Elburton Primary School

Maths Policy

February 2020	Policy Agreed
February 2022	Policy Review Date
June 2022	Policy Amended
September 2022	Policy Agreed
July 2024	Policy Review Date
Date	**Description**

Intent

The 2014 National Curriculum for Maths aims to ensure that all children:

- Become fluent in the fundamentals of Mathematics
- Are able to reason mathematically
- Can solve problems by applying their Mathematics

At Elburton Primary School, these skills are embedded within Maths lessons as well as through continuous provision of some objectives which has replaced the explicit teaching of these objectives within our programmes of study. Knowledge, skills and understanding are developed consistently over time.

We are committed to ensuring that children are able to recognise the importance of Maths in the world around them in order to build their own cultural capital through enrichment activities, learning about Maths within the wider world as well as within daily Maths lessons. It is essential they are able to use their mathematical skills and knowledge confidently in their lives in a range of different contexts.

We want all children to enjoy Mathematics and to experience success in the subject, with the ability to reason mathematically. We are therefore committed to developing children's curiosity about the subject, as well as an appreciation of the beauty and power of Mathematics in the wider world.

Implementation

The curriculum design underpinning the 2014 Mathematics curriculum and the Maths curriculum at Elburton Primary School reflect those found in the pedagogic thinking of high-performing education systems internationally, particularly those of east and south-east Asian countries such as Singapore, Japan, South Korea and China.

The following principles and features characterise this approach and convey how our curriculum is implemented at Elburton Primary School:

- Teachers reinforce an expectation that all children are capable of achieving high standards in Mathematics thus instilling a growth mindset towards the subject. Resilience being one of Elburton's School drivers therefore resonates clearly with this subject.
- The large majority of children progress through the curriculum content at the same pace. Differentiation is achieved by developing greater depth knowledge and through individual support and intervention where deemed appropriate. The delivery of 'Keep up not catch up' and an ethos of 'No child left behind' sessions are instrumental to how children are continually provided with support throughout their mathematical learning. Pre-teaching and post-teaching sessions are also held and children assess (age appropriately) the level of success they have had within a lesson. This feeds into our provision for support after and before a lesson.
- Teaching is underpinned by a methodical spiral curriculum design and supported by carefully crafted lessons and resources to foster conceptual and procedural knowledge. Objectives, although taught in blocks, are revisited and interleaved throughout a carefully structured progression of objectives which Elburton have adapted to suit their needs.
- To ensure whole school consistency and progression, the school uses the White Rose Maths Schemes of work and the school's engagement with the DFE funded Maths Hubs programme continues to ensure that staff at all levels understand the pedagogy of the mastery approach to Maths. To ensure we best fit children's needs, Elburton are also utilising the resources and materials provided by the NCETM with their Curriculum Prioritisation. This provides us with a more coherent curriculum which is adaptable to the schools and children's needs. Mathematical topics are taught in blocks, to enable the achievement of 'mastery' over time.

Each lesson phase provides the means to achieve greater depth, with more-able children being offered rich and sophisticated problems, as well as exploratory, investigative tasks, within the lesson as appropriate.

- Children work with their learning partners to support their reasoning and new concepts are delivered through a series of CPA – Concrete, Pictorial and Abstract methods which relate closely to our Maths Calculation Policy. In KS1, principles are almost always presented with objects (concrete manipulatives) for children to use. Children will also use manipulatives in KS2. Teachers use careful questions to draw out discussion and reasoning. The class teacher then leads children through strategies for solving the problem using carefully scaffolded and modelled sequences using the Rosenshine principles for teaching.
- Practice and consolidation play a central role in our children's learning. Carefully designed variation within this builds fluency and understanding of underlying mathematical concepts. Our teachers represent the concepts being taught often in more than one way in order to draw attention to critical aspects, and to develop deep and holistic understanding.
- Teachers use precise questioning in class to test conceptual and procedural knowledge and assess children informally on a regular basis as well as termly to identify those requiring intervention, so that all children 'Keep up not catch up'.
- Maths is linked to relatable real-life contexts which also link to other areas of learning in order to build children's cultural capital. Independent work provides the means for all children to develop their fluency further, before progressing to more complex related problems.

