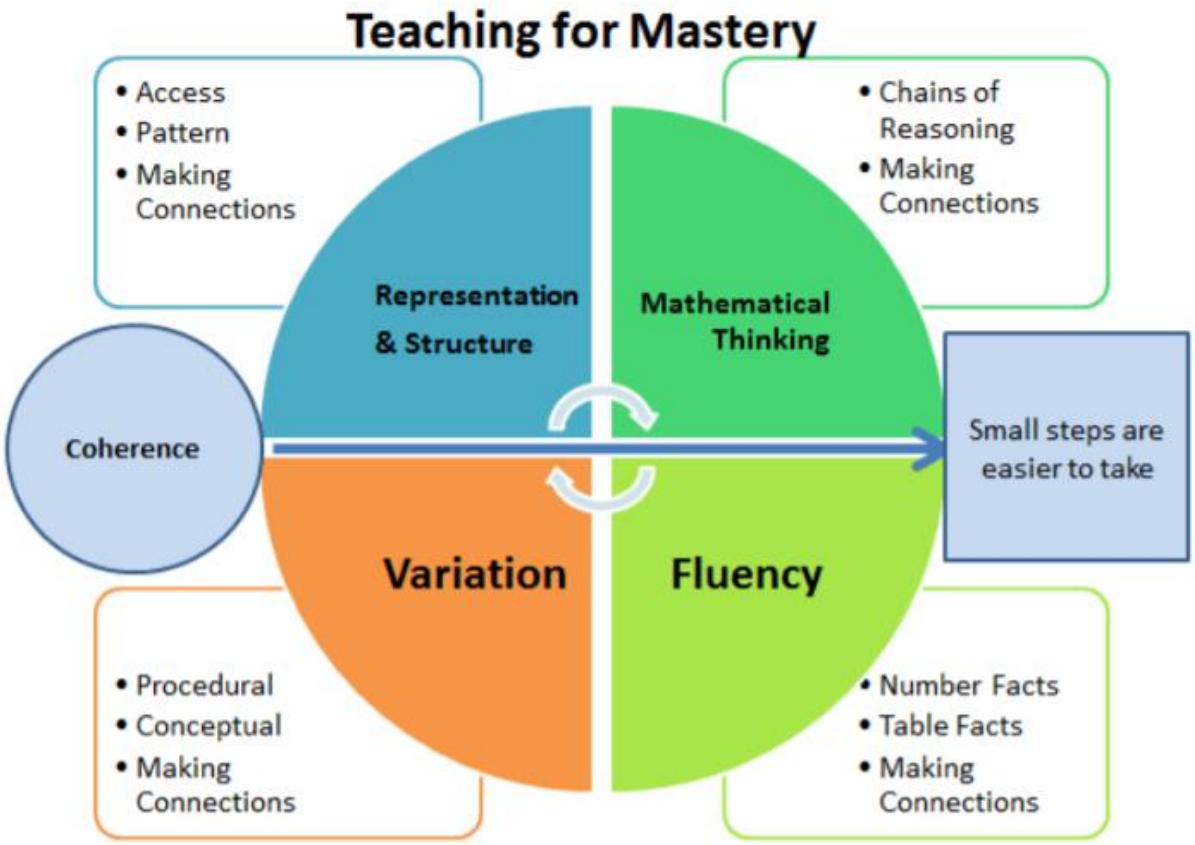
In September 2019, Feniscowles Primary School began transitioning towards a mastery approach to the teaching and learning of mathematics. We understood that this would be a gradual process and take several years to embed. The rationale behind changing our approach to teaching mathematics lay within the NCETM Maths Hub 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.

FLUENCY – REASONING – PROBLEM SOLVING

These three key aims of the National Curriculum should be addressed in each sequence of learning.

5 Big Ideas of Mastery



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 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.

8 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.
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. Mathematics lessons are about learning, not performing.

Teaching for Mastery Principles

- It is achievable for all – we have high expectations and encourage a positive 'can do' mindset towards mathematics in all pupils, creating learning experiences which develop children's resilience in the face of a challenge and carefully scaffolding learning so everyone can make progress.
- Deep and sustainable learning – lessons are designed with careful small steps, questions and tasks in place to ensure the learning is not superficial.

- The ability to build on something that has already been sufficiently mastered – pupils' learning of concepts is seen a continuum across the school.

- The ability to reason about a concept and make connections – pupils are encouraged to make connections and spot patterns between different concepts (E.g. the link between ratio, division and fractions) and use precise mathematical language, which frees up working memory and deepens conceptual understanding.

- Conceptual and procedural fluency – teachers move mathematics from one context to another (using objects, pictorial representations, equations and word problems). There are high expectations for pupils to learn times tables, key number facts (so they are automatic) and have a true sense of number. Pupils are also encouraged to think whether their method for tackling a given calculation or problem is Appropriate, Reliable and Efficient (A.R.E).

