Inspire Learning, Ignite Curiosity

Marlow C of E Infant School
Maths Policy
2021

Then God said, "Let us make humankind in our image, in our likeness"
Genesis 1:26

Rationale
At Marlow Church of England Infant School our curriculum vision is to inspire learning and ignite curiosity, within a welcoming Christian and spiritual community. We embrace the uniqueness of everybody and are inclusive of all. Our values of, respect, kindness, perseverance, forgiveness, thankfulness and service guide all that we do and our aim is for every child to feel nurtured, supported and safe.

Our belief is that every individual is created in God's image and therefore is precious and valuable. We believe in treating everybody with respect and dignity because we acknowledge everyone's God given value and unique identity.

We aim to achieve this by providing children with the opportunity to work towards achieving their full potential by:

- Embracing the uniqueness of everybody and be inclusive of all
- Empowering all to be enthusiastic learners
- Ensuring that every child feels nurtured, supported and safe
- Enriching learning through progressive teaching methods and technology
- Being responsible to and for society
- Being good citizens of the planet

Maths Intent
At Marlow Church of England Infant School, our aim is for all children to enjoy mathematics and have a secure and deep understanding of key mathematical concepts when they leave us. We want our children to have an awareness of the maths that surrounds them every day and enjoy learning vital skills in this subject.
Our mathematics curriculum is both accessible and challenging for all of our learners and we strive to provide this by creating a variety of practical and hands-on learning experiences which we believe can support even the most disadvantaged of pupils to explore and apply their Maths skills and knowledge in fun, engaging contexts.
At Marlow C of E Infant School, it is our intention that all of our children become increasingly independent in making connections and links between different concepts and we provide plenty of opportunities for mathematical reasoning and problem solving, to allow our children to develop their conceptual understanding.
We encourage the children to

- Foster a sense of enjoyment and resilience
- persevere and remain patient when faced with a problem.
- learn to solve problems in many different ways, using different methods.
- Talk, using high quality language
- Reason and justify, practising voicing their opinions and sharing their approaches with each other.
- listen to each other's ideas, acknowledge different approaches and reflect on which approach is most suitable.
- Develop a love maths and enjoy it.

In addition to teaching mathematic skills, it is our intention for the children to learn about themselves as learners and develop their personal qualities. We teach our children to have the confidence to approach problems, the ability, perseverance and resilience to solve problems, good communication skills to work with others, the curiosity to question what they are told and the honesty to reflect on their own and others' approaches. In doing so, our hope is that they will be well equipped moving forwards in their education and future lives.

Maths Implementation

What are we teaching?

At Marlow C of E Infant School, we follow a mastery approach to delivering our maths curriculum. Each year group follows the objectives outlined in the National Curriculum and we use the scheme White Rose Maths to support the planning and delivery of our lessons.

In the Reception, the statutory Early Years Foundation Stage Framework and non-statuary guidance contained in 'Development Matters' are used to support the planning of learning. Teachers use White Rose Maths resources in lessons and play learning.

To allow our teachers to create and creative and engaging curriculum, we also supplement White Rose Maths with the following resources to support planning, problem solving and reasoning:

- NRich
- NCETM
- DfE Non-Statutory Mathematics guidance

How are we teaching it?

As part of our mastery approach, children are exposed regularly to fluency, reasoning and problem solving. Lessons are presented clearly through PowerPoint and children have ample opportunity for regardless of ability, to access and show greater depth challenges with the support of the class teacher and teaching assistant. We do not put a cap on children's learning and have high expectations of all of our children so that all children have the opportunity to acquire the knowledge and cultural capital they need to succeed in life.

Language is a crucial to our mathematics curriculum and at Marlow C of E Infant school we ensure that our children are exposed to a range of mathematical vocabulary across the school which is displayed and shared in lessons. Talk and use of vocabulary is central within lessons across the school and children are encouraged to explain their thinking using 'because' to demonstrate their understanding and promote appropriate discussion.

