Dilton Marsh Church of England Primary School

Mathematics Policy

Monitoring of this policy:

This policy has been developed by a working group made up of:

- Head teacher: Jill Hibbs
- Mathematics lead: Lucy Bown

Schedule for review of this policy:

This policy was approved by the Governing Body on:	DRAFT
The implementation of this policy will be monitored by:	Lucy Bown
Monitoring will take place:	Annually
The Governing Body will receive a report on the implementation of this policy, generated by the monitoring group:	Annually
Next review date:	September 2022

Mathematics Policy

Rationale

A high-quality Mathematics education 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)

Purpose

The purpose of this policy is to describe Dilton Marsh's practice in Mathematics and the principles upon which this is based. It links, in more detail to our Intent, Implementation and Impact statement.

Introduction

The policy is based upon the aims of the National Curriculum for Mathematics and the Early Years Foundation Stage framework. Our teaching approach, from Reception, is based upon the mastery model, using the rich and high-quality textbook Power Maths.

Aims of Mathematics Education

All pupils shall:

- Become fluent in the fundamentals of Mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- Reason mathematically by following a line of enquiry, conjecturing relationships and generalisations which will support them to develop an argument, justification or proof using mathematical language.
- Solve problems by applying their Mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning, and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to Science and other subjects.

Mastery Teaching

Mastery allows children to gain a solid and deep understanding of Mathematical concepts - recognizing the power of thinking not just doing, which in turn will allow all to see patterns and make connections.

Mathematics at Dilton Marsh Church of England Primary School is based upon a fundamental belief that all children can achieve confidence and competence in Mathematics, building fluency, a deep conceptual and procedural understanding through prolonged and varied practice.

Small, sequenced steps that are supported by a range of concrete and pictorial representations build and deepen conceptual and procedural knowledge.

Children working within a mastery context can:

- rapidly and accurately recall mathematical facts.

- make connections between concepts.
- use a variety of representations to demonstrate understanding
- articulate fully in discussion “how” they have calculated answers to rich and sophisticated problems.

We believe that knowledge is not fixed and explicitly embed a growth-mindset approach into all that our children do. Through hard work, practice, and a willingness to see mistakes as part of their learning journey - they can succeed.

Mathematics is taught in mixed-ability groupings which we believe necessitates:

- vital discussion.
- the use of accurate and specific mathematical language to explain what is known.
- validation of an idea or reason.
- a deep understanding that underpins all future learning.

Within lessons, reflection time is built in; this allows opportunities for children to make links and focus. Where possible, working in mixed-ability pairs or small-groups, children are encouraged to explain what they know using complete sentences and key mathematical language to discuss and express concepts precisely - this is empowering when clarifying understanding and can highlight any possible misconceptions. Maths talk is integral to the structure of teaching at Dilton Marsh Church of England Primary School.

Lessons

Lessons are typically an hour long and begin with a fluency activity that aids mental recall. Children are taught through whole-class interactive teaching, where the focus is on all pupils working together on the same lesson content at the same time. This ensures that all can master concepts and deepen their understanding as far as they can, before moving to the next part of the curriculum sequence - allowing no pupil to be left behind. Textbooks are an excellent resource used to support high-quality teaching and allow children to see the concept in multiple representations. In addition to this, maths resources such as: Numicon, Diennes, multi-link cubes and bead strings are available to support the development of understanding.

If a pupil fails to grasp a concept or procedure, this is identified quickly through live marking and Booster same day interventions take place using manipulatives to support, ensuring sustained progress - children are then ready to move forward with the whole class in the next lesson.

Timetables

Times tables and mental arithmetic skills are a vital part to the mathematics curriculum and are a focus throughout the school. We subscribe to Times Tables Rockstars. Tables are taught in extra explicit sessions designed to develop automaticity which avoids cognitive overload in the working memory and enables pupils to focus on new concepts. (see our Multiplication Progression document for more information).

Speaking and Listening

The National Curriculum for Mathematics reflects the importance of spoken language in pupils’ development across the whole curriculum.

