



Introduction

Mathematics 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.

The national curriculum for mathematics aims to ensure that all pupils:

- become fluent in the fundamentals of mathematics;
- reason mathematically;
- can solve problems by applying their mathematics.

(National Curriculum 2014)

Our Curriculum

The content and principles underpinning the 2014 mathematics curriculum and the maths curriculum at Delph Side Community Primary School reflect those found in high-performing education systems internationally, particularly those of east and south-east Asian countries such as Singapore, Japan, South Korea and China. The OECD suggests that by age 15 students from these countries are on average up to three years ahead in maths compared to 15 years in England. We learn from their education systems by adopting a 'mastery approach' to teaching commonly followed in these countries. These principles and features characterise our approach:

- Teachers reinforce an expectation that all pupils are capable of achieving high standards in mathematics;
- The large majority of pupils progress through the curriculum content at the same pace. Differentiation is achieved by emphasising deep knowledge and through individual support and intervention.
- Teaching is underpinned by methodical curriculum design and supported by carefully crafted lessons and resources to foster deep conceptual and procedural knowledge;
- Practice and consolidation play a central role. Carefully designed variation within this builds fluency and understanding of underlying mathematical concepts;
- Teachers use precise questioning in class to test conceptual and procedural knowledge, and assess pupils regularly to identify those requiring intervention so that all pupils keep up.

The intention of these approaches is to provide all children with full access to the curriculum, enabling them to achieve confidence and competence – 'mastery' – in mathematics.



The Foundation Stage

In the Early Years Foundation Stage (EYFS), we relate the mathematical aspects of the children's work to the Development Matters statements and the Early Learning Goals (ELG), as set out in the EYFS profile document. Mathematics development involves providing children with opportunities to practise and improve their skills in counting numbers, calculating simple addition and subtraction problems, and to describe shapes, spaces, and measures. The profile for Mathematics areas of learning are Number (ELG 11) and shape, space and measures (ELG 12). We continually observe and assess children against these areas using their age-related objectives, and plan the next steps in their mathematical development through a topic-based curriculum.

- There are opportunities for children to encounter Maths throughout the EYFS (both inside and outside) – through both planned activities and self-selection of easily accessible quality maths resources
- Towards the end of Reception teachers aim to draw the elements of a daily mathematics lesson together so that by the time children move into Year 1 they are familiar with a structured lesson / activity.

Years 1 - 6

- Through Years 1 to 6 we use a coherent programme of high-quality materials and exercises, which are structured with great care to build deep conceptual knowledge alongside developing procedural fluency.
- Our learning uses a Concrete - Pictorial - Abstract model.
- Our KS1 and KS2 teachers use textbooks and workbooks from the 'Maths - No Problem!' series, which is based on the principles of how Mathematics is taught in Singapore and aligned with the National Curriculum 2014, to support their planning and delivery of Mathematics teaching.
- The 'Maths - No Problem!' textbooks and workbooks are arranged in chapters and, over the course of the academic year, all units of the National Curriculum 2014 are covered.
- The short term planning is done weekly, with teachers planning learning intentions, identifying possible misconceptions, key vocabulary, scaffolding and ways to challenge pupils.
- Through careful lesson planning, all children are on a learning journey together from a shared starting point through small coherent steps achievable by all.
- If the needs of the children are best met following an alternative plan, which deviates from the National Curriculum 2014, then the class teacher and the SENCO/Subject Leader discuss this and decide on a way forward.



A Typical Lesson – Maths – No Problem!

Lessons last approximately 1 hour and are taught daily.

Pupils start the lesson with an 'In Focus' problem, which they discuss in partners. This is a problem solving activity, which prompts discussion and reasoning. In Key Stage One, these problems are almost always presented with objects (concrete manipulatives) for children to use. Pupils also use manipulatives in Key Stage Two wherever appropriate. Teachers use careful questions to draw out pupils' discussions and their reasoning.

The class teacher then leads pupils through strategies for solving the problem, including those already discussed. At this part of the lesson, the children might need to write down their strategy in their "Maths Journal" or "whiteboard books". The class then try some questions in 'Guided Practice'. Carefully designed variation in these questions builds fluency and deep understanding.

When they are ready to apply their learning independently, the children answer questions in their own workbook. If some pupils are advanced in this area of mathematics and have completed the questions independently, they will be given extra tasks to consolidate and deepen their learning, which they will complete in their 'Maths Journal'.

