St Loys Primary Academy

Mathematics Policy

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Introduction

This policy document should be read in conjunction with the following school policies:

- Calculation Policy
- Homework Policy
- SEN Policy

The policy is underpinned by the school's core values:

Respect – Trust – Love – Community – Joy – Wisdom

The purpose of this policy statement is to:

- Ensure a shared outlook and mastery approach to the teaching of Mathematics.
- Aid consistency, coherence and continuity in the teaching and learning of Mathematics throughout our school
- Enable new members of staff to have easy access to and understanding of our approach to the teaching of Mathematics
- Fulfil National Statutory requirements

Mathematics teaches us how to make sense of the world around us through developing a child's ability to calculate, to reason and to solve problems. It enables children to understand and appreciate relationships and patterns in both number and space in their everyday lives. Through their growing knowledge and understanding children learn to appreciate the contributions made by many cultures to the development and application of mathematics.

Introduction

Since September 2017, St Loys Primary Academy has been developing the way we teach Mathematics towards a mastery approach. This has been a gradual process undertaken amidst changes to staffing and leadership structure. We are continuing to develop this approach across our Academy. The rationale behind changing the approach to teaching mathematics lies within, for example, the research of Guskey (2009) and Skemp (1976), the Mathematics Specialist Teacher Programme, the NCETM/Maths Hub led Mastery Specialist Programme, as well as the 2014 National Curriculum, which states:

The expectation is that most pupils will move through the programmes of study at broadly the same pace.

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.

In addition to this…

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.

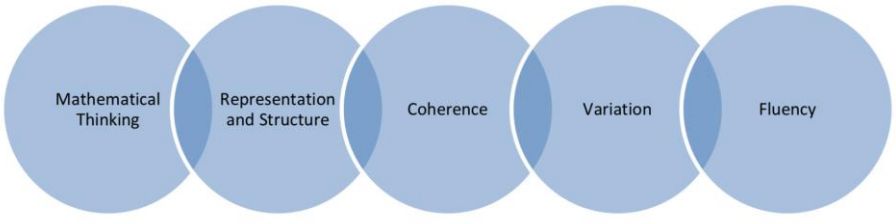
A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject. (National Curriculum 2014).

Aims and Objectives

During their time at St Loys Primary Academy we want our children to:

- Follow a mastery-based curriculum developing positive attitude to Mathematics as an interesting, enjoyable and challenging subject
- Develop lively and enquiring minds with an appreciation of the creativity of Mathematics
- Develop an ability to think clearly and logically in Mathematics with confidence, flexibility, independence and perseverance, expressing their mathematical ideas fluently and using mathematical language
- Develop an understanding of mathematical patterns and be able to identify relationships between number and with fluent recall of basic number facts
- Become confident and proficient in mental calculations, using a range of strategies.
- Develop an understanding of mathematics through a process of systematic enquiry and experiment, choosing varied methods and operations
- Develop a contextual awareness of the uses of mathematics in the environment and its links with other subjects.

Teaching and Learning……5 Big Ideas



Our teaching for mastery reflects the National Centre for Excellence in Teaching Mathematics (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 as appropriate.

The study of Mathematics at St. Loys is carefully structured within the National Curriculum and Early Years Foundation Stage Curriculum Framework to reflect the development of the concepts, principles, methods, vocabulary, knowledge and skills that a pupil requires to ensure progression in the subject.

Our mixed year classes are taught Mathematics daily through a variety of means as; whole class, split year groups, and/or group direct teaching as appropriate. Study includes; mental, practical, investigative, oral, written or problem-solving activities and children have access to a wide range of concrete resources, eg. Counting collections, Numicon, counters as well as number lines, number squares, multiplication grids and digit cards.

Every opportunity is made to encourage the use of correct mathematical terms and language.

Schemes of Work and Resources

The National Curriculum and Early Years Foundation Stage (EYFS) Curriculum framework, respectively, inform the planning and implementation of the mathematics curriculum in school. These are used in conjunction with selected materials contained within published schemes or as resources in support of Teaching for Mastery and to reflect individual teacher choice and year group appropriateness, eg. Hamilton Maths, White Rose, Classroom Secrets, Twinkl PlanIt.

We have a wide range of mathematical resources to support the teaching of Maths across the school. All classrooms have a wide range of appropriate small apparatus to ensure pupils can work concretely, including, Numicon, Base10, Number rods, Place value counters, and Counting collections. These may be used to supplement teaching tasks involving shape, space, measurement, handling data and investigational work. UKS2 also use Target Maths books to supplement their learning.

