



Elmwood Infant School & Nursery

Mathematics Policy

DATE POLICY REVIEWED: March 2018

DATE OF NEXT REVIEW:

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.

The National Curriculum 2014. Mathematics Programme of study Key stage 1&2

The 2014 National Curriculum 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.

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.

School Aims

Our aims for the teaching and learning of mathematics are founded on a belief that ALL children will enjoy equality of access to the provision of a high quality curriculum that will:

- develop an inquiring and inquisitive mind;
- extend each child to his or her fullest potential, building on previous experiences and recognising individual capabilities;
- promote enjoyment and enthusiasm for learning through practical activities, exploration and discussion;

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- promote confidence and competence with numbers and the number system;
- develop the ability to solve problems through decision making and reasoning in a range of contexts;
- enable children to calculate accurately and efficiently, both mentally and with a pencil and paper, drawing on a range of calculation strategies and understanding of the required operations;
- develop a practical understanding of the ways in which information is gathered and presented;
- enable the exploration of the features of shape and space, and develop measuring skills in a range of contexts;
- provide opportunities to apply mathematical learning in everyday situations and enable children to use and apply their knowledge in the world outside;
- to support inclusion and ensure pupils make good progress by using data to pinpoint underachievement;
- ensure we attend to equality issues and take appropriate actions to promote race equality;
- develop teaching strategies that allow full access to the maths curriculum and the language of maths including the use of key visuals, appropriate vocabulary, clear modelling and collaborative group work.
- to ensure parental awareness/involvement in supporting maths
- to include ICT throughout the mathematics curriculum using the interactive whiteboard as an integral part of a mathematics session.

Entitlement, Inclusion, Ethnic Minority achievement and Equal opportunities

We are proud to be a Gold Level Rights Respecting School. The Award recognises our school's achievement in putting the United Nations Convention on the Rights of the Child into practice within the school and beyond. We have worked with Unicef to create a safe and inspiring place to learn, where children are respected, their talents are nurtured and they are able to thrive. Our Rights Respecting Schools Award embeds these values in daily school life and gives children the best chance to lead happy, healthy lives and to be responsible, active citizens.

We ensure that every pupil has the opportunity to experience success in learning and to achieve as high a standard as possible. Boys and girls from all ethnic groups are entitled to access the mathematics curriculum. We ensure we attend to equality issues and take appropriate opportunities to actively promote race equality. In line with the Equality Act

2010 we aim to adapt or modify our curriculum to ensure children with disabilities are not discriminated against.

At Elmwood Infant School the children self-select appropriate challenge from 'hot', 'boiling' and 'on fire'. Within each of the three tiers there are newly introduced graduations of complexity with 'lava' offering more complex challenge in each. The teachers effectively guide pupils to the correct challenge if required and provide effective marking a feedback to consolidate and develop the extension of the children's learning.

We use teaching assistants to support some children and ensure that work is matched to the needs of individuals. We ensure that the curriculum is culturally relevant wherever possible and provide positive images. We include strategies to support EAL children in our short and long term planning.

The use and application of Mathematics to investigate and solve problems is integrated with work on number, algebra, shape, space and handling data to help the children think mathematically. Cross-curricular links are made when appropriate.

Teaching and learning style and organisation

The school uses a variety of teaching and learning styles in mathematics lessons. Our principle aim is to develop children's knowledge, skills and understanding in mathematics. Pupils do this through a daily lesson that has a high proportion of whole class and group teaching. During these lessons we encourage children to ask as well as answer mathematical questions. In our day to day teaching we aim:

- to introduce a new topic with a real life problem;
- to use models and images;
- to undertake some whole class teaching including mental / oral starters;
- to promote speaking and listening;
- to enable children to appropriate practical work;
- to plan activities that help children consolidate prior learning and practice skills and routines;
- to problem solve;
- to undertake activities that help children commit to memory a range of mathematical facts that they can recall easily;
- activities that encourage investigation;
- different groupings - class work, collaborative group work, paired work or individual work.

Children have the opportunity to use a wide range of resources such as number lines, number squares, digit cards and small apparatus to support their work. Children use ICT in mathematics lessons where it will enhance their learning, as in modelling ideas and methods. Wherever possible we encourage the children to use and apply their learning in everyday situations.

In the foundation stage the provision and experiences are organised to promote the development of mathematical language and understanding through, for example, stories, songs, rhymes, finger games, sand and water, construction on a large and small scale, imaginative play, outdoor play and playground games, cooking and shopping, two and three dimensional creative work with a range of materials and by observing numbers and patterns in the environment and daily routines. It is expected that at the foundation stage children will receive some direct teaching and talk about mathematical ideas.

Apparatus

The use of practical apparatus to develop mathematical understanding is at the heart of mathematics teaching at Elmwood Infants.

Children should be allowed constant access to materials which will help them develop concepts and understanding of maths.

Teaching staff use Numicon philosophy, guidance and materials closely to match the ideals of the school.

Our school uses Numicon materials, guidance and apparatus, that should be used when appropriate to form the basis of certain lessons which teach place value, calculation and number patterns, in the early years and KS1.

The Foundation Stage

Children are taught all number and SSM objectives within the Statutory Framework for the early Years Foundation Stage. Children are then given opportunities to transfer adult taught skills during independent play throughout the classroom and outside area. This is supported by the three characteristics of effective learning: playing and exploring, active learning, creating and thinking critically.

Year One and Year Two plan from the 2014 curriculum.

Using and Applying

Using and Applying is the main focus for our school. To link with the Literacy framework we are incorporating **speaking and listening** into our short term planning in order to:

- Use and structure dialogue in the mathematics classroom (strengthen children's use of vocabulary and language skills and build opportunities for speaking and listening, dialogue and use of vocabulary, model how language is used.)
- Promote and use interactions with and between children (ask prompting, probing and promoting questions, promote peer group or paired activity, give sufficient response time).