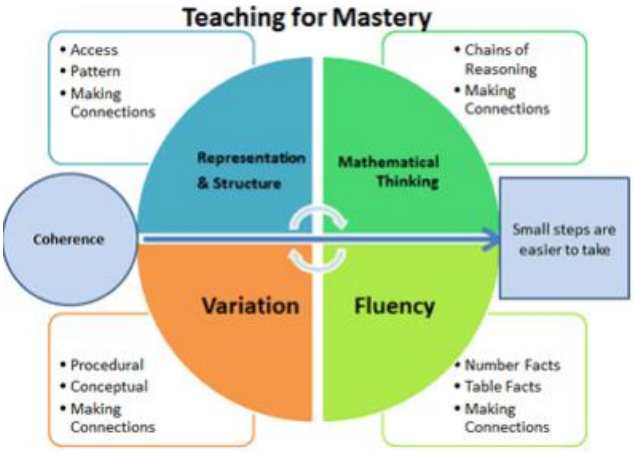
Impact

The school has a supportive ethos and our approaches support the children in developing their collaborative and independent skills, as well as empathy and the need to recognise the achievement of others. Students can underperform in Mathematics because they think they can't do it or are not naturally good at it. White Rose, alongside other resources, help to address these preconceptions by ensuring that all children experience challenge and success in Mathematics by developing a growth mindset.

Regular and ongoing assessment from White Rose assessments, NFER assessments as well as teacher formative and summative assessment as an ongoing tool, informs teaching across the year. We target intervention as a result of these assessments to support and enable the success of each child through the programmes of Maths Plus 1 and Power of 2. These factors ensure that we are able to maintain high standards, with achievement at the end of Key Stage 1 and Key stage 2 above the national average and we strive to ensure a high percentage of children demonstrating greater depth, at the end of each key stage.

Teaching and Learning

Effective teaching for mastery is underpinned by five big ideas, first published by the National Centre for Excellence (NCETM) in mathematics in 2017.



A typical Maths lesson will last approximately 45 minutes to 1 hour. Maths is taught daily. Early Morning Work is provided for children three times a week for most year groups. This can take the form of recap work from the previous, day, week, month or term as well as arithmetic of key skills such as number bonds, times tables or the formal written methods.

Key Stage 1 lessons may take the form of a two-part session whereby other number skills are taught separate to the main lesson as a result of the school's involvement in the Mastering Number programme funded by the NCETM and Maths Hubs.

Lessons will begin with activities which support fluency and automaticity in and recall of number facts. Following this, the lesson will move onto a concept/objective being taught (generally within a context). Children will learn to master the concept individually and with their learning partner using a range of cognitive processes. The promotion of discussion ensures that mathematical ideas are introduced in a logical way to support conceptual understanding.

In KS1, problems are almost always presented using concrete or pictorial representations. Children may also use manipulatives in KS2. Teachers use careful questioning skills to draw out children's discussions and their reasoning and the children learn from misconceptions through whole class reasoning. The teacher uses this part of the lesson to address any initial errors or misconceptions and confirm the different methods and strategies that can be used.

Following this, children may be presented with varied similar problems which they might discuss with a partner or within a small group – 'Your Turn'. At this point, scaffolding is carefully reduced to prepare children for independent practice. Children may record their thinking on whiteboards and/or maths quick work books. Maths Working Walls in all classes has enabled ongoing learning to be displayed in order to remind children of key aspects of their learning within a block of work.

Within all lessons, there will be elements of 'challenge' which promotes a greater depth of thinking. Children will generally move to an independent aspect of the lesson. This practice uses conceptual and procedural variation to build fluency and develop greater understanding of underlying mathematical concepts as well as reasoning and problem solving skills to develop a greater level of depth. Children can be provided with further 'Deeper Thinking' tasks to complete in their own maths book to demonstrate mastery of an objective.

Assessment

Assessment for Learning: Children receive effective feedback through teacher assessment, both orally and through written feedback in line with the school marking policy. AfL is integral to the design of each lesson.

The structure of the teaching sequence, ensures that children know how to be successful in their independent work. Guided practice can also provide further preparation for children to be able to apply the skills, knowledge and strategies taught.

Common misconceptions are addressed within the teaching sequence and key understanding within each 'small step' is reviewed and checked by the teacher and adults within the class through 'live' marking which helps to address misconceptions and areas for 'keep up' sessions (pre and post teaching) before progression to further depth.