ICT is used in Mathematics in a range of ways including programmable equipment. A range of computer software programmes are utilised to support and supplement practical learning, including; RM Maths, Interactive Whiteboard games, Times tables Rock Stars, Data programs, all of which promote cross-curricular learning and the development of IT skills.

Recording Work

The purpose for which pupils record their work include:

- helping to clarify their own thinking – informal jottings to support mental work
- acting as a note for future reference
- communicating with others
- providing evidence of their work in Mathematics

In the early stages it is more important for children to talk about their Mathematics than to record what they are doing in writing. It is essential that the children are encouraged on a regular basis to express in words what they have done and to compare their methods with those of other children. In the Foundation Stage we follow EYFS curriculum guidance for Mathematics. However, we are committed to ensuring the confident development of number sense and put emphasis on mastery of key early concepts. Pupils explore the 'story' of numbers to twenty and the development of models and images for numbers as a solid foundation for further progress. Conceptual development is developed through practical means and the use of concrete, pictorial, abstract (CPA) mastery approaches.

Language is a key featuring of children's deep knowledge and understanding of Mathematics and appropriate terminology is used consistently across the school ensuring that children can think and communicate freely and with confidence.

Recording of Mathematics is in different forms depending on the nature of the mathematical activity and the purpose of the record, for example;

- Symbolic
- Graphical
- Diagrammatic
- Pictorial
- Written
- Constructed (model)
- Verbal
- Photographs

The children work in Maths exercise books, on small individual whiteboards, on the computer or on paper where appropriate. In year 2, children are introduced to cm. squared exercise books, progressing to smaller squares by the end of key stage 2.

All recorded number operations are initially based around mental methods, which, when solidly in place, are used as the basis for more formal methods. Our Calculations policy details these from Foundation Stage through to Year 6.

Assessment and Reporting

Formative Assessment

Assessment is both a "feed-back" and "feed-forward" process. It provides information on what every pupil knows, understands and is able to do. It is part of teaching and as such is a continuous process. It is used to inform planning and is seen as a way of charting children's progress or of diagnosing difficulties.

Teachers use formative assessment to guide the teaching of individual pupils in mathematics. This information identifies each child's progress in the subject, the knowledge gained by them and will influence the teaching approach and content of their next stage of learning and includes, informal approaches such as:

- Pupil books
- Small group discussions and teacher observation
- End of topic/term tests which the teacher administers to pupils in an oral/written form
- Specific assignments for individual pupils
- Verbal feedback in which children are encouraged to appraise and edit their own work and progress
- Teacher marking

Children are awarded a level in line with the expectation for their year group as; Emerging, Developing, Within, Secure or Exceeding as a result of Teacher Assessments and Standardised Assessment Tests (SATS during the summer term of Year 2 and Year 6). Teachers level children in Autumn, Spring and Summer and the levels are entered into I-track.

Analysis of the results provides information for monitoring the standards of mathematics in school and informing target setting, weaknesses to be addressed and planning. Formal parent consultations are held to review pupil progress with written reports sent out in the Spring Term for KS1 and KS2 and end of Summer term for Foundation Stage.

Responsibilities

Monitoring and Evaluating

The purpose of monitoring and evaluating is to promote higher standards of attainment. Each teacher has the responsibility for teaching Mathematics to their class.

The Subject Leader monitors Mathematics by;

- evaluating planning to ensure coverage of the National Curriculum
- reviewing children's work regularly through book scrutiny and meetings with pupils to document Pupil Voice
- identifying the quality of teaching and learning through lesson observations and the learning environment through Learning Walks
- looking at and evaluating school data for attainment and progress and liaising with SENCO
- identifying strengths and weaknesses for inclusion in future school development plan
- liaising with the designated Governor

The Subject Leader ensures that the Headteacher is kept informed.

The role of the Subject Leader

It is the role of the Subject Leader to:

- guide and support the staff in the teaching and learning of Mathematics, attending relevant courses in order to keep up to date with subject knowledge and methodology
- co-ordinate classroom practices and guidelines across the curriculum and to ensure the progression of subject skills
- monitor the development of the subject throughout the school and to inform the Headteacher
- ensure staff are aware of new developments in the subject, passing on relevant information and training to staff as appropriate
- audit and monitor resources throughout the school
- ensure that appropriate record keeping and planning is maintained.

Susie Addison 5th November 2019

Mathematics Subject Lead