Within lessons and independent learning, children have access to concrete resources across to help them embed and understand new knowledge and develop a deep understanding of a newly taught concept. Teachers plan a range of different variations within lessons to support children in acquiring a deep understanding of a taught concept.

Within Reception and KS1 children develop their fluency skills and have access to 'one-minute maths' to practise and consolidate their subitising, number and place value, addition and subtraction as well as their multiplication and division skills (KS1).

Which methods do we teach?

Children are taught to represent their answers in a number of ways using concrete, pictorial and abstract methods.

Concrete – children have access to concrete objects and manipulatives to help them to understand and explain what they are doing. These are outlined in the school's calculation policy. These are beneficial for kinaesthetic learners.

Pictorial – children can build on the concrete approach by using pictorial representations which can be used to solve problems and reason. Children are introduced to representations such as the part-part whole model and bar model

Abstract – children can move on to using numbers and symbols as representations

Concrete and pictorial methods are used to demonstrate and visualise abstract ideas. While children often use concrete and pictorial methods in the early stages, teachers will encourage children to make use of them throughout their learning to support and question their answers.

How do we deliver learning?

To support our mastery approach and develop our teacher's confidence in *'teaching for mastery',* maths planning is aided by the use of White Rose Maths, in line with the relevant curriculum and drawing on resources, data and suggestions from other reliable sources such as NCETM, Deepening Understanding

and NRich.co.uk to link mathematical talk and knowledge across the various units. Children are given the opportunity to develop their conceptual understanding before they are shown strategies which are outlined in the school's Calculation Policy. Modelling and demonstrating strategies contained in the Calculation Policy are key methods used by teachers to ensure a consistent mastery approach across the school.

When planning for objective coverage, teachers are expected to take the following mastery strategies into account:

- Small learning steps planned using WRM.
- Ping pong style of delivery to encourage lots of discussion around key concepts.
- Implementing the Concrete, Pictorial and Abstract (CPA) approach to introducing, exploring and applying mathematical concepts
- Applying/using the Bar Model approach as a strategy to approach calculation/problems
- Considering key questions and mathematical vocabulary at the point of unit planning
- Multiple opportunities for verbal and written/drawn reasoning (explaining and using mathematical vocabulary to explain methods or reasoning) within unit exploration
- Inclusion of relevant problem-solving opportunities, where children are expected to draw on and apply multiple concepts to address or approach a challenge
- Modelling of all skills and approaches
- Modelling and sharing of efficient and accurate application of methods
- Opportunities to explore maths concepts/objectives at 'greater depth' for *all* children.
- Include all learners, providing relevant support for those with additional needs (educational, medical or otherwise)

Year 2: Maths is taught 5 times a week.
Year 1: Maths is taught 2-5 times a week depending of the time of year and cohort.
Reception: Each week there are 2 maths lessons which serve as the focus for an entire morning's learning. Once the main teaching has been delivered, each child has an adult focused activity as part of a group during the morning. In addition to this there are daily maths activities which form part of the provision which the children can choose as part of their play learning.

Lesson Structure

- Lessons are sharply focused and planned for using PowerPoint.
- Key new learning points are identified explicitly and children are able to talk about what they are learning.
- 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.

Maths Impact

The impact of our intent and implementation means that all of our children are able to work towards achieving their true potential because as a school we:

- Stimulate and challenge *all* pupils to extend their attainment in Maths.
- Create an atmosphere of exploration and excitement starting in the Foundation Stage, so that a genuine love for maths and a desire to learn and find out more is developed.
- Maintain a high level of interest and motivation through enthusiastic teaching and creative teaching strategies.
- Promote independent learning and confidence in maths through initial direct teaching of the whole class, progressing on to pair and individual problem solving and investigations.
- encourage co-operative learning in order to promote social and leadership skills.
- Develop mathematical knowledge and understanding so the pupils can explain and reason about mathematics and apply their knowledge practically to everyday experiences.
- giving equal opportunities to all, by using data analysis from the Learning Ladders, that are appropriate and relevant to each individual and build on their previous experiences.
- Embed a mastery approach to teaching maths, ensuring our maths lessons (learning steps) are heavily practical and an exploratory approach is taken to learning, allowing the children to understand the meaning behind the mathematical concepts they learn and deepen their knowledge.
- develop mathematical skills and concepts and use a creative approach to apply them across the whole curriculum.

