



Dishforth CE Primary School

Mathematics Intent, Implementation and Impact.

Intent.

The National Curriculum (2014) for mathematics aims to ensure that all pupils:

- 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, and developing an argument, justification or proof using mathematical language
- Can **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

At Dishforth C of E, we aim to ensure that our children have access to a high quality mathematics curriculum that is both challenging and enjoyable. We want to develop our children into confident mathematicians who are not afraid to take risks. Children need opportunities to make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. It is vital for our children to be able to see how mathematics is relevant to their world, and applicable to everyday life. We also aim to instil 'lifelong learning' and an understanding of how mathematics is something that the children will need as they move through their school life and into the world of employment.

Our definition of learning is that our children will know more, remember more and understand more about Maths

Implementation.

Teaching Sequence: We have adopted a mastery approach to the teaching of mathematics by creating our own bespoke maths scheme of work that teaches our children what they need, when they need it. Our approach follows the White Rose scheme of learning, using reasoning, problem solving and fluency. Children become used to the idea that they will follow the same structure for each mathematical unit, not just in their own year group but in every year group as they progress through the school. Our children are first exposed to this learning in nursery where we use “Master the Curriculum” to introduce maths. This is used throughout EYFS.

The teaching phases break down as follows: Assess is where we identify and examine the skills needed in order to successfully understand the objective. We use Pre assessment tasks to pinpoint each child’s starting point. Teach/Model is where we teach the relevant methods, operations and concepts specific to that domain as well as discussing the vocabulary that is key to that area of mathematics. Children are given opportunities to develop their understanding through fluency questions. **Using White Rose Maths workbooks the children have access to Fluency, Reasoning and Problem Solving questions in order to solidify the topic we have been learning in the ‘Teach/Model’ phase.** In the Explore phase we extend knowledge and understanding through the use of problem solving and reasoning challenges and children are expected to explain their answers calling on many aspects of their mathematical knowledge. This phase also allows the children to explore the genre of mathematical questions and apply their knowledge in a range of different contexts. **Often these questions are taken from the National Centre of Excellence in Teaching maths (NCETM) and provide opportunity for children to deepen their learning from the lesson. These questions are completed in a blue ‘Maths’ book. Teachers use approaches that meet the needs of children. Children are encouraged to use manipulatives and pictorial methods of working where required.**

Marking and feedback: Marking is done primarily by the teacher or teaching assistant. In Key Stage 2 children may self mark their work. The class teacher conducts a ‘book check’ after each lesson which enables them to group children into those who have achieved that day’s objectives and those that require extra support. Those who achieved the objectives complete a challenge designed to deepen their understanding of the concept being taught. Those who were identified as requiring extra support will revisit the objective to further consolidate the learning. These groups are given some further input and an activity based on achieving the objectives from the previous day.

Working Walls: All working walls follow the same design and are used in the same way, containing useful vocabulary, modelled problems and top tips relevant to the topic being undertaken. Working walls are referenced and added to in lessons.

Assessment: Our assessment of progress in mathematics is robust to ensure that all children make the required level of progress. At the start of the unit, children complete a ‘pre-learning’ assessment which identifies what they already know about the unit being taught. Any child who has not made expected progress is quickly identified and interventions are put in place to ensure the knowledge gaps are filled. At the end of each topic a ‘post assessment’ takes place to ensure knowledge has

been obtained and retained. At Dishforth, we also use the NCETM 'Ready to Progress' documents, that allow us to assess children at end points of topics.

Arithmetic: Our teachers are expected to include an element of arithmetic in every lesson. This often takes the form of "Fluent in Five" by Third Space Learning, "Flashback Four" by White Rose or a multiplication low stakes test. Fluency is an opportunity to practice the four operations regularly and usually forms the lesson starter or an early bird activity. Fluency practice is marked within the lesson and the teacher leads a discussion of method with the class each day.

Times tables: Excellent times table knowledge and instant recall of related facts is essential to efficient calculation methods – both mental and written. In recognition of this, and in preparation for, the year 4 times table check, we explicitly teach the times tables to the appropriate year groups and allow them ample time to practice and apply their understanding. To aide the progress of multiplication in school we use TT Rockstars, both in lesson and as a home learning activity.

Counting: We understand the importance of our learners developing a fluency of number and an important way to do this is through counting. We regularly count with our children in a variety of age appropriate ways. We offer children access to the White Rose app which has good counting and subitising tasks.

Vocabulary: There are three main ways in which children's failure to understand mathematical vocabulary may show itself: children do not respond to questions in lessons, they cannot do a task they are set and/or they do poorly in tests. In order to avoid these, we teach the vocabulary for each unit during the Teach/Model phase. See Mathematical vocabulary lists.

Inclusion: We take a mastery approach to the teaching of mathematics at Dishforth CE Primary; a key part of this methodology is that all learners engage in all aspects of our curriculum. Where required, lessons and resources may be adapted and scaffolded to ensure that every learner can access every aspect of our wide ranging, challenging and engaging mathematical offering. We expect all children to have an understanding of age appropriate mathematical topics.

Due to the development and organic growth of our school, we have recently had a large intake of new children. We have found that as they have progressed through the school there is evidence of cumulative disfluency. In these instances interventions are put into place to highlight and improve each individual need.

Cross- Curricular Links

Using mathematical skills and language in a wide range of contexts is key to the development of successful mathematicians. We therefore encourage as much cross curricular maths activity as possible in order to give our learners a true sense of the relevance of mathematical skills as well as an awareness of how mathematics underpins many other aspects of the curriculum.

Examples of cross curricular maths could be: Role playing shops, cafes and other environments using money (FS)

Writing instructions involving measures (English)

Recording the results of investigations using data tables and / or graphs (Science)

An investigation of religious affiliation in our local area – calculating percentages and drawing pie charts (RE) Practicing key skills with children who are resistant to or struggle with desk-based learning (PE)

Conducting and recording market research (DT)

Studying / creating art work using geometric shapes based on Matisse, Mondrian, Picasso etc (Art)

Using timelines (History)

Calculating distances – lengths, width, depths of rivers, seas and oceans (Geography)

Foundation Stage

- Staff's ongoing observational assessments ascertain a baseline when each child begins EYFS which then informs subsequent teaching and learning for each child.
- Future attainment is noted using photographs and observational notes. Progress is recorded in each child's Learning Journey and the next steps to be taken are identified. Progress is monitored termly.
- Statutory assessments are made on exit of the EYFS.

Monitoring.

The Head teacher and Maths subject leader play a central role in the monitoring and evaluation of the quality of teaching and learning of Maths in the school.

The monitoring strategy:

1. Children's work and planning scrutinies are conducted.
2. Pupil progress meetings are held termly.
3. Lesson 'drop ins' and observations take place in all classes throughout the year.

The subject leader is responsible for monitoring attainment and progress, the outcomes of which are collated in the subject leadership folder and fed back to staff at an appropriate time.

Impact.

As a result, learners will –

- know more, remember more and understand more about Maths
- demonstrate a rapid recall of facts and procedures including key facts and multiplication tables
- show confidence in their ability to achieve in maths

- have the flexibility and fluidity to move between different contexts and representations of maths
- develop the ability to recognise relationships and make connections in maths lessons, deepening and consolidating their understanding of key concepts
- show mastery of mathematical concepts or skills and can show it in multiple ways, using mathematical language to explain their ideas
- understand the importance of and differences between their reasoning and problem-solving skills

The majority of learners will achieve or exceed age related expectations in Maths