Loving, living and learning
in the light of Christ

'Let your light shine before others, that they may see your good deeds and glorify your Father in heaven.'
Matthew 5:16

Ellel St. John's C.E. Primary School

Maths Policy

The answer is only the beginning.

Date formally approved by Governors:		
Date policy became effective:	January 2022	**Reviewed:** September 2022 **Reviewed:** Autumn 2023 **Review date:** Autumn 2024
Person(s) responsible for implementation & monitoring	Maths Lead: Sarah Massey Headteacher: Jo FitzGerald	

Vision Statement

At Ellel St John's C.E. Primary, we endeavour to develop in our children a healthy, enthusiastic attitude to mathematics that will stay with them for life.

By encouraging a growth mind-set, we aim to produce mathematicians that have the confidence to: have a go, be curious, discuss, question, suggest, create, persevere, reason and explain. We aim to make Maths lessons challenging, fun, and active and a positive experience for all learners.

Our children develop transferable mathematical skills; logical and creative number fluency; the ability to reason and solve problems, and the necessary vocabulary to express themselves clearly.

Through this they will have a solid foundation in mathematics which will equip them for their future learning and for real life.

'The answer is only the beginning.'

Pupil Voice showing what they would like Maths lessons to be like in our school -collated September 2020

Parent Voice showing what they would like Maths to be for their child – collated May 2020

Introduction

This policy has been developed to ensure that the teaching of Mathematics contributes to the fulfilment of the school's mission:

Loving, Living and Learning in the light of Christ.

It should be read in conjunction with the following school policies:

- Calculation Policy
- Progression toward Mental Calculation Strategies Policy
- Assessment and Feedback Policy
- SEND Policy

'Mathematics is a creative and highly interconnected 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 mathematical education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the power and beauty of mathematics, and a sense of enjoyment and curiosity about the subject.' (DfE 2013)

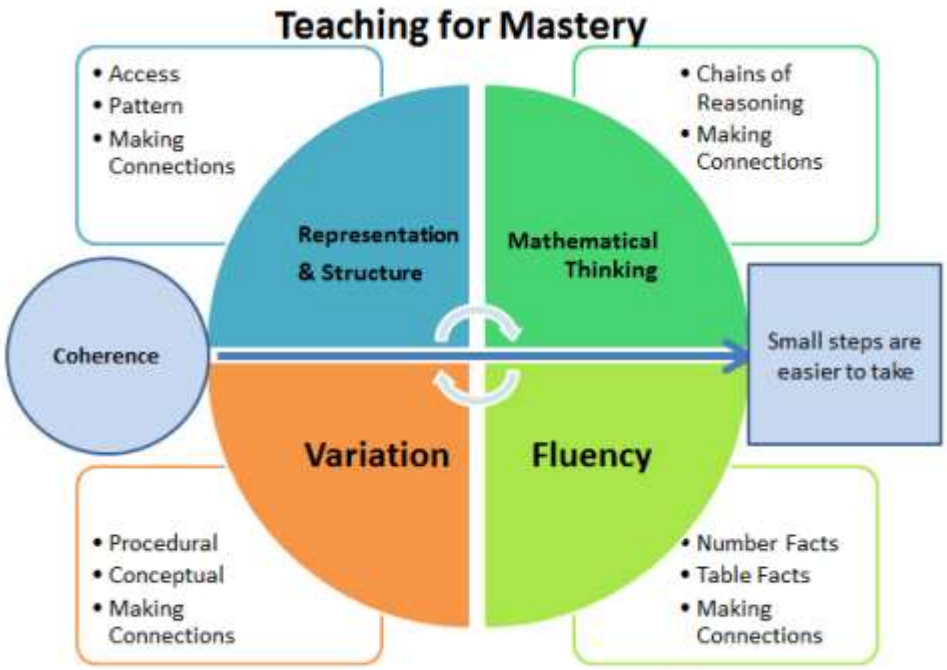
As can be seen from the above introduction, mathematics pervades all aspects of our lives and helps us to make sense of our world. With this in mind this policy promotes the basic and wider understanding of mathematics, and hopes to instil an enjoyment in the subject by supporting children to engage with it and build upon their own understanding and promote further learning. Learning skills are an important aspect of mathematics but such skills are only a means to an end, and should be taught and learned in a context that provides purpose and meaning.

Approach

The programmes of study set out within each domain in the National Curriculum will be used to ensure children get the learning experiences that are required.

The CPA approach: concrete, pictorial, abstract is used so that children gain a full understanding of the Mathematics they are exploring. This encourages them to present their findings not just in written form but also visually and verbally.