Statutory Requirements

Statutory requirements for the teaching and learning of Maths are laid out in the National Curriculum (2014)

https://www.gov.uk/government/publications/national-curriculum-in-england-mathematics-programmes-of-study

Reception

The Early Years curriculum is founded on the principles and practice laid out in the Development Matters document (September 2020 Revised July 2021)

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1007446/6.7534_DfE_Development_Matters_Report_and_illustrations_web__2_.pdf

Key Stage 1

The KS1 curriculum is planned around the 8 strands of the National Curriculum 2014:

- Using and applying
- Number and place value
- Addition and subtraction
- Multiplication and division
- Fractions
- Measurement
- Geometry (properties of shapes and position and direction)
- Statistics (Year 2 only)

Non-Statutory Requirements

In July 2020, the DfE released some new guidance https://www.gov.uk/government/publications/teaching-mathematics-in-primary-schools

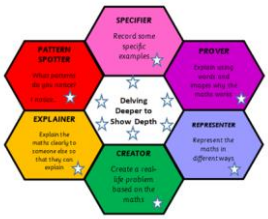
This publication aims to:

- bring greater coherence to the national curriculum by exposing core concepts in the national curriculum and demonstrating progression from Year 1 to Year 6.
- summarise the most important knowledge and understanding within each year group and important connections between these mathematical topics.

Meeting the needs of all pupils

Taking a mastery approach, differentiation occurs in the support and intervention provided to different pupils within a lesson. There is no differentiation in content taught, but the questioning and scaffolding that individual pupils receive in class as they work through problems will differ.

- Questioning will be used throughout the lesson to ensure that all children understand the concepts taught and are challenged at an appropriate level.
- Once fluency is attained, teachers will present more complex challenges using variation. Talk will be used within the classroom to ensure depth of understanding.
- Pupils that show signs of *'working deeper'* ahead of other pupils are challenged within the lesson with more complexed problems (NRich, NCETM Assessment materials) to support deepening their knowledge of the same content. Teachers will also use the below model 'delving deeper', to support their questioning. This is displayed in classrooms around the school.



- Those children who show signs of misunderstanding should be identified through immediate formative assessment and addressed with rapid intervention. Where possible, intervention should occur within class but if needed and necessary, extra intervention should be organised on the same day so that any gaps are closed.

Interventions

An essential part of teaching for mastery is the assumption that *all* children will progress together at broadly the same pace and we should have high expectations of *all* our children and know that *all* children are fully capable of accessing the mathematical concepts we teach. Undoubtedly however, we understand that children learn at different paces and *some* children will need additional teaching and extra time to grasp certain concepts.

Those children displaying *significant gaps* in their knowledge will be placed in either a '*keep-up'* or *'catch-up'* intervention dependent upon their needs.

Keep-up intervention

Given the mastery approach ensures that children don't get 'left behind' in the journey through a learning sequence, the purpose of a 'keep-up' interventions are to support those children who have small gaps in their knowledge and that with a bit more teaching around a concept will be ready to join in on the next lesson. These children should be identified within a lesson and a same-day session should be arranged so that they're ready to move onto the next day's learning.

Catch-up interventions

These interventions are for those children who are unable to keep up with their peers despite having regular 'keep-up' interventions. The children placed in this group may have significant gaps in previous learning which is impacting on them obtaining any new concepts they are faced with.

