

Maths Policy

Policy author	
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Approved by	Executive Team

Aims

That children develop the knowledge, skills and understand of mathematics that they need in order to succeed in life and prepare for their next steps in learning.

That children will develop their knowledge of mathematics cumulatively over time and complete the full programmes of study - linking mathematics to other curriculum subjects and extending beyond the academic or technical application and thus encouraging children to develop and discover their own interests and talents.

That children develop their character – including their resilience, confidence and independence through mathematics – increasingly adopting a positive attitude to learning and a growth mind-set. We encourage children to foster a commitment to their learning, know how to study effectively, become resilient to setbacks and take pride in their achievements.

Rationale

Our rationale is based on the mastery approach key principles being:

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

Pupils who grasp concepts rapidly should be challenged further 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, through additional practice before moving on.

In-depth development of individual concepts in Inspire Maths

In Inspire Maths, concepts in each topic are carefully developed using Piaget's Assimilation and Accommodation Approach.

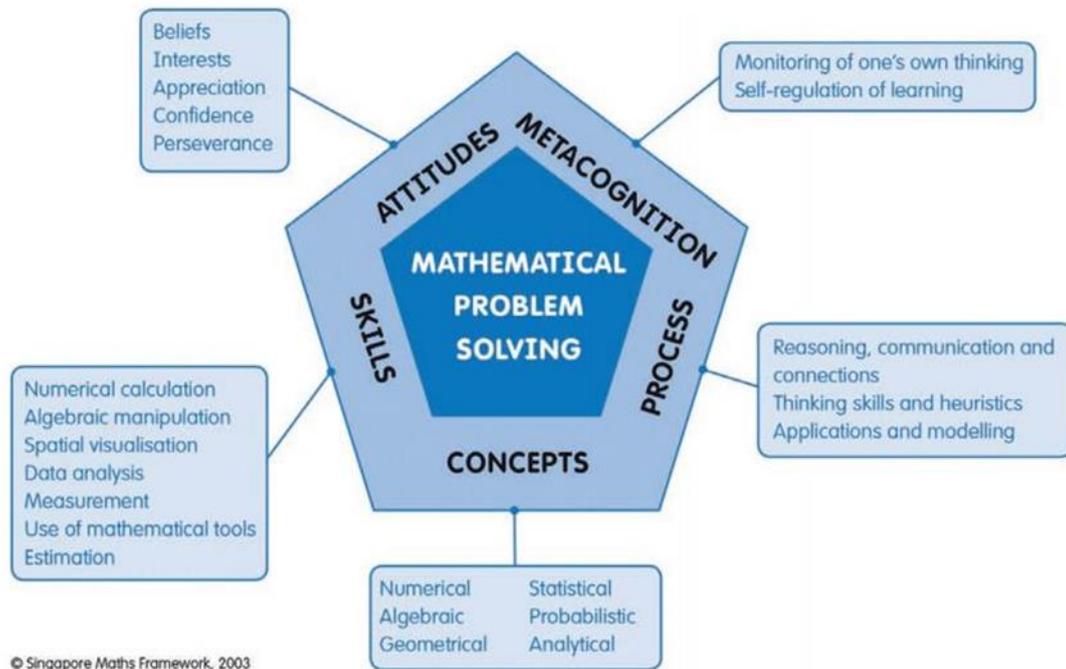
This ensures that enough time is given for children to master each concept before they move on to the next. Piagetian conceptual development takes place over four stages:

- Learn: Direct teaching to develop knowledge and deep understanding.
- Guided practice: Informal assessment of children's understanding.
- Activity: Help for children to accommodate the concepts and skills learnt.
- Practice: Further enhancement to the accommodation of concepts and skills.

The structure of the Inspire Maths programme mirrors these stages through the teaching sequence 'Let's Learn', 'Guided Practice', 'Activity' and 'Independent Practice'. With this structure, children have ample opportunities to practise concepts in Inspire Maths, and the scaffolded approach of practice gradually releases the responsibility of learning to the children.

During 'Guided Practice', children practise concepts with teacher's guidance and teachers have the opportunity to identify those who need immediate intervention, consolidation, further practice or challenge to go deeper. This contributes to making learning accessible to all, and by the time children reach the second stage of practice, which is done independently, they will be able to answer the questions confidently. This cycle of conceptual development repeats each time a new concept is introduced; so mastery is achieved in a structured and coherent manner, without the risk of any

child falling behind. Inspire uses a spiral, cumulative approach which relies on building mathematical content progressively over time.



The principles that underpin *Inspire Maths*

Teaching Principles

1. Teachers believe in the importance of mathematics and that the vast majority of children can succeed in learning mathematics in line with national expectations.
2. The learning needs of individuals are addressed through careful scaffolding, questioning and appropriate rapid intervention where necessary, to provide the appropriate support and challenge.
3. The reasoning behind mathematical processes is emphasised. Teacher/pupil interaction explores how answers were obtained as well as why the method worked and what might be the most efficient strategy.
4. Precise mathematical language, often couched in full sentences, is used by teachers so that mathematical ideas are conveyed with clarity and precision. At Queen Emma's, we value 'mathematical talk' and children have lots of opportunity to talk about and evaluate their mathematics during lessons.
5. 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 non-standard 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.

6. Sufficient time is spent on key concepts to ensure learning is well developed and deeply embedded before moving on.

Features of Lesson Design

1. Teacher input gives ample time for independent practice whilst the teacher delivers rapid intervention should somebody require it. Independent practice includes reasoning, problem solving and higher-order thinking activities.

2. Lessons are sharply focused with one new objective introduced at a time.

3. Difficult points and potential misconceptions are identified in advance and strategies to address them planned. Key questions are planned, to challenge thinking and develop learning for all pupils.

4. The use of high quality materials (Inspire textbooks) and tasks to support learning and provide access to the mathematics is integrated into lessons.

5. There is regular interchange between concrete/contextual ideas and their abstract/symbolic representation.

6. Making comparisons is an important form of developing deep knowledge. The questions “What’s the same, what’s different?” are often used to draw attention to essential features of concepts.

Assessment

Teachers and leaders use assessment to help learners embed and use knowledge fluently or to check understanding and inform teaching. Teachers check learners’ understanding systematically, identify misconceptions accurately and provide clear, direct feedback. In so doing, they respond and adapt their teaching as necessary without unnecessarily elaborate or differentiated approaches. Live feedback is completed using pink (for ‘think’) and green (for ‘got it’) highlighters by both teachers and learning support assistants.

Cornerstones assessments- There is a baseline Number and Arithmetic Progress Assessment and a further 7 progress test to be completed throughout the year. Summative assessments are completed 3 x per year. Teachers respond and adapt their teaching based on the gap analysis tool produced from these assessments. The results of these assessments are shared with Cornerstones who then compare our results nationally.

National Curriculum tests are used at the end of KS1 and 2; teachers use past and sample papers to inform their assessments as they prepare pupils for these assessments.

Teachers understand the limitations of assessment and do not use it in a way that creates unnecessary burdens for staff or learners.

EYFS

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. Teachers use the 'Singapore Maths' approaches concrete – pictorial – abstract approach to conceptual development. In the Summer term EYFS become familiar with Inspire Maths ready for transition into Year 1.

Resources

A bank of essential mathematics resources is available for all teachers, for example Cuisenaire rods. Additional resources for wider mathematics, such as weighing scales, are kept in the central storage area. Each Teacher has access to the relevant Inspire books that they teaching which includes: a teacher reference book, a copy of the Inspire practice book, 15 Inspire text books (a) and (b) and Inspire online resources.