At the end of the lesson, the children may review their work. Self and peer assessment are used by the school's 'Marking and Feedback Policy' or it will be marked by an adult with misconceptions addressed, deeper thinking tasks given (if appropriate) or checked for understanding. Not all work will include a deeper thinking task. Children, in Key Stage 2, are also encouraged to assess their own understanding and level of need. This is then addressed by the adults within the class on a timely basis. Opportunities for additional practice, ('keep up' sessions) as well as responding to marking sessions are provided by the teacher, as appropriate, with a focus on promoting and achieving a growth mindset within the subject and an ethos of 'It is alright to be wrong' is a key mantra for children and teachers when learning Mathematical content.

Formative Assessment: Short term assessment is a feature of each lesson. Observations and careful questioning enable teachers to adjust lessons and brief other adults in the class. The lesson structure is designed to support this process and during, as well as, at the end of each lesson misconceptions can be addressed.

At the end of each blocked unit of work, the children may complete the aligned White Rose Maths 'End of Block Assessment'. The outcome of this is used by the teacher to ensure that any identified gaps in understanding can be addressed. This informs dialogue with parents and carers during parent's evenings, as well as the judgements made at the end of the term as to the extent that each child has demonstrated mastery of each objective.

Summative Assessment: Teachers administer a termly NFER Maths Test which is in line with other members of the Multi-Academy Trust (Horizon MAT). This consists of an arithmetic paper and reasoning and problem-solving paper which links to the coverage for that term as well as aspects of the curriculum still to be taught and previous learning. The results of these papers are used to identify children's ongoing target areas, which are communicated to the children, as well as to parents and carers at Parents Evening. They are also used alongside the end of unit assessments and outcomes of work, to inform the whole school tracking of attainment and progress for each child in line with each objective.

Assessment data in Maths is reviewed throughout the year as an ongoing teacher assessment tool as well as at termly Pupil Progress Meetings where key children are discussed and provision is discussed to support their learning further. These meetings and assessments help to inform interventions and ensure that provision remains well-informed to enable optimum progress and achievement.

End of year data is used to measure the extent to which attainment gaps for individuals and identified groups of learners are being closed. This data is used to inform whole school and subject development priorities for the next school year.

Planning and Resources

The use of Mathematics resources is integral to the concrete – pictorial – abstract approach and thus planned into teaching and learning. The school has a variety of good quality equipment and resources to support our learning and teaching.

Resources include: number lines; place value cards; hundred squares; dienes; place value grids; money or coins; measuring equipment for capacity, mass and length; bead strings; the interactive whiteboards and related software; 3D shapes and/or nets; Numicon; multilink cubes; clocks; protractors; dice; number and fractions' fans; individual whiteboards and pens; Quick Work books and 2D shapes and pattern blocks, amongst other things.

Each classroom has its own supply of mathematical equipment and all children should be encouraged to be responsible for their use. Targeted children will be given a Maths 'First Aid Kit' of resources to support their learning.

Organisation

The school has implemented a blocked curriculum approach to the teaching of Mathematics. This ensures that children are able to focus for longer on each specific area of Maths and develop a more secure understanding over time. This approach is also designed to enable children to progress to a greater depth of understanding. Subsequent blocks continue to consolidate previous learning so that the children continually practise key skills and are able to recognise how different aspects of Maths are linked. For example, when children have completed a block which has enabled them to master the multiplication of two-digit numbers, a subsequent block on area and shape might provide opportunities to use this understanding when calculating the area of shapes with 2-digit length and width dimensions. Interleaving the Maths curriculum enables us to ensure fluency and reasoning are taught fully and learning is maximised.

There is a clear progression provided within the Medium Term Plans and progression maps which enable objectives from the National Curriculum to be covered in a timely manner. Teachers are responsible for the adaptation of this pathway and will pass information onto the subject lead as well as the next year group relating to gaps in knowledge or objectives not fully covered.

We also teach, in some year groups, discrete arithmetic sessions on a weekly basis as well as follow a progressive schedule in Key Stage 2 for teaching the times tables in preparation for the Multiplication Checks and to ensure all our learners are equipped with these vital fluency skills. Our key interactive tool for this is the use of 'Times Tables Rockstars'. In Key Stage 1, we use an interactive tool entitled 'Numbots' to enable the constant practice and repetition of key addition and subtraction skills.