At Dilton Marsh Church of England Primary School we recognize the quality and variety of vocabulary that pupils hear and speak are key factors in developing mathematical understanding and enabling children to have confidence presenting justifications, argument, or proof. Stem sentences are used to introduce and consolidate key mathematical vocabulary in complete sentences which links to reading and comprehension skills; it is an expectation that all children use specific mathematical language at all times and support is given to those who find this challenging. We assist children in making their thinking clear to

themselves as well as others, using discussion to probe and remedy any misconceptions. Stem sentences and Unit Vocabulary are always displayed on the Mathematics Working Wall.

Early Years (EYFS) Experiences of Mathematics at Dilton Marsh Church of England Primary School

Activities will provide pupils with the opportunity to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems, and describing shapes, spaces and measurements. All activities will adhere to the objectives set out in the framework.

During the Early Years Foundation Stage, pupils will be taught to:

Number

- Have a deep understanding of number to 10, including the composition of each number;
- Subitise (recognise quantities without counting) up to 5;
- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

Numerical Patterns

- Verbally count beyond 20, recognising the pattern of the counting system;
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

Through a combination of child-led, child-initiated, and adult-led activities, mathematics is taught daily, ensuring that it is fun, interactive, and most importantly, linked to children's current interests and fascinations. Within the EYFS we use the Concrete – Pictorial – Abstract process of learning when introducing new concepts. This approach develops children's understanding at a deeper level and can be used both at home and within the EYFS setting. Young children are happy engaging with construction toys and making marks on paper but cannot always solve the problem of 5 + 2 = 7 without a play-based introduction to this as a concept using concrete and pictorial resources. Children begin learning about number by playing with real objects and resources, e.g. shells, pebbles, toy figurines or cut out pictures. They build confidence with the basic idea of adding together or taking away alongside adults engaged in play before moving to the second stage of drawing pictures that represent their objects and fascinations. Much later in a child's mathematical development you will begin to see them including numbers in their drawings.

Children need to be exposed to different representations of mathematical concepts to embed their understanding of them. Children are given opportunities to reason and develop their skills around number, recognising patterns and relationships.

A child's inquisitive nature and natural curiosity help greatly with observing their approach to exploring where lots of discoveries and questions start outside in the outside learning environment, in the sand or water tray, through filling and emptying containers and through messy play opportunities.

Teaching and Learning

When planning in Reception to Year 6, teachers use Power Maths as a framework based upon the CPA approach (concrete, pictorial and abstract).

Within a lesson there are periods of independent practice using practice books and/or mathematics books, and it is identified on the plan who the teacher or TA may need to support and by what means e.g. number lines, small group work. Children are encouraged to "Discover" – show how they are able to solve a mathematical concept; "Share" listen to the range of representations that may be used and "Think Together" apply their developing understanding – scaffolded until they have grasped the concept.

Role of the TA

Use of Teaching Assistant support is planned in every lesson, where a TA is present, to ensure they effectively support, develop, and assess understanding in every part of the lesson. Our TAs mark throughout the lesson alongside the teacher to indicate where they have moved children on, developing skills further. TAs share observations with the teacher throughout the lesson to directly impact upon progression. Outside of Mathematics lessons, TAs are used to consolidate learning from the previous lesson or pre teach concepts in preparation for the next lesson. Sometimes they will be used to support children in developing key skills such as number bonds.

Use of ICT in Mathematics

The effective use of ICT can enhance the teaching & learning of mathematics when used appropriately. When considering its use, we consider the following points:

- ICT should be used in lessons only if it supports good practice in teaching mathematics
- Any decisions about using ICT in a lesson or sequencing lessons must be directly related to the teaching and learning objectives for those lessons.
- ICT should be used if the teacher and/or the children can achieve something more effectively with it than without it.

Calculation Policy

We have calculation policies to reflect progression in the range of strategies taught, whilst giving flexibility to model the four operations in a variety of ways - this ensures consistency throughout the school. These policies follows Power Maths explicitly.

Inclusion and Equal Opportunities

All children are provided with equal access to the mathematics curriculum. We aim to provide suitable learning opportunities regardless of gender, ethnicity, or home background.

