



Maths Teaching and Learning Policy

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Maths Teaching and Learning Policy

Maths Vision

At Howard Park we offer the children a balanced mathematics curriculum based on the National Curriculum (Years 1-6) and The Early Learning Goals (Reception) in order to develop a range of mathematical skills for our children.

They will be positive and enthusiastic towards mathematics, with an awareness of the diversity of the subject.

We aim to inspire a positive attitude and develop an effective and confident approach towards the learning of Mathematics in all our pupils.

- *They will be competent and confident in taking risks to apply mathematical knowledge, concepts and skills.*
- *They will be able to solve problems, reason mathematically and think logically and systematically.*
- *They will be able to work independently and in co-operation with others, progressing at their own pace.*
- *They will be able to use and apply mathematics across the curriculum, and to understand the application of mathematics in real life contexts and scenarios.*

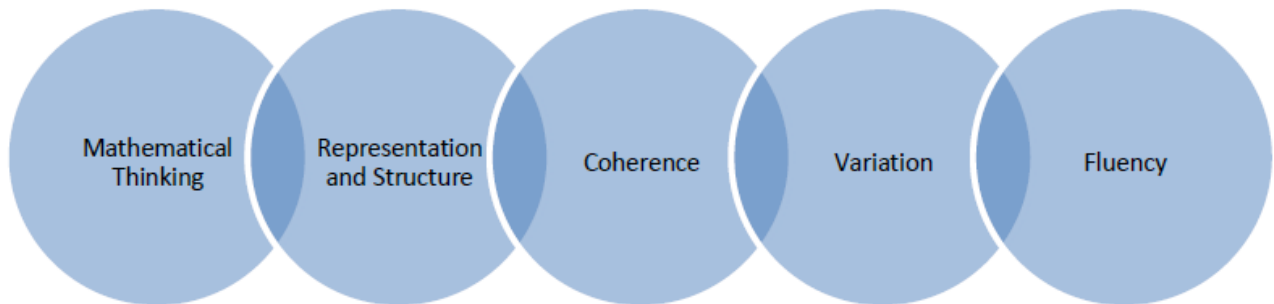
The Approach To Teaching Mathematics at Howard Park Community School

In September 2018, Howard Park began transitioning towards a mastery approach to the teaching and learning of Mathematics. The rationale behind changing our approach to teaching mathematics lay within the research of Guskey (2009) and Skemp (1976), the Maths Hub led Mastery Specialist Programme as well as the 2014 National Curriculum, which states:

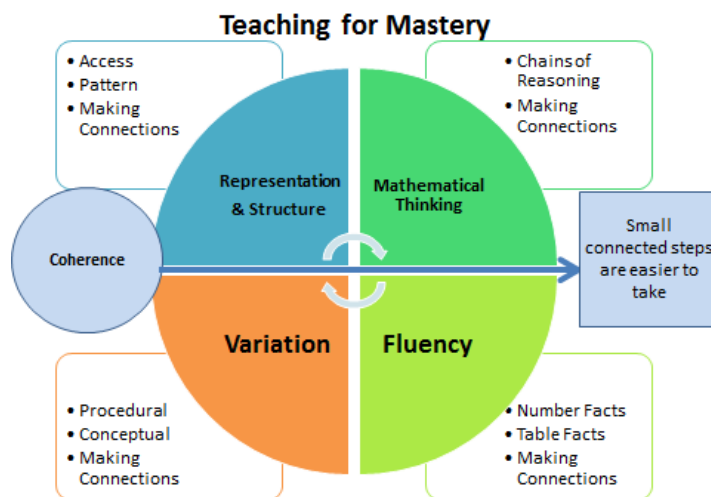
- The expectation is that most pupils will move through the programmes of study at broadly the same pace.
- Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content.
- Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

Our teaching for mastery is 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.

The Five big ideas



What is teaching for mastery?



Fluency Involves:

- Quick recall of facts and procedures
- The flexibility and fluidity to move between different contexts and representations of mathematics
- The ability to recognise relationships and make connections in mathematics

Representation and Structure:

- Mathematical structures are the key patterns and generalisations that underpin sets of numbers – they are the laws and relationships that we want children to spot.
- Using different representations can help children to 'see' these laws and relationships.

Variation:

- **Procedural variation** – This is a deliberate change in the type of examples used and questions set, to draw attention to certain features.

- **Conceptual variation** – When a concept is presented in different ways, to show what a concept is, in all of its different forms.

Mathematical Thinking Involves:

- Looking for pattern and relationships
- Logical Reasoning
- Making Connections

Coherence:

Teachers should develop detailed knowledge of the curriculum in order to break the mathematics down into small steps to develop mastery and address all aspects in a logical progression. This will ensure deep and sustainable learning for all pupils.

As a result of teaching and learning in mathematics, our aim is that pupils will be able to meet the key aims of the National Curriculum for maths.

Equal Opportunities and Special Educational Needs

All children have equal access to the Mathematics curriculum. Children access the curriculum at the level appropriate to them, ensuring rapid measurable progress. Resources and learning environments are planned and designed to enable all children access to the learning required. Differentiated activities are provided to support struggling learners and challenge rapid graspers so they are able to work at greater depth in Mathematics.

Roles and Responsibilities

The Maths lead has a clear overview of the maths teaching taking place at Howard Park. The maths lead is responsible for structuring the mathematics curriculum and ensuring its planning, delivery, content and assessment is of the highest quality. The lead will oversee the distribution and use of resources and the monitoring of teaching and learning in mathematics across the school.

Class teachers are responsible for planning and delivering maths each day in their year groups.

