Our Trust Maths Policy

Policy Date: **September 2022**

Review Date: **September 2023**

‘Children’s chances of success are maximised if they develop deep and lasting understanding of mathematical procedures and concepts’

NCETM 2022

Aims

- To fulfil the requirements of the National Curriculum Programmes of Study.
- To develop the three aims of the National Curriculum: **Reasoning**, **Fluency** and **Problem Solving**.
- To provide a **mastery curriculum** for all children and develop **deep** mathematical understanding through a **Concrete**, **Pictorial** and **Abstract** approach (**CPA**)
- To provide breadth and balance of mathematical activities for all children with a focus on a **NCETM '5 Big Ideas'**.
- To promote mathematical curiosity and develop mathematical talk using correct and consistent **mathematical language**.
- To create an awareness of the relevance of mathematics to the **whole curriculum** and the **wider community**.
- To ensure a progressive development of mathematical concepts, knowledge, skills and attitude.
- To promote a **positive attitude** and **enthusiasm** towards Mathematics.

Intent:

The three main aims of the Mathematics curriculum are fluency, problem solving and reasoning; they are interdependent and of equal importance and should be taught in an integrated way to ensure constant interaction between them. Within Maths, we follow a 'Teaching for Mastery' approach. Instead of learning mathematical procedures by rote, we want pupils to build a deep conceptual understanding of concepts which will enable them to apply their learning in different situations. The curriculum is cumulative, sequential and progressive. Each year begins with a focus on the concepts and skills that have the most connections, which are then applied and connected throughout the school year to consolidate learning. This allows pupils to make connections and develop conceptual understanding, by using previous learning throughout the school year.

Implementation:

At Three Saints Academy Trust, we are currently following the Maths Mastery ARC Plus Programme from Year 1 to Year 6 with additional support from NCETM and outside consultants.

"At the centre of the mastery approach to the teaching of mathematics is the belief that all pupils have the potential to succeed. They should have access to the same curriculum content and, rather than being extended with new learning, they should deepen their conceptual understanding by tackling challenging and varied problems. Similarly, with calculation strategies, pupils must not simply rote learn procedures but demonstrate their understanding of these procedures through the use of concrete materials and pictorial representations."

(Maths Mastery Calculation Policy, 2017.)

It is important that children are allowed to explore Maths and present their findings not only in a written form but also visually; to that end the school will adopt the CPA approach: concrete, pictorial, abstract. This will allow the children to experience the physical aspects of Maths before finding a way to present their findings and understandings in a visual form before relying on the abstract numbers.

Organisation:

Class teachers are responsible for their own organisation, but should follow guidelines as set out in the National Curriculum. At Three Saint Academy Trust, children should be sat in **mixed ability groups** and moved throughout the year. Each classroom should have a **Maths Working Wall** that reflects the unit being covered, and should be developed while working through the unit. Children should have access to a **wide range of resources** that supports their thinking.

Each week: (May include)

- 5 x Maths Lessons
- KS1 Mastering Number sessions
- Maths Meeting sessions
- Mastering Number Programme sessions
- Same day interventions (Keep Up)
- Specific Planned Interventions (Catch Up)
- Pre-teach sessions
- Times Table Sessions