Teaching Staff at Ellel St John's C.E. Primary attend meetings that regularly have a Maths input, which allow for professional discussions to take place to continue to improve and strive towards best practice.



The Maths Lead is currently attending an NCETM Mastery Embedding Course to ensure all staff are being kept up to date with developments in teaching for mastery and to maintain a whole school approach to teaching mastery in mathematics.

Through this we are developing and further embedding our teaching for mastery, underpinned by the NCETM's 5 Big Ideas.

Opportunities for Mathematical Thinking allow children to make chains of reasoning connected with the other areas of their mathematics. A focus on Representation and Structure ensures concepts are explored using concrete, pictorial and abstract representations, the children actively look for patterns as well as specialise and generalise whilst problem solving. Coherence is achieved through the planning of small connected steps to link every question and lesson within a topic. Teachers use both procedural and conceptual Variation within their lessons and there remains an emphasis on Fluency with a relentless focus on number and times table facts.

6 Teaching Principles of High-Quality Teaching and Learning in Mathematics

- Teachers believe in the importance of mathematics and that the vast majority of children can succeed in learning mathematics in line with national expectations.
- The whole class is taught mathematics together. We do not group children by ability. The learning needs of individuals are addressed through careful scaffolding, questioning and appropriate rapid intervention where necessary, to provide the appropriate support and challenge.
- The reasoning behind mathematical processes is emphasized. Teacher/pupil interaction explores how answers were obtained as well as why the method worked and what might be the most efficient strategy.
- Precise mathematical language, often couched in full sentences, is used by teachers so that mathematical ideas are conveyed with clarity and precision. We value 'mathematical talk' and children get lots of opportunity to talk about and evaluate their mathematics during lessons.
- Conceptual variation and procedural variation are used extensively throughout teaching. This helps to present the mathematics in ways that promote deep, sustainable learning.

A. Conceptual variation is where the concept is varied and there is intelligent practice. Positive variation is showing what the concept is, and negative variation is showing what the concept isn't. This clears away misconceptions at the very start. Within positive variation, both standard and nonstandard representations are shown.

B. Procedural variation is where different procedures and/or representations are used to bring about understanding. For example, teachers may collect several solutions for a problem (some right, some wrong) before guiding the class towards the most efficient method. It also involves highlighting the essential features of a concept or idea through varying the non-essential features. Variation is not the same as variety – careful attention needs to be paid to what aspects are being varied (and what is not being varied) and for what purpose.

- Sufficient time is spent on key concepts to ensure learning is well developed and deeply embedded before moving on. Teacher's use their professional judgement as to how long to spend on a particular concept within the Lancashire Planning Documents to allow for the necessary understanding.

8 Classroom Norms to Establish

1. Everyone can learn mathematics to the highest levels.

2. If you 'can't do it', you 'can't do it yet'.

3. Mistakes are valuable.

4. Questions are important.

5. Mathematics is about creativity and problem solving.

6. Mathematics is about making connections and communicating what we think.

7. Depth is much more important than speed.

8. Maths lessons are about learning, not performing.

Assessment

See Assessment Policy and Feedback and Marking Policy

What Mathematics looks like at Ellel St John's C.E. Primary School…

What a Maths lesson looks like in our school:

• Flexible groupings / seating which allows children to work with different people over the course of time

• Lots of talk—Reasoning/Mathematical Inquiry/Maths Talk/Use Mathematical Vocabulary

• Problem solving throughout – puzzles/investigations/misconceptions/corrections and mistakes

• Mini plenaries to share misconceptions, pose questions, challenge ideas

• Free access to manipulatives/concrete resources

• Feedback given to pupils at point of need, usually within the lesson – allowing teacher to adapt/extend/challenge or support immediately;

• Children freely accessing work/tasks that challenges their thoughts and ideas – free movement between tasks to ensure challenge is sustained throughout all year groups.

This is our philosophy:

• All pupils can succeed
• All children will be challenged
• Mastery
• CPA approach
• Problem solving & reasoning at the heart of everything
• Cross-curricular links wherever possible – these are indicated on class topic webs.

This is how it works:

• Focus on mathematical language-key vocabulary displayed for children to see/teacher models use of key vocabulary/methods/strategies and pupils encouraged to use throughout lessons.
We do this by having a slide at the start of each lesson that displays the Knowledge and Skills being taught and used in the lesson and also a section for Key Vocabulary so children and teachers are using the current language in class.
• Many opportunities to talk mathematically
• Prove It! Convince me!
• Children given time they need –may return to a task in following lesson – not 'compartmentalised' sessions but 'fluid'

This is what we do:

- Planning is carried out using the 'spiral' Lancashire Mathematics Curriculum alongside the LAPS documents for each year group and delivered using a mastery approach.