Mathematics and other curriculum areas

English

The literacy teaching can support the daily mathematics teaching. For example, in Reception and Key Stage 1, stories, rhymes and songs can be chosen which rely on their appeal on the pleasure of counting, the sequencing of events, and the use of everyday words such as on, under and down to describe position and direction.

Science

Almost every scientific investigation or experiment is likely to require one or more of the mathematical skills of classifying, measuring, calculating, estimating, and recording in tables and graphs.

Art, design and technology

Art and design is a fun way to consolidate pattern, shape and spatial awareness. DT incorporates measuring and spatial awareness and when food is prepared a great deal of measurement occurs including, possibly, costing of ingredients.

ICT

Children will apply and use mathematics in a variety of ways when they solve problems using ICT. For example, they will collect and classify data, entering it into data handling software, produce graphs and tables, and interpret and explain their results. The interactive whiteboards has incorporated ICT throughout the mathematics lesson. Also the use of the laptops in classroom should ensure links with ICT.

History, geography and religious education.

In history and geography children will collect data by counting and measuring and make use of measurements of many kinds. The study of maps in KS1 includes the use of co-ordinates and ideas of angle, direction, position and possibly scale. The pattern of the days of the week, the calendar and recurring annual festivals all have mathematical basis. For the older children historical ideas require understanding of the passage of time, which can be illustrated on a time line, similar to the number line that they already know

Physical education and music.

Athletic activities may require measurement of height, distance and time, while ideas of counting, time, symmetry, movement, position and direction are used extensively in music, dance gymnastics and ball games,

Planning

Mathematics is a core subject in the National Curriculum, and we use the National Numeracy Strategy as the basis for implementing the statutory requirements of the programmes of study for mathematics

Our planning across KS1 is based upon the 2014 curriculum. In key Stage One the year groups have yearly over views which show our coverage of the curriculum through each term. Year groups complete the weekly plans for the teaching of mathematics in KS1. These weekly plans list the specific learning objectives for each lesson and give details of how the lessons are to be taught. Teachers annotate their planning to reflect the needs of their class. All teachers evaluate their lesson objectives in order to inform future planning. The Head Teacher, deputy and subject leader regularly monitor plans.

Assessment

In KS1 we assess daily by annotating children's books during the lessons and next steps are provided in line with our marking policy. In the foundation stage the assessments are completed on labels which form their Learning Journey.

The children's progress is tracked across the schools own assessment sheets after each area is taught. Half termly checks are also completed and reported on O'track. We make long term projections with the help of the end-of-year tests and teacher assessments to aid the next teacher.

Assessments are analysed by class teachers to identify any underachieving children or groups with their class and by the SLT to identify underperforming or potentially underperforming groups across the year group. Individuals or groups are identified and strategies are then put in place to support their progress, either through focussed TA support or support materials offered in their independent work.

Children's recording of work

At Elmwood Infants we place great emphasis on our teaching of mathematics, the importance of discussion and the development of thinking and reasoning skills. Children are actively encouraged to use pictures, diagrams and written methods to support their work. Great importance is given to collaborative work and talk partners.

In the foundation stage, the emphasis is on practical learning and emergent recording. The children work towards recognising and reading numbers, and the correct formation of numbers. At this stage the teacher may model simple calculations. The emphasis is for children to recognise patterns in numbers and be confident in talking about larger numbers and their relationships with the need to count, order and problem solve.

Resources

Each classroom is equipped with the equipment to teach mathematics, these include, number lines, numicon, hundred squares, dice counters etc.

Interventions

The five minute box is incorporated into the day from targeted work by the TA's with specific children. The Five Minute Box was designed within school settings to fulfil several purposes:

- To provide an easy to manage teaching system for any child who needed extra time to learn or to consolidate basic skills, managed by a Teaching Assistant for a few minutes a day.
- To ensure that any child who may turn out to be dyscalculia has had multi-sensory teaching for 2 years rather than waiting to be diagnosed at the age of 7 and then having to start from the beginning again.
- Most importantly, it is a system that children engage in with the utmost enthusiasm, taking ownership of their learning and progressing from the very first time they open the Box

Maths booster groups are available for year two children. They run in the mornings before school once a week.

School/home links

Homework will focus on the practice and recall of specific facts or the consolidation of work completed during the week. KS1 also have a maths game scheme where children take a maths game home every week and parents are asked to comment on their experiences.

Reporting

Reporting to parents and carers is carried out through the regular parent/teacher consultation meetings and annually through the written report. Parent/carers are informed of the children's achievements and curriculum targets on these evenings. There are also informed through the curriculum newsletter half-termly.

Monitoring and Evaluation

The purpose of monitoring and evaluation activities is to raise the overall quality of teaching and the levels of children's attainment. Regular monitoring by the head teacher and maths coordinator ensure that the standards of teaching mathematics at Elmwood are high. Monitoring will include:

- Scrutiny of planning;
- Quality of teaching through lesson observation and feedback;
- Moderation of standards in children's work;
- Evaluation of children's attainment against targets;

The Role of the Co-ordinator

The role of the mathematics coordinator is to:

- Ensure teachers are familiar with the Framework and to continue the successful implementation.
- Support colleagues in the development of weekly plans

- Lead by example in the way they teach in their own classrooms
- Improve teaching through shared or demonstration lessons
- Support the head teacher to assess, evaluate and monitor the mathematics curriculum through classroom observation, reviewing assessment data and speaking to colleagues and children.
- Support the head teacher in the target setting process
- Formulate and monitor the mathematics policy
- Ensure that there are sufficient mathematical resources.

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