



Ellwood Community Primary School

Mathematics Policy

Introduction

'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 in England 'Mathematics' programme of study (DfE Published 2013)

Intent

At Ellwood Community Primary School, we believe that a high-quality mathematics education, that is both challenging and enjoyable, provides a foundation for understanding the world, the ability to reason mathematically and a sense of curiosity about the subject. We aim to develop lively, enquiring minds, encouraging pupils to become self-motivated, confident and capable in order to solve problems that will become an integral part of their future. The children should become fully independent mathematicians who are not afraid to take risks.

We provide our children with a variety of mathematical opportunities, which will enable them to make the connections needed to apply their understanding of mathematics across the curriculum.

Aims

We aim to ensure that all pupils meet the requirement of the National Curriculum for mathematics by becoming **fluent** in the fundamentals of mathematics and able to **reason mathematically** and **solve problems** by applying their mathematics to a variety of routine and non-routine problems.

All pupils will be given equal access to mathematics activities and experiences regardless of the gender, race or disability.

We acknowledge that these activities will also contribute to children's personal, social, emotional and spiritual development.

Implementation

The EYFS

The programme of study for the Foundation stage is set out in the EYFS Framework. The document is available to download:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/974907/EYFS_framework_-_March_2021.pdf

Educational Programme:

‘Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organising counting - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, ‘have a go’, talk to adults and peers about what they notice and not be afraid to make mistakes.’

The ‘Early Learning Goals’ [ELGs] detail the expected level of development for children to meet at the end of the reception year:

ELG: Number

Children at the expected level of development will:

- 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.

ELG: Numerical Patterns

Children at the expected level of development will:

- 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.

Key Stage 1 and 2

The objectives of Mathematics teaching in the school are based on the requirements of the National Curriculum programmes of study for Key Stages 1 and 2. The document is available to download from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/335158/PRIMA_RY_national_curriculum_-_Mathematics_220714.pdf

The programmes of study are organised in a distinct sequence and structured into separate domains. Pupils should make connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Key Stage 1

The principal focus of mathematics teaching in Key Stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources (e.g. concrete objects and measuring tools). At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of Year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at Key Stage 1.

Lower Key Stage 2

The principal focus of mathematics teaching in lower Key Stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of Year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Upper Key Stage 2

The principal focus of mathematics teaching in upper Key Stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of Year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

Cross curricular

Throughout the whole curriculum, opportunities to extend and promote Mathematics should be sought. Nevertheless the prime focus should be on ensuring *mathematical progress* delivered discretely or otherwise.

Teaching and Learning Strategies

The curriculum is delivered by class teachers supported by Teaching Assistants. All work is differentiated in order to give appropriate levels of work. Planning is based upon the National Curriculum. Programmes of Study should inform medium term plans and subsequently weekly and daily planning. Class teachers are

responsible for the relevant provision of their own year groups and develop daily plans which give details of learning objectives and appropriate differentiated activities, adjusted to better suit the arising needs of a class and individual pupils.

A range of strategies and activities are used to support children's learning as listed below:

- Daily Maths lessons in discrete year groups, supported by Teaching Assistants.
- Fluency developed through practicing key skills, repeating, reinforcing and revising.
- Children use a range of manipulatives and move through concrete, pictorial and abstract stages.
- Children given time to practice and perfect their calculation strategies including giving pupils opportunity to make appropriate decisions when estimating, calculating and evaluating the effectiveness of their chosen methods.
- Children given opportunities to reason and solve problems regularly; learning is varied and allows for deep and secure understanding.
- Investigative tasks designed to allow pupils to follow lines of enquiry and develop their own ideas, justifying and proving their answers. Children work both collaboratively and independently solving problems, which require them to persevere and develop resilience.
- Feedback including our whole school 'next steps' system is designed to ensure pupils are well informed and making visible progress.
- Weekly practice of mental maths facts through Maths passports (Reception and Year 1) and Schofield and Sims Mental Maths practice books (Year 2 – 5).
- Class challenge giving regular practice of times tables, recorded on an interactive display.
- TT Rockstars used to support learning and assessing of times tables.
- Mathematical vocabulary is explicitly written in planning – this is discussed with children, who are encouraged to use it independently.
- Both greater depth and struggling learners are given small group, 1-2-1 and/or timetabled intervention in order to ensure every child is reaching their full mathematical potential.

Calculation Policy

The calculation policy is at appendix 1.

Equal opportunities

All children are provided with equal access to the Mathematics curriculum. We aim to provide suitable learning opportunities for all children regardless of ethnicity, culture, religion, home language, family background, learning difficulties, disabilities, gender or ability.

Marking and Presentation

Teachers are expected to adhere to the school's marking policy when marking books. Presentation should be in line with non-negotiables included at Appendix 2.

Assessment

In the EYFS children are assessed throughout the year using the Early Years Outcomes/Development Matters age bands. At the end of the year they are assessed using the Foundation Stage Profile, as

emerging, expected or exceeding in the Understanding the World Early Learning Goals. This information is reported to parents at the end of the Reception year.

In KS1 and KS2 assessment of children's progress is ongoing. Short term assessments are used to adjust daily plans and closely matched to learning objectives. Teachers also assess children against the National Curriculum and record progress on Insight Tracking. Children are tested using the national tests for children in Year 2 and Year 6, and optional tests for Years 1, 3, 4 and 5.

Homework

Homework will be set once a week. Children will have access to online homework using the learning platform My Maths, through which instant feedback is given to children, parents and teachers, or other work as set by the teacher. In addition, children will be expected to practise their times tables and number bonds for quick recall to aid them with their calculations.

Homework is used to support mathematics through tasks such as gathering information to use in lessons eg collect data or measurements; do an activity that makes use of the home context such as tipping out a purse and counting money in it, or weighing things on the kitchen or bathroom scales; think about how they might solve a problem; prepare their contribution to a group presentation to the class.

Resources

Children should have access to a range of resources and aids to support their learning in Maths. These should be readily available in class when required eg hundred squares, number lines, times tables grids, counters and dice. Resources which are not used or required regularly are stored centrally and accessed by teachers at the beginning of a topic.

Displays

All classrooms should have an interactive and effective Maths working wall including displays relating to current work and useful vocabulary. The content of the working wall should change regularly to support learning and teaching as it develops in the classroom. The ultimate aim is for children to access prior learning, make links to what they already know and apply this to future learning. A working wall enables children to refer to concepts and resources, supporting them to become more secure independent learners.

Excellence in mathematics should be celebrated in display including

- children's investigational work
- geometric and numerical patterns
- graphs and charts based on data handling
- linking mathematics to the wider curriculum

Role of the Co-ordinator

- Produce and update the Mathematics Policy
- Produce the Mathematics development plan with realistic and developmental targets
- Provide advice to teachers or seek information to help support with appropriate resources and approaches to assessment
- Renew, update and complement resources needed to deliver the curriculum, within budget restraints
- To attend relevant in-service courses and feedback to staff new information and ideas

- To monitor Teaching and Learning
- Build an assessment portfolio

Monitoring and Evaluation

The Maths Co-ordinator, alongside SMT, is responsible for monitoring and evaluating curriculum progress. This is done through book scrutiny, planning scrutiny, lesson observations, pupil conferencing, staff discussions and audit of resources.

Review

The Mathematics Policy will be reflected in our practice.
The policy will be reviewed in September 2023.