

Eveline Day School

Teaching for Mastery: Mathematics Policy

Eveline Day School is committed to excellence in mathematics. Underpinned by our core values, we endeavour to achieve this by:

- Having a **mastery approach** to the teaching and learning of mathematics
- Providing a happy, supportive and **safe environment** in which everyone can achieve their full potential
- Being **inclusive** and giving every child the opportunity to develop talents
- Encouraging everyone to become creative, motivated and life-long learners prepared for an ever-changing, **global community**
- Valuing and respecting every member of the school community
- **Use of technology**
- Recognising and celebrating success

THE NATURE OF MATHEMATICS

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. (National Curriculum 2014)

The purpose of mathematics in our school is to develop:

BREADTH OF STUDY

Through careful planning and preparation we aim to ensure that throughout the school children are given opportunities for:

- Mastery of concepts
- practical activities and mathematical games
- problem solving through offering rich and sophisticated problems
- individual, group and class discussions and activities open and closed tasks
- using a range of methods; mental, pencil and paper and using a calculator
- working with computers as a mathematical tool

Through our creative curriculum approach we also seek to explore and utilise further opportunities to use and apply mathematics across all subject areas.

MASTERY APPROACH

Eveline Day School is transitioning towards a mastery approach to teaching and learning mathematics as outlined by the NCETM (National Centre for Excellence in Teaching Mathematics.)

Mastering maths means pupils acquiring a deep, long-term, secure and adaptable understanding of the subject.

The 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:

- Everyone can learn mathematics to the highest levels.
- If you 'can't do it', you 'can't do it **yet**'.
- Mistakes are valuable.
- Questions are important.
- Depth is more important than speed
- Mathematics is about creativity and problem solving.
- Mathematics is about making connections and communicating what we think.
- 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.

Curriculum design and planning

Teachers use *Abacus Maths Scheme* as a starting point in order to develop a coherent and comprehensive conceptual pathway through the mathematics curriculum, and *White Rose Planning* to provide extra breadth of materials. The focus is on the **whole class progressing together**.

- Learning is broken down into small, connected steps, building from what pupils already know.
- 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*, Abacus *Maths Problem* textbook activities, *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*) are provided outside mathematics lessons (**For example KS2 early morning maths for times tables and/or mathematical concepts.**)

Lesson Structure

- Lessons are sharply focused
- 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.

TEACHERS PLANNING AND ORGANISATION

Each class teacher is responsible for the mathematics in their class in consultation with and with guidance from the mathematics subject leader. Teaching is based on these principles:

- a mathematics lesson every day
- a clear focus on direct, instructional teaching and interactive oral work with the whole class and targeted groups
- an emphasis on mental calculation
- all children achieving mastery before moving on

Each class organises a daily lesson of between 45 and 60 minutes for mathematics. Teachers of the EYFS ensure the children learn through a mixture of adult led activities and child initiated activities both inside and outside of the classroom.

Long term planning

The National Curriculum for Mathematics 2014, Development Matters and the Early Learning Goals (Number, Shape Space & Measure) provide the long term planning for mathematics taught in the school.

Medium term planning

Years 1-6 use Abacus Mathematics Planning Documents as its medium term planning. EYFS planning is based on Development Matters and the Early Learning Goals (Number, Shape Space & Measure.)

Short term planning

Teachers plan from Abacus, NRich (mastery) and White Rose (fluency)

SPECIAL EDUCATIONAL NEEDS

The daily mathematics lessons are inclusive to pupils with special educational needs. Where required, children's IEPs incorporate suitable objectives from the New National Curriculum for Mathematics or Development Matters and teachers keep these objectives in mind when planning work. These targets may be worked upon within the lesson as well as on a 1:1 basis outside the Mathematics lesson. Maths focused intervention programmes are available in school to help children with gaps in their learning and mathematical understanding. These are delivered on a 1:1 basis by trained support staff and overseen by the class teacher. Within the daily mathematics lesson teachers must not only provide differentiated activities to support children with special educational needs but also activities that provide appropriate challenges for children who are high achievers in mathematics. It is vital that all children are challenged at a level appropriate to their ability. This is part of The Mastery Approach.

EQUAL OPPORTUNITIES

We incorporate mathematics into a wide range of cross-curricular subjects and seek to take advantage of multi-cultural aspects of mathematics. We ensure that all children are able to fulfil their potential regardless of race, religion, disability or gender.

PUPILS' RECORDS OF WORK

Children are taught a variety of methods for recording their work and they are encouraged and helped to use the most appropriate and convenient method of recording. Children are encouraged to use mental strategies before resorting to a written method. All children are encouraged to work tidily and neatly when recording their work. When using squares one square should be used for each digit. At KS1 1cm square exercise books are to be used. This changes to 7mm square exercise books in Year 3 through to Year 6.

EYFS record informally within the setting, for example:

- on the playground
- on whiteboards
- using jigsaws
- physically ordering numbers

Staff in Foundation Stage use photos to ensure records of each child's achievements are maintained.