Maximising access to the maths curriculum

This is done by:

- ensuring pupils learning English as an additional language spend most of their time in their mainstream class.
- using learning activities which involve practical activity and discussion;
- supporting understanding with concrete items, pictures, etc. so that understanding does not depend on oral language alone;
- ensuring the maths curriculum and resources are not Euro-centric and are relevant and interesting to every child in the class.

Planning

Progression, coverage and continuity in maths is planned for by:

- following the objectives outlined in the National Curriculum 2014 in Key stage 1;
- following the objectives outlined in the Development Matters in Reception;
- producing long term plans, which group the objectives from the National Curriculum into strands and show links to other areas of mathematics;
- producing medium term plans, which show opportunities for cross-curricular work and identify teaching activities where the children can show evidence of mastery of the curriculum or working at a greater depth within the year group curriculum;
- producing weekly *'teaching slides'* which detail the teaching sequence and lesson steps. The slides provide integrated differentiation and challenge for *all* pupils.
- the learning objectives and key vocabulary are clearly identified on the 'teaching slides' and are shared with the children at the start of every lesson; the success criteria are discussed within the lesson and reviewed regularly to ensure that the children understand what they need to do and how they can do it.
- regular monitoring/reviewing/revising of weekly and medium-term plans takes place, led by senior staff and the Maths subject leader.

ICT and Maths

ICT is used in various ways to support teaching and enhance learning opportunities:

- Use of visualiser to model and demonstrate
- Beebots for work on position and direction
- Light table to enhance sensory play
- Use of PCs and Chromebooks in provision to support the learning objective

Assessment

Assessment is an integral part of the planning process. Evidence for assessment is gathered through planned opportunities for observation, peer and self-assessment and teacher-led activities.

Teachers use the Learning Ladders platform to record how the children have met the objectives against the objectives from the National Curriculum.

When planning, the gap analysis from the Learning Ladders is used to identify gaps in the children's knowledge.

Both formative and summative assessments are used to inform planning and target setting for individuals and groups.

Further detail is contained in the school's Assessment Policy.

Record Keeping and Tracking

Records are kept on all children in each year group these include:

- Learning Ladders
- Statutory assessments (Year 2)
- Teacher assessment against Development Matters (Reception)
- Individual annual reports to parents

Teachers and SLT regularly monitor pupil progress and identify any concerns. These are shared with the teaching team during pupil progress meetings and class action plans are put in place to monitor gaps and progress and individual groups and pupils.

Equal Opportunities

Please refer to the school's Equalities Policy

Staff development and training

Staff development and training is provided in the following ways:

- school based INSET;
- liaison with appropriate county and national services;
- working alongside other teachers or visiting other classrooms as an observer to share good practice.

The role of the maths subject lead:

The role of the subject lead is to:

- take the lead in policy development.
- ensure the implementation of the curriculum.

- monitor the coverage of the National Curriculum and Development Matters objectives
- support colleagues in their implementation of the curriculum.
- support colleagues in the use of the Learning Ladders to assess and monitor the progress of pupils.
- monitor progress in maths and advise the Headteacher of action needed.
- take responsibility for the purchase and organisation of subject resources.
- keep up-to-date with developments in maths education and disseminate information to colleagues as appropriate.

Monitoring and Evaluation of the Maths Policy

The effectiveness of the policy will be monitored during the year through:

- monitoring of teaching and learning by the Maths subject lead and SLT;
- visits from the inspectorate or advisory team;
- consultation with staff;
- sampling of pupil's work and target setting across year groups;
- visits from the Maths governor to discuss the implementation and effectiveness of the policy with the subject lead.

The following criteria can be used as a measure of success

- Have the learning targets been achieved?
- Have standards improved?
- Is there whole-school consistency?
- Has any part of the policy been difficult / impossible to achieve?

Date reviewed: December 2022

Next review date: December 2025