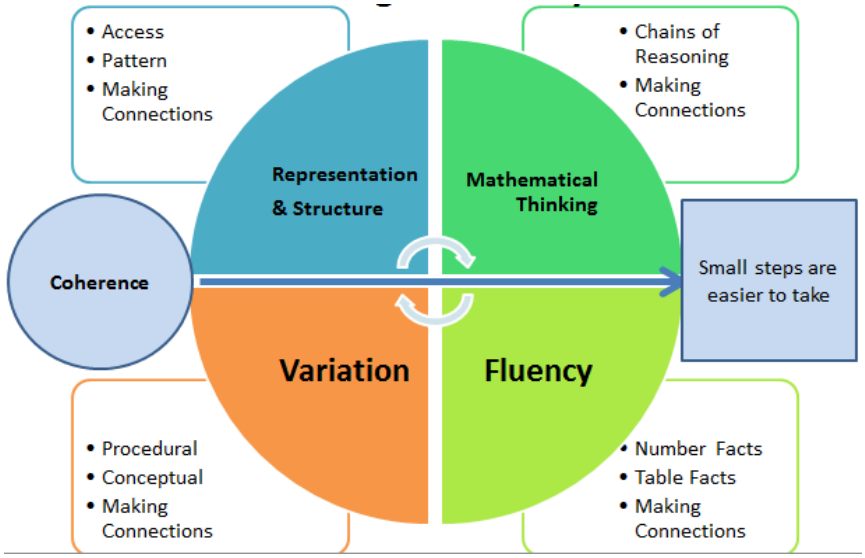
Inclusion

Teaching a mastery maths approach is different because it offers all pupils access to the full maths curriculum. This inclusive approach, and its emphasis on promoting multiple methods of solving a problem, builds self-confidence and resilience in pupils. Though the whole class goes through the same content at the same pace, there is still plenty of opportunity for differentiation. Taking a mastery approach, differentiation occurs in the support and intervention provided to different pupils, not in the topics taught, particularly at earlier stages. There is no differentiation in content taught, but the questioning and scaffolding individual pupils receive in class as they work through problems will differ, with higher attaining children, or those pupils who grasp concepts quickly, challenged through more demanding problems which deepen their knowledge of the same content. Those children who are not sufficiently fluent are provided additional support to consolidate their understanding before moving on. Pupils' difficulties and misconceptions are identified through immediate formative assessment and addressed with intervention – commonly through individual or small group support later the same day where possible. Where children make less than expected progress efforts are made to ensure relevant support is put in place to help support the child.

No child will be denied a full curriculum however and concepts will be revisited throughout the year to help with long term understanding.

Teaching for Mastery

At Three Saints Academy Trust, we focus on mastering mathematics. Within our teaching, we aim to deepen pupils' understanding and to create links between the subjects resulting in long lasting learning for pupils to build upon in life. Our teaching for mastery is underpinned by the NCETM's 5 Big Ideas. The 5 Big Ideas can be found below:



A true understanding of these ideas will probably come about only after discussion with other teachers and by exploring how the ideas are reflected in day-to-day maths teaching, but here's a flavour of what lies behind them:

Coherence

Connecting new ideas to concepts that have already been understood, and ensuring that, once understood and mastered, new ideas are used again in next steps of learning, all steps being small steps

Representation and Structure

Representations used in lessons expose the mathematical structure being taught, the aim being that students can do the maths without recourse to the representation

Mathematical Thinking

If taught ideas are to be understood deeply, they must not merely be passively received but must be worked on by the student: thought about, reasoned with and discussed with others

Fluency

Quick and efficient recall of facts and procedures and the flexibility to move between different contexts and representations of mathematics

Variation

Varying the way a concept is initially presented to students, by giving examples that display a concept as well as those that don't display it. Also, carefully varying practice questions so that mechanical repetition is avoided, and thinking is encouraged.

Throughout Key Stage 1 and during the early part of Key Stage 2, the emphasis is on mental work and the development of mental strategies. During the later part of Key Stage 2, when mental strategies are established, the emphasis shifts towards written methods.

During the Foundation Stage the children develop their number sense and focus on the 6 key learning areas for mathematics: Cardinality and Counting, Comparison, Composition, Pattern, Shape and Space, and Measure.

> "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."
>
> **Statutory Framework for the Early Years Foundation Stage**

Mathematical language is emerging in EYFS, developed in KS1 and embedded in KS2.

Planning

Long Term

With the exception of Foundation stage 1, teachers will use a six-part lesson plan which consists of; Do it now task, new learning, talk task, develop learning, independent task and a plenary. Planning should demonstrate children's learning being deepened throughout the lesson – this could be completed through using NCETM materials and ideas from maths consultants. During every lesson, children will be allowed to engage in mathematical discussion, problem solving and reasoning.

Short Term

Within short term planning, lesson objectives are taken from the medium-term plan and structured to ensure progression. This will enable the class teacher to follow a clear and systematic teaching sequence which will lead to success. Teachers use the toolkit for ideas and examples to ensure coverage of the three aims of the national curriculum.

Where children are working significantly above or below most the class, differentiation will be used to support and challenge all learners in order to keep the whole class together. This differentiation will involve support or the use of concrete and pictorial materials where children are working below, or deeper style questions with a higher level of sophistication to challenge the learners who are working above.

Planning, where possible, should involve real-life contexts for maths, where children are problem solving with a purpose in mind.

Class teachers should regularly plan for opportunities for children to apply their maths skills to different problems within maths lessons and across the curriculum.

This will also allow children to revisit, practice and consolidate different areas of maths and apply them within different contexts.

Marking

Children's books should be marked in line with the school Marking Policy. Books will be marked daily by the class teacher either during the lesson (live marking) or after the lesson. Teachers will judge whether more immediate or delayed feedback is required, considering the characteristics of the task set, the individual pupil, and the collective understanding of the class. Ticks /dots will be used to indicate correct/incorrect answers. If appropriate, corrections will follow the piece of work. Where appropriate, children will self and peer-mark with guidance from the teacher. This can foster independence in the children, who can seek help if they are unable to locate and correct their errors. However, children will be provided with feedback either verbally or through written marking. If a child has not achieved the learning objective, Same Day Intervention will take place. Feedback focuses on moving learning forward, targeting the specific learning gaps that pupils exhibit.

Assessment

See also policy on Assessment.