- Problem solving is central – this develops pupils' understanding of why something works so that they truly have an appreciation of what they are doing rather than just learning to repeat routines without grasping what is happening.

- Challenge through greater depth - rather than accelerated content, (moving onto next year's concepts) teachers set tasks to deepen knowledge and improve reasoning skills within the objectives of their year group.

Connected Experts

Work Groups

At Feniscowles, we pride ourselves on 'Striving for Excellence' therefore we work closely with our Maths Hub to develop a model of professional and school development.

A Maths Hub Work Group is

- comprised of a group of schools who work on something together, normally over the large part of a school year, typically with one or two teachers from each school acting as lead participants

- led by a teacher or former teacher, expert both in the area of maths education in question and in leading teacher professional development

- normally part of a national collaborative project, which supports the Work Group Leads and seeks to ensure lessons are learned from around the country.

Schools in every Maths Hub

- work towards outcomes linked to teachers' professional learning, their practice development, the learning of the pupils they teach, and new approaches and policies in maths teaching across their school or department

- maintain a focus on the classroom, often planning, observing and refining lessons together

- evaluate the outcomes of the Work Group's activity, with collated findings being fed into the national picture and used to inform future work

Teacher Research Groups

Teacher Research Groups, (TRGs) meet regularly to plan, observe and discuss teaching for mastery. In between meetings, teachers explore mastery approaches in their own classrooms and across their school. TRG's run for a year initially, with many continuing beyond the first year as mastery is embedded in participants' schools.

Support is provided from a local classroom-based Mastery Specialist who leads the group. This model of professional development involves hands-on learning and peer-to-peer support. It is evidence-based and designed to support substantial long-term change.

IMPLEMENTATION

What do we teach? What does this look like?

Curriculum design and planning

- Staff use White Rose Maths Schemes of Learning as a starting point in order to develop a coherent and comprehensive conceptual pathway through the mathematics. The focus is on the whole class progressing together. Collaborative planning with year group colleagues is encouraged to ensure consistency

- Learning is broken down into small, connected steps, building from what pupils already know. The lesson journey should be detailed and evident on flipcharts (Smart Notebook or PowerPoint) as there is no requirement for teachers to produce detailed paper plans. (A lesson plan format has been designed for staff who wish to use it.)

- 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.

- Contexts and representations are carefully chosen to develop reasoning skills and to help pupils link concrete ideas to abstract mathematical concepts.

- The use of high quality materials and tasks to support learning and provide access to the mathematics, is integrated into lessons. These may include White Rose Maths Schemes of Learning and Assessment Materials, INSPIRE activities, Third Space Learning resources, NCETM Mastery Assessment materials, NRICH, visual images and concrete resources.

- Opportunities for extra fluency practice (instant recall of key facts, such as number bonds, times tables, division facts, addition and subtraction facts) should be provided outside mathematics lessons (morning starters or post lunch).

Lesson Structure

- Lessons are sharply focused; digression is generally avoided. There is a model of I do, we do, you do approach.

- Key new learning points are identified explicitly.

- There is regular interchange between concrete/contextual ideas, pictorial representations and their abstract/symbolic representation.

- Mathematical generalisations are emphasised as they emerge from underlying mathematics, which is thoroughly explored within contexts that make sense to pupils.

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

- Repetition of key ideas (for example, in the form of whole class recitation, repeating to talk partners etc) is used frequently. This helps to verbalise and embed mathematical ideas and provides pupils with a shared language to think about and communicate mathematics.

- Teacher-led discussion is interspersed with short tasks involving pupil to pupil discussion and completion of short activities.

- Formative assessment is carried out throughout the lesson; the teacher regularly checks pupils' knowledge and understanding and adjusts the lesson accordingly.

- Gaps in pupils' knowledge and understanding are identified early by in-class questioning. They are addressed rapidly through individual or small group intervention, either on the same day or the next day, which may be separate from the main mathematics lesson, to ensure all pupils are ready for the next lesson.

- Teachers discuss their mathematics teaching regularly with colleagues, sharing teaching ideas and classroom experiences in detail and working together to improve their practice.

IMPACT

What will this look like?

By the time children leave our school they will:

By the end of KS2 we aim for children to be fluent in the fundamentals of mathematics with a conceptual understanding and the ability to recall and apply knowledge rapidly and accurately. They should have the skills to solve problems by applying their mathematics to a variety of situations with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios. Children will be able to reason mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.

Marking

Marking of mathematics books should be completed in line with the Feniscowles Primary School marking policy. Next steps are not necessary as the next lesson is normally the next step in learning. However, it is essential that all marking picks up and addresses any misconceptions/mistakes and thorough questioning ensures children have clarified their thinking clearly.