For pupils who have not accessed a lesson, or may need preparation prior to a lesson, boosting sessions are built into the day either during assembly time or at times in the afternoon.

Resources

The use of Mathematics resources is integral to the Concrete – Pictorial – Abstract model and thus planned into our learning and teaching.

We have a wide variety of good quality equipment and resources, both tangible and ICT based, to support our learning and teaching.

These resources are used by our teachers and children in a number of ways including:

- Demonstrating or modelling an idea, an operation or method of calculation, e.g.: a number line; place value cards and discs; Base 10; money or coins; measuring equipment for capacity, mass and length; bead strings; the interactive whiteboards and related software; 2 and 3D shapes and/or nets; Numicon and related resources and software; multilink cubes; clocks; protractors; calculators; dice; number and fractions' fans; individual whiteboards and pens; amongst other things;
- Enabling children to use a calculation strategy or method that they couldn't do without help, by using any of the above or other resources as required.

Resources within individual classes are accessible to all pupils who should be encouraged to be responsible for their use.



Cross curricular

Opportunities are used to draw mathematical experiences out of a range of activities in other subjects, such as in PE, Science and Design and Technology, to enable children to apply and use Mathematics in both real life and academic contexts.

Pupil support and differentiation

Taking a mastery approach, differentiation occurs in the support and intervention provided to different pupils, not in the topics taught, particularly at earlier stages. The National Curriculum states:

'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.'

There is little differentiation in the content taught but the questioning and scaffolding individual pupils receive in class as they work through problems will differ, with rapid graspers challenged through more demanding problems which deepen their knowledge of the same content. Pupils' difficulties and misconceptions are identified through immediate formative assessment and addressed with rapid intervention – commonly through individual or small group support during assembly time or later the same day.

Parental Involvement

We encourage parents / carers to be involved by:

- Meeting with child's class teacher during the autumn and spring terms to discuss the progress of their child.
- Providing them with a yearly report about their child which includes attainment in mathematics.
- Adopting an open door policy for parents / carers to speak to their child's teacher at any point during the year, either informally or by making a specific appointment.
- Supporting with their child's homework.

Homework

In line with the homework policy, times tables are the main focus for mathematics home learning. In key assessment years, additional maths challenges and homework may be sent home to help prepare children for the upcoming assessments.

Subject Leader

The role of the Subject Leader involves supporting colleagues in the teaching of mathematics, being informed about current developments in the subject, and providing a strategic lead and direction for the subject in the school. Observation of



lessons, learning walks, scrutinies of planning and work will take place on a regular basis.

They will also, support the Headteacher and governors in the monitoring of the standards of children's work and quality of teaching in mathematics.

Monitoring progress

Children undertake formal baseline assessment at the beginning of their Reception Year.

At Delph Side, there are three 12 week assessment periods. At the end of each 12 week period, teachers use a combination of formal assessment and teacher assessment, in line with Lancashire KLIPs, to assess attainment and progress. The judgements are for each year group (1-6); Entering, Entering +, Developing, Developing +, Secure and Secure +

Following each assessment period, the SLT meet with class teachers to discuss progress, track children and target intervention where necessary.

During Reception Year assessments are made against the Early Learning Goals

At the end of Year 1 – Teacher Assessment KLIPs

At the end of Year 2 (SATs)

At the end of Year 3 – Teacher Assessment KLIPs

At the end of Year 4 – Teacher Assessment KLIPs

At the end of Year 5 – Teacher Assessment KLIPs

At the end of Year 6 (SATs)

**To inform teacher judgements, formal assessments are used throughout the year.*

The Governing Body

The Governing Body has responsibility for the school's range of policies. The Headteacher reports to the school governors about the curriculum and policies relating to each subject area, as well as policies relating to the wider school.

Equality Statement

At Delph Side Community Primary School, we seek actively to encourage equity and equality through our work. No gender, race, creed or ethnicity will be discriminated against. The school's Disability Equality Scheme will be followed and the use of stereotypes under any of the above headings will always be challenged.

Mathematics Policy

Autumn 2018



Mathematics Policy Review

Agreed: Autumn 2018

To be reviewed: Autumn 2020

Additional Related Documents:

- Calculations Policy
- Visual Representation Document
- Appendix 1: Guidelines for Pupils and Teachers
- Appendix 2: Mastery Approach Document for Visitors