Assessment is an essential part of teaching in the effective implementation of the Mathematics curriculum. At Three Saints Academy Trust, continuous assessment is built into each unit of work and is based upon a range of activities within the normal routines of the classroom.

- KPIs are used to assess children from Y1-Y6. Year 2 and Year 6 will use past SAT papers and CGP tests at each half term. Year 1, 3, 4, and 5 use NFER tests.

- Pupils at Year 2 and Year 6 carry out the statutory National Curriculum End of Key Stage Tests.
- Y1-Y6 assessments are carried out at the end of each half term. Results are recorded and tracked and are used to inform future planning and target setting.
- Year 4 will complete the National Multiplication Tables Check

Informal assessment

At Three Saints mathematics is assess in a variety of ways:

- Observation of children or groups on task.
- Discussion with children about their work.
- Marking children's work.
- Children's own evaluation of their work.
- Questioning children's understanding.
- Same day intervention.

Formal and informal assessment will be considered when making final judgments on children's assessment.

Record Keeping and Reporting

We believe in the need for continuity and progression of experience for our pupils. The National Curriculum and KPI system provides opportunities for this to take place.

Records

- A school tracking chart tracks children's progress from Y1 through to Y6.
- Half-termly Maths assessment results are recorded on the school-tracking chart.
- Continuous assessment of all children's work is recorded in the form of daily marking of work.
- Target setting is carried out throughout the year. Each pupil is set targets from KPI assessments, or from QLA of NFER tests and these are agreed with the child. Once a term, the targets will be shared with the child and parent during the mentoring conversation. All targets are reviewed before new ones are set.

Reporting

- Each child receives an annual written report stating their mathematical progress throughout the year.
- End of Key Stage results are reported to parents, school committee and to the Directors.
- End of Key Stage 2 results are reported to appropriate Secondary School as printed in Assessment and Reporting Arrangements Booklets produced by QCA.

Monitoring

Monitoring is essential if there is to be continuity and progression within mathematics. The overall responsibility of monitoring mathematics lies with the Headteacher and Maths Subject leader.

- Planning monitored by the Mathematics team, Maths Subject Leader and Senior Leadership Team.
- Lesson observations by Head Teacher, Senior Leadership Team and Trust Director of Maths when appropriate. The Headteacher/Maths Subject Leader may focus upon a particular part of the lesson
- Work scrutiny and Book Looks by Mathematics Team, Senior Leadership Team and Trust Director of Maths when appropriate.
- In Class support / coaching may be carried out by Head Teacher, Maths Lead or Trust Director of Maths.
- Data analysis (attainment and progress of all pupil groups).
- Analysis of staff, pupil and governor questionnaires and interviews.
- Moderation of books, planning and assessments as part of the Three Saints Academy Trust.
- End of Foundation Stage, Key Stage 1 and 2 moderation.

Monitoring the Needs of Staff

The Maths Subject leader liaises with the Trust Director of Maths and individual teachers in order to clarify issues/areas of concern and to ensure that they are kept abreast of new initiatives and documentation. Regular whole staff meetings are held, which are devoted to Mathematics and where possible, in service training will be arranged or staff will attend meetings/courses or visit schools to enhance their professional development. At the end of year members of staff are asked to complete a Maths Audit from which an Action Plan can be drawn up.

Monitoring use of resources

Any requirements for resources should be reported to the Maths Subject leader. Broken or missing equipment should also be reported so that the Maths Subject leader can arrange for necessary replacements.

Monitoring Documentation

The Maths Subject leader is responsible for preparing, updating and reviewing documentation relevant for the teaching and learning of Maths and for keeping abreast of all new initiatives relating to Maths. The Subject leader also represents the school on matters relating to Maths and keeps the Headteacher informed of progress and intended developments.

SEND

We believe that all pupils should be given equality of opportunity. All children access quality first teaching. In our mastery approach, all children are kept together through small steps. In each class, children are sat in mixed ability groups and changed throughout the year.

Where a child is considered to have SEND in mathematics it is the responsibility of the class teacher to alert the Special needs Co-coordinator. When a child is placed on the Code of Practice, a school support plan will be drawn up. Every opportunity is taken to ensure suitable challenge for those pupils who are considered more able.

Resources

Staff are responsible for the storage and upkeep of resources particular to their year group and will generally be kept in classrooms or shared areas. Each class have all of the equipment required for their year group.

Equal Opportunities

All teaching and non-teaching staff at Three Saints Academy Trust are responsible for ensuring that all children irrespective of gender, ability, ethnic origin and social circumstances have access to the whole curriculum and make the best possible progress.

All children have equal access to the mathematics curriculum and its teaching and learning. Day-to-day monitoring of the Mathematics Policy and the provision of equal opportunities in mathematics is the responsibility of the class teacher. General monitoring is the responsibility of the Head and SLT.