Assessment and Record Keeping

In addition to the formative assessment undertaken in lessons, teachers will use termly summative assessments supplied by NTS (National Test – Style Assessments) and /or White Rose Maths end of unit assessments to reinforce their judgements and provide further opportunities to identify gaps in pupil learning and tailor future lessons. Judgements are then entered onto Arbor each term and teachers talk through the progress of their pupils at termly tracking progress meetings: this ensures targeted support can be given to those who need it.

Inclusion and Special Educational Needs

Feniscowles Primary School aims to meet the needs of all, taking into account gender, ethnicity, culture, religion, language, disability, age and social circumstances. The provision for children with special needs is detailed in the SEND Policy. SEN pupils may be supported by additional adults, different resources, differentiated activities. They may also complete additional activities outside of the mathematics lesson or be taught in a small group. We have high expectations of all children and strongly believe that all children are able to achieve in mathematics. Some pupils may take longer to grasp concepts and may need careful scaffolding or extra time/support.

Involving Parents and Carers

At Feniscowles Primary School we encourage parents to be involved in the mathematics curriculum by:

- Providing parents with guides outlining what mastery teaching involves in EYFS and KS1 & KS2 and how they can support at home.
- Running teaching for mastery curriculum evenings and workshops throughout the year.
- Inviting parents in twice a year for parents evening to discuss their child's progress.
- Reporting on mathematical progress in their child's report.
- Using our mathematics page on the school website to provide information about how we teach the four calculations as pupils move through the school.
- Children have access to My Maths, Times Table Rock Stars and School Jam(Reception) to further consolidate their Mathematical understanding.
- Staff can use Microsoft Teams to highlight any games / online resources the children can access.

- Parents are invited into school for regular Maths Drop Ins to see Maths in Action.

Early Years Foundation Stage (EYFS)

Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organising counting - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes.

At Feniscowles, we use Power Maths Reception. This has been developed in conjunction with White Rose Maths, Power Maths Reception is written by a team of Mastery Specialists and Early Years advisors.

- Combines short, ten-minute bursts of maths teaching each day with plenty of practice through both guided activities and independent play.

- Supports staff in delivering the teaching for mastery in Reception and covers the new Early Learning Goals and non-statutory Development Matters guidance.

- Helps ensure a smooth transition to KS1 and a consistent approach across your whole school from Reception to Year 6.

- An exciting growth mindset and problem-solving approach develops mathematical curiosity and resilience.

Promoting the Love of Reading

The use of story books helps to make Mathematics more engaging. Within our curriculum, connected texts are used to help make mathematics teaching more accessible and more enjoyable for our learners. Story books help children to understand mathematical concepts through the power of story telling and children's imagination.

Role of the Subject Leader

• Ensures teachers understand the requirements of the National Curriculum and supports them to plan lessons. Leads by example by setting high standards in their own teaching.

• Leads continuing professional development; facilitates joint professional development – especially Lesson Study; provides coaching and feedback for teachers to improve pupil learning.

• Leads the whole-school monitoring and evaluation of teaching and learning in mathematics by observing teaching and learning in mathematics regularly; analysing assessment data in order to plan whole school improvement in mathematics; conducting work scrutiny to inform evaluation of progress; conducting pupil interviews.

• Takes responsibility for managing own professional development by participating in external training, independent private study, engaging in educational research and scholarly reading and keeping up-to-date with Teaching for Mastery developments.

• Keeps parents informed about mathematics issues.

• Ensures that the school's senior leaders and governors are kept informed about the quality of teaching and learning in mathematics.

• Works in close partnership with the school's senior leaders to ensure the learning needs of all pupils in mathematics are met effectively.

• Keeps the school's policy for mathematics under regular review

Transition to teaching for mastery

Pre September 2019

- All teachers have had 5 days CPD INSPIRE maths training.

Academic Year 2019-2020

- Maths Lead and Year 1 Maths Lead attend the Teacher Research Group (TRG) Teaching for Mastery
- Launch of teaching for mastery across the school
- Regular internal CPD lead by the maths team
- Opportunities for maths team to support with planning in Year 1 and teachers from across the school to observe mastery in action.

Academic Year 2020 - 2021

- Ongoing opportunities for internal and external CPD and to see mastery in action. Embedding Mastery Approach
- Maths Leads attended the Teacher Research Group (TRG) Embedding Mastery
- School further developing its approach to mastery across all year groups.
- Work Groups – Specialist knowledge for teaching maths
- Work Group EYFS – Building Firm Foundations
- Work Group EYFS - Specialist knowledge for teaching maths
- Reception Jigsaw Trial – EEF (September 2021)

Academic Year 2021 – 2022

- Ongoing opportunities for internal and external CPD and to see mastery in action.
- Maths Leads attended the Teacher Research Group (TRG) Sustaining Mastery
- Work Groups – Specialist knowledge for teaching maths
- Reception Jigsaw Trial – EEF (September 2021 notified we are a control school)
- Specialist Knowledge for Teaching Mathematics: Primary Teaching Assistants
- Work Group – Mastering Number Programme – Reception, Year 1 and Year 2.