The Curriculum

We believe all children can succeed mathematically, and as such all children should follow the same curriculum and expectations. We ensure, through our informed planning and preparation process that all children are given opportunities to:

- Experience practical mathematical activities and games to support their learning
- Develop their reasoning, questioning and problem solving skills in a variety of contexts
- Take part in class, group, partner and independent learning and activities
- Learn, use and apply a range of methods to calculate solutions

Children are given opportunity to demonstrate their maths knowledge by careful planning for cross-curricular opportunities. Teachers plan for links to be made through topics such as:

- Science (capacity, measurement, data handling)
- History (timelines, dates, roman numerals)
- Geography (co-ordinates, temperature, data handling)

Teaching and Learning

At Howard Park, children are taught in an environment centred round the balanced mix of independent work, partner tasks and whole class work. Children in each year group have a dedicated daily Mathematics lesson which should last for at least approximately 1 hour in Key Stages 1 and 2. The National Curriculum identifies 3 key strands in Maths:

- **Fluency** – the ability to recall fundamental mathematical concepts and skills rapidly and accurately.
- **Reasoning** – being able to explain an answer, prove something correct or incorrect, use enquiry skills to ask key questions, and make predictions and spot patterns within mathematics.
- **Problem Solving** - applying mathematics to a variety of problems, including breaking down problems into a series of simpler steps and persevering in seeking different solutions.

Mathematics is a subject containing many opportunities for pupils to make links to prior learning. Pupils need to be able to move fluently between these different links and representations of mathematical ideas. The programmes of study are, by necessity, organised into distinct areas, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. 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.

Teachers work to support and guide their children through the following stages of development:

- Talking mathematically; using appropriate vocabulary and examples.
- Developing the use of concrete, pictorial and abstract means of recording.
- Using and applying flexible mental strategies to solve calculations.
- Explaining and justifying their use of strategies or resources to solve problems and calculations.
- In Key Stage 2, using an expanded method which leads into a standard written method for each of the four main operations (*see Calculation Policy for Progression*).

- Understanding when to apply either written or mental methods when completing calculations.
- To develop skills of reasoning and problem solving, being given regular opportunities to embed these skills.

Planning and Time Allocation

All class teachers are responsible for weekly planning, based on the agreed yearly overviews linked to The White Rose Maths Scheme. Teachers plan using the unit blocks from The White Rose Scheme and lessons should include opportunities to complete a range of varied Fluency style questions as well as opportunities for Reasoning and Problem Solving. Class teachers are supported to adapt materials for their own classroom.

Teachers will:

- Identify the appropriate teaching and learning strategies required.
- Plan lessons with a balanced and engaging range of activities (Concrete/Pictorial/Abstract, Varied Fluency, Reasoning, and Problem Solving.)
- Plan for the specific needs of children within their own class.
- Assess children routinely using formative and summative approaches.

Differentiation and Support (Including Provision for SEN, More Able, PP, EAL)

- Setting challenging age-related reasoning and problem solving tasks based on accurate assessment of pupils' prior skills, knowledge and understanding.
- Where appropriate, using small, differentiated target steps for all children to move through the curriculum at a pace that suits their needs.
- Adult support and intervention, effectively assessing and checking pupils' understanding throughout lessons and offering feedback through different forms.
- Ensuring that marking and constructive feedback is personal, frequent and of a consistently high quality. Feedback may also include a 'next step' for teachers to encourage children to think about their learning.
- Teachers use a range of practical-real life resources to support all stages of learning within the class.

Intervention programmes/extra teacher support delivered where needed both in class and through extra sessions.

Display and Resources (Also see 'Maths Working Wall at Howard Park')

- In the classrooms there should be, either on display or easily accessible to children, age appropriate resources.

- Mathematical vocabulary (including stem sentences) should be displayed so that children use this to demonstrate their understanding.
- There should be maths learning on display in classrooms to encourage a positive attitude and enthusiasm towards mathematics for all groups of children (Maths Display/Maths Working Wall).

Staff have access to a range of concrete resources with which to develop children's understanding. Across Howard Park, our children are taught to use mathematical resources productively and confidently, and to assess which resources are appropriate to support their learning.

Parental Engagement

We involve our parents and communities in our children's learning when appropriate. Through regular mathematics workshops to support their knowledge of the school mathematical approach, we enable parents to use a range of activities to create fun learning opportunities at home.

Teachers will:

- Hold parent maths workshops to support parents with calculation strategies and how they can support their child at home.
- Hold a Multiplication Screening check information evening to inform parents on the test.
- Hold a SATS information session on the maths SATS papers in Year 2 and Year 6.
- Provide log-ins for Times table Rockstars/Numbots so children can access Maths Activities online.

Assessment

The teaching and assessing of mathematics at Howard Park follows the Assessment for Learning cycle of: plan, teach, review, assess. Children's work is marked regularly, as part of our AFL policy and assessed against National Curriculum objectives. Progress against year group objectives is recorded and monitored half-termly on our school tracking system for each year group. Children are set an end of year target/prediction of progress in Maths and regular progress meetings are held between class teachers and SLT to discuss progress/interventions needed. Children in EYFS are assessed regularly using the Early Learning Goals. Formal tests are administered to children from Year 1 to 6, to assist teachers with their assessment of individual achievement and progress in Mathematics.

The following test formats are used within this process:

- White Rose End of Unit Tests: The results are analysed and used to isolate gaps in children's knowledge. They are also used to monitor progress in maths.
- NTS Assessments at the end of each term to support teacher judgement.
- SATs preparation Assessments in Year 2 and Year 6.