Learning and Progression Steps (LAPS)

The Learning and Progression Steps are designed to scaffold the learning required in order to meet the expectations of the National Curriculum.

Statements in the Lancashire Key Learning for Mathematics document have been broken down into smaller steps to support teachers in planning appropriate learning opportunities.
These key pieces of learning will support pupils in becoming fluent in the knowledge and skills of the curriculum and ensure that the learning is effective and sustained.

- Positive use of mistakes/misconceptions- learning environment
- Regular book scrutiny, (we call these Book Explorations so the children and staff know we are exploring the learning and we do this with the children being present so we can explore specific comments, questions, feedback or sticky knowledge), learning walks, planning audits, pupil voice
- Whole school CPD – dissemination from Maths Readiness Course, Maths Coordinator CPD and current developments in Mathematical teaching
- Raised profile of Mathematics- Primary Maths Challenge, Maths Quiz, whole school celebration via class certificates, Mathletics display board.
- Parental involvement - Parent Voice through maths survey, Parent Workshops KS1/KS2 Y2/Y6

This is what you might typically see:

• Open ended investigations- low threshold/high ceiling tasks
• Problems/puzzles/investigations
• Different representations of mathematical concepts
• Individual/paired/group work
• Active maths where children move around the room
• Engagement and perseverance
• Children challenging themselves
• Children talking about, sharing and reflecting on their learning

This is what differentiation looks like:

• Effective and well-thought out use of concrete resources
• Probing questions to support struggling learners
• Learners show more than one way of representing their ideas
• Well-thought out learning environment, including placement of learners

This is how we know how well our pupils are doing:

• Tracking
• Pupil progress meetings
• Teacher assessment – Use of KLIPS (Lancashire Mathematics Team) at the end of each term to inform teacher assessment.

Key Learning Indicators of Performance (KLIPs)

The KLIPs, or Key Learning Indicators of Performance, have been developed from Lancashire's National Curriculum Support Materials which detail the key learning in mathematics for each year group. The KLIPs approach is intended to be used for periodic assessment, in other words 'stepping back', perhaps termly, and asking the question 'How is this pupil performing in mathematics?'

These key learning grids can be used to provide:

- detailed assessment information for the teacher to use to inform their future planning of next steps (formative);
- overall judgements which can be made more summatively (for example once a term), to enable senior leadership teams to track progress across the school, during the year. This will assist schools with self-evaluation and in informing discussions with others e.g. inspection teams, about attainment and progress;
- a means of informing parents about attainment and progress.

The underlined statements on the grids have been identified as Key Learning Indicators of Performance (KLIPs) as these have the greatest impact on the further development of skills and subsequent learning. Consequently, the Key Learning Indicators of Performance (KLIPs) play a particularly significant role in the assessment process.

• Marking and feedback – Live Marking – misconceptions/corrections and teaching completed during the lesson so progress is sustained.
• Photo evidence of practical maths – annotated either by child (KS2) or teacher (KS1) so that the journey of learning is clear including mistakes/misconceptions (a photo can tell you nothing or be very misleading).
Targeted use of TAs- TA's noting and recording observations of individual children.

This is the impact of the teaching:

- Confident children who can talk about maths
- Have a depth of understanding/application in different contexts
- Quickly recall facts and procedures.
- Have the flexibility and fluidity to move between different contexts and representations of mathematics.
- Have the ability to recognise relationships and make connections in mathematics.
- Master mathematical skills or concepts by demonstrating they can show it in multiple ways, using the mathematical vocabulary to explain their ideas, and can independently apply the concept to new problems in unfamiliar situations.

This is how we use intervention:

• Targeted intervention for children identified through monitoring by TA/Teacher/SENDCO
• Rapid Intervention during the lesson by Teacher/TA/High Achiever pupil to ensure learning does not stop and method/strategies discussed to enable progress by struggling pupil
• Intervention sessions during assembly and outside of the maths lesson.

This is how we challenge the higher attainers /rapid graspers:

• Problem solving/puzzles/investigations that promote perseverance and Growth Mindset in different contexts
• Further reasoning and justification – Prove it/Convince Me
• Generalising and testing rules

Role of the Maths Subject Leader

- To lead in the development of maths throughout the school.
- To monitor the planning, teaching and learning of mathematics throughout the school.
- To help raise standards in maths.
- To provide teachers with support in the teaching of mathematics.

- To provide staff with CPD opportunities in relation to maths within the confines of the budget and the School Improvement Plan
- To monitor and maintain high quality resources.
- To keep up to date with new developments in the area of mathematics