MARKING

Children's work is marked against success criteria, in line with the school marking policy, and includes *next steps*. Children are encouraged to self-assess their work and given time to read

teachers' comments and make corrections. Children themselves can mark exercises which involve routine practice with support and guidance from the teacher – particularly in Years' 4, 5 and 6. The quality of marking is crucial; a simple 'X' is of little assistance unless accompanied by an indication of where the error occurred and an explanation of what went wrong.

ASSESSMENT/TRACKING AND RECORD KEEPING

Formative short term assessments

Children's class work is assessed frequently through

- regular marking
- analysing errors
- questioning
- discussion
- plenaries

This is used to inform future planning and teaching. Lessons are adapted readily and short term planning is evaluated and annotated in light of these assessments.

SUMMATIVE ASSESSMENTS

Teachers make regular assessments of each child's progress and record these systematically. A record of each child's attainment against the key objectives for the appropriate year group is recorded using **Classroom Monitor**.

KS1 and LKS2

Children sit termly year appropriate **PUMA** tests to assess progress. To track progress against yearly expectations, **Classroom monitor** is updated half-termly.

UKS2

Children sit termly year appropriate **PUMA** tests to assess progress. From Summer Term in Year 4, children sit regular pre 11+/11+ practise tests in preparation for their exams in Year 6. From Summer Term in Year 4 children are assigned their own on-line **BOFA** account to access Non-VR and arithmetic tests. These help to develop the fluency necessary for forthcoming **11+ exams**.

To track progress against yearly expectations, **Classroom monitor** is updated half-termly.

Long term

Y2 and Y6 to complete SATs assessments every May. Y3, 4 and 5 to complete optional SATs papers during summer term.

REPORTING TO PARENTS AND PARENTAL INVOLVEMENT

Reports are completed before the end of Winter and Summer terms and parents are given opportunity to formally discuss their child's progress at two parents' evenings in the autumn and spring terms. Parents can make an informal appointment to discuss their child's progress at any time over the school year.

MONITORING AND EVALUATION

The mathematics subject leader and SLT monitor and evaluate the teaching of mathematics through Learning Walks, Book Looks and lessons observations.

STAFF RESPONSIBILITIES

SLT: Headteacher/Deputy headteacher/Educational Consultant

- lead, manage and monitor the development of mathematics in the school
- support the mathematics subject leader in taking mathematics forward

- carry out annual audits, set targets, review the action plan and monitor its progress
- ensure that arrangements are made to meet the training needs of teachers and other adults involved
- manage the school's allocation of resource funding, including leadership time
- ensure parents are informed and involved

Mathematics Subject leader

- Assist the SLT in carrying out the audit, reviewing and amending of the action plan.
- Prepare, organise and provide school based INSET meetings.
- Assist with the monitoring of teaching and planning and the analysis of SATs results.
- Preparation, review and implementation of school policy documents and guidelines taking into account the recommendations of the New National curriculum and EYFS.
- Liaison with staff in school – working alongside them giving guidance and support.
- Introduce, organise and maintain the school's mathematics resources.
- Take responsibility for own professional development by attending courses and keeping up-to-date with current developments within mathematics education.
- Liaison with mathematics subject leaders through attendance of local network meetings.
- To provide an example by taking a lead in teaching mathematics and classroom organisation.
- Maintaining contacts beyond school with numeracy consultants, advisory staff and other outside agencies.
- Ensuring equality of opportunity for all pupils.

SENCO

- Organising and providing INSET for staff special needs mathematics issues
- Advising staff how best to support children with varying needs during mathematics lessons so that they meet the expectations of the yearly teaching programmes where possible
- Advising staff on the inclusion of mathematical objectives in IEPs for children with SEN in mathematics.
- Help to ensure that children capable of catching up their peer group do so as quickly as possible.
- Advise staff on effective use of teaching assistants and helping support staff to develop their role.

Class Teachers

Class teachers are responsible for the planning, teaching and assessment of the daily mathematics lesson and the organisation of additional adults in the classroom. They are also responsible for implementing the contents of this policy within their classroom.

Support Staff

HLTAs and TAs that work with the children support the teaching of mathematics under the direction of the class teacher.

STAFF DEVELOPMENT

All staff are encouraged to develop, assess and improve their teaching of mathematics.

Whenever possible we:

- encourage staff to attend mathematics courses
- make provision for mathematics subject leader to work alongside colleagues in the classroom
- provide school based INSET
- involve staff with policy and decision making
- provide the opportunity to learn from colleagues expertise
- encourage parental involvement at home and in school based workshops with their children

RESOURCES

All teachers should organise an area within the classroom dedicated to mathematics resources which is easily accessible to all children and allows them to become familiar with all resources. There should also be a working wall area within every classroom that the children can access. This needs to be updated regularly in accordance with the area of maths being taught at the time. Resources which are not used or required regularly are stored centrally in Year 5.

HOMEWORK

It is our school policy to provide parents and carers with opportunities to work with their children at home. These activities may only be brief, especially in the Foundation stage, but are valuable in promoting children's learning in mathematics. Activities are sent home to children in years UR to 6 on a weekly basis as part of our home learning challenges. These can take the form of Abacus, online games, activities or quick written tasks and increase in amount as the child progresses through school.

Written by Sharon Holloway in consultation with SLT and Teachers Spring 2020

Review date: Summer 2020