Differentiation and Support (Provision for G&T, SEND, EAL, PP)

While the National Curriculum suggests children move through the programmes of study at a similar rate, we recognise that children sometimes need work that is ,"other and different" to support and/or challenge – their mathematics "stage" not "age." This is done in a variety of ways:

- The use of a greater variety of concrete items to support consolidation
- Real-life planned links to support abstract concepts
- The use of problem-solving activities to further develop reasoning
- Timely support and intervention, systematically checking understanding throughout every lesson to embed conceptual development

- Small differentiated tasks to suit learning needs of all
- Effective AFL throughout every lesson, picking up misconceptions and moving others to deepen understanding with a range of tasks
- Live marking and verbal feedback throughout every lesson
- Pre-teaching or post-teaching sessions delivered by class teachers or TAs to address misconceptions on a daily basis
- SEND Toolkit that ensures children are given work and challenged at the right level for them.

Marking

The purpose of marking is to ensure that all children receive constructive verbal and non-verbal feedback, including next steps, to challenge and consolidate learning further. Our marking policy is shared with children, and as they progress up the school, they become increasingly able to respond independently.

We recognise the importance of marking and verbal feedback and use a range of strategies to ensure progression in every lesson. Teaching staff are not required to mark every piece of work in detail and should use professional judgement to determine how much marking is appropriate for the individual child.

Teaching staff use green pen (Green for Growth) allows the children to reflect on their learning. This could be in the form of additional questions in the style of the work or deeper questioning that enables the children to explore the concept at a different level. Pink pen is used to indicate "Tickled Pink," individualised feedback that indicates a pupil has shown a depth of understanding, reasoning or persevered

Assessment

Throughout the lesson AFL is a continuous process whereby teachers and teaching assistants review through mini-plenaries, targeted differentiated questioning, marking, verbal feedback and pupil's self-assessment.

An EYFS Profile will be completed for each pupil in the final term of the year in which they reach age five. The progress and development of pupils within the EYFS is assessed against the early learning goals outlined in the 'Statutory framework for the early years foundation stage'

Dilton Marsh uses NFER Tests termly (Year 1 (Spring) –Year 6). These are standardised tests to measure each pupil's attainment in all areas of maths. These results will be compared with an 'average' for all pupils of that age.

FFT Aspire allows teachers to indicate concepts met to gauge progression and attainment. Data from assessments is analysed and is fed into teaching and used to fill gaps.

Data that is put into FFT for Mathematics links to five of the six terms. These our outlined below.

	Teacher Assessment	NFER / Formal Test
Term 1	X	
Term 2	X	X
Term 3	X	
Term 4	X	X
Term 6	X	X

We also use data from the end of Key Stage Statutory Assessments to inform us about the needs of the subject and specific cohorts.

The Mathematics Leader

The role of the Mathematics Leader is to:

- Analyse data
- Ensure a core of material is available.
- Review and monitor planning.
- Monitor Mathematics teaching and evaluate pupils work.
- Arrange liaison with outside consultants.
- Work alongside staff to support if required.
- Attend relevant courses to be aware of new ideas and disseminate these to all staff and to arrange appropriate inset for colleagues.
- Carry out a curriculum review.
- Update the policy document and schemes of work, as necessary.

Monitoring and Evaluation

The curriculum leader, alongside SLT, are responsible for monitoring and evaluating curriculum progress. This is done through book scrutiny, planning scrutiny, lesson drop-ins, pupil interviews, staff discussions and audits of resources.

Internal moderation tasks are carried out. These take on different forms and are initiated by the subject lead. Internal moderation is carried out in SDMs, and by the subject lead. They enable the subject lead and staff to see the progression in teaching and are fed back on to develop maths within the school.

External moderation for Key Stage 1 is carried out by Wiltshire LA. This is usually undertaken every four years but can be triggered by various factors including:

- new teaching staff in Year 2 or Year 6 (particularly if the teacher is an NQT)
- new senior leadership team in the school
- concerns from a previous moderation visit (usually in the year before)
- concerns about the data from the previous year
- Ofsted concerns
- having a Year 2 or Year 6 cohort for the first time
- request from either the school management, senior managers at the LA, or the STA.

Other Policies

This policy links with the following:

- EYFS Calculation Policy
- Key Stage 1 Calculation Policy
- Lower Key Stage 2 Calculation Policy
- Upper Key Stage 2 Calculation Policy
- Marking and Feedback Guidance (Acorn Education Trust)
- SEN Policy
- Homework Policy
- Multiplication Progression