EYFS

EYFS children have a short daily Maths teaching session, during which time they begin to develop their understanding of simple mathematical concepts such as subitising, counting to 20, maintaining 1 to 1 correspondence, simple addition and subtraction facts, to recognise and describe simple 2d and 3d shapes. The six main elements of the EYFS curriculum are as follows:

- Cardinality and Counting
- Comparison
- Composition
- Pattern
- Shape and Space
- Measures
-

Children are taught these concepts using physical resources, pictorial resources, songs, games and role-play whilst still following the White Rose blocks of progression as well as the Mastering Number programme.

The structure to an EYFS lesson enables teachers to secure a good balance between whole class work, group teaching and individual practice. It supports assessment on a daily basis, as well as individual feedback to children, ensuring that children receive immediate intervention as required during the supported focus activity which has been planned.

In EYFS, the independent activities in the Maths area links to the focus for the week. For example, if the focus for the week is addition, then activities on the Maths will often link to this. In addition to these planned independent activities, children also have the opportunity to self-select Maths resources to consolidate their learning during child-initiated activities. We recognise the importance of play-based learning and therefore encourage children to develop their understanding during their play. Such opportunities are provided in both the inside and outside environment.

EYFS at Elburton Primary School use 'Tapestry' as their daily tool for ongoing assessment of children's achievements and targets.

Equal Opportunities

The school is committed to ensuring the active participation and progress of all children in their learning. All children will be given equal opportunities to achieve their best possible standard, whatever their current attainment and irrespective of gender, ethnic, social or cultural background, home language or any other aspect that could affect their participation or the progress of which they are capable.

Inclusion

Differentiation occurs in the support and intervention provided to different children, not in the topics taught, particularly at earlier stages.

The National Curriculum states: 'Children 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.'

Differentiation of the content taught is kept to a minimum in most instances but the questioning and scaffolding individual children receive in class as they work through problems will differ, with higher

attainers challenged through more demanding 'Greater Depth' problems, which deepen their knowledge of the same content before acceleration onto new content.

Children's difficulties and misconceptions are identified through immediate formative assessment and addressed with rapid intervention – commonly through individual or small group support later the same day.

The expectation is that the majority of children will move through the programmes of study at broadly the same pace, if a child's needs are best met by following an alternative plan, including coverage of the content from a previous year, this will be overseen by the SENDCo, in collaboration with the class teacher and with the knowledge of SLT. Specific arrangements for the provision of children with SEND will be communicated to parents and carers during SEND and Individual Education Plan reviews.

Role of the Subject Leader

The subject leader will raise the profile of Maths at Elburton Primary School through best practice. They will offer model lessons, as appropriate, to new staff, NQTs and peers to support continued professional development.

They will provide INSET to allow all staff to be fully up-to-date with key Mathematical thinking. They will facilitate the use of Maths Working Walls to ensure key learning is being kept fresh in children's minds so they can refer to it during the block of work as necessary.

They will also ensure Maths displays around the school are prominent and raise the profile of Maths around the school. There are termly 'Battle of the Bands' for Times Tables and Key Stage 1 challenges for Numbots.

The school shall participate in Maths Weeks across the United Kingdom and the subject leader will ensure children have the opportunity to participate in Maths in the wider academic vicinity.

The subject leader will monitor progression and continuity of Maths throughout the school through Maths Learning Walks, book scrutiny, gaining pupil voice, coaching sessions and discussions on a termly basis.

The subject leader will ensure that all staff have access to year group plans, progression maps and overviews of Medium Term plans and the relevant resources which accompany them.

The subject leader will monitor children's progress through the analysis of whole school data. They will use this data to inform the subject development plan which will detail how standards in the subject are to be maintained and developed further.

The subject leader will, on a regular basis, organise, audit and purchase central and class-based Maths resources.

The subject leader will develop opportunities for parents/carers to become more involved in Maths education.

The subject leader will ensure that all staff have access to professional development including observations of outstanding practice in the subject, when available. This may come in the form of information and guidance from the local Maths Hub.

Parents

Parents and carers have an extremely valuable role to play in supporting their child's mathematical learning.

An overview of the Maths curriculum is available on the school's website, as well as guidance in the progression in calculation methods used by the school via the Calculation Policy.

Children are given Maths home learning on a regular basis from EYFS to Year 6.

Parents are informed of their child's progress at Parents Evenings and this is also communicated in written school reports.

Parents and carers are encouraged to speak to their child's teacher at any point during the year, either informally or by making a specific appointment.

Information about their child's standards, achievements and future targets in Maths is shared during parent/carer meetings, as well as ways that parents/carers may be able to assist with their child's learning.