



## **Downlands Community School Mathematics Policy October 2021**

**We Care, We Share, We Believe, We Achieve**

### Missions Statement:

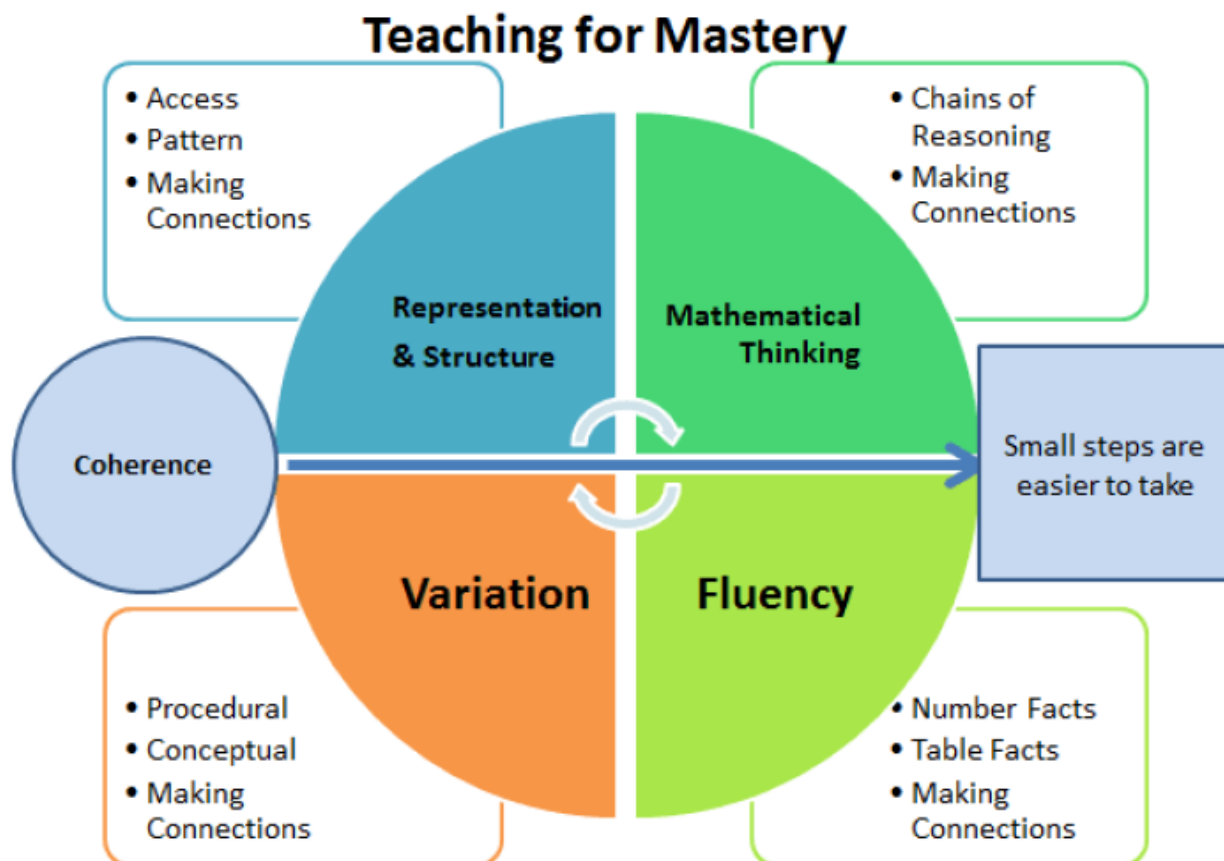
Our children learn and achieve high standards through a broad and balanced curriculum. It offers unique experiences inspired by events. It offers motivation and challenges and is delivered in creative ways and takes account of the context of the school. We want our children to develop a thirst for learning and to encourage them to become independent in their learning.

### Vision Statement:

Mathematics is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. Our aim at Downlands is to provide a high-quality mathematics education with a mastery approach so all children enjoy mathematics and have a secure and deep understanding of mathematical concepts and procedures.

### Aims for all pupils:

- to develop a growth mindset and positive attitude towards mathematics.
- to become competent and confident in mathematical knowledge, concepts and skills.
- to become problem solvers through reasoning and thinking logically and working systematically.
- to develop their use of mathematical language through discussion.
- to use and apply mathematical skills across the curriculum and in real life.



- to understand that mathematics is a process of enquiry and experimentation and to not be afraid to make mistakes.

### Teaching for Mastery:

Mastery maths means acquiring a deep, secure and adaptable understanding of mathematical concepts and procedures. A mastery approach is underpinned by the NCETM's 5 Big Ideas.

### Coherence

Lessons are broken down into small connected steps that gradually unfold the concept, providing access for all children and leading to a generalisation of the concept and the ability to apply the concept to a range of contexts.

### 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

Variation is twofold. It is firstly about how the teacher represents the concept being taught, often in more than one way, to draw attention to critical aspects, and to develop deep and holistic understanding. It is also about the sequencing of the episodes, activities and exercises used within a lesson and follow up practice, paying attention to what is kept the same and what changes, to connect the mathematics and draw attention to mathematical relationships and structure.

(The Five Big Ideas were first published by the NCETM in 2017.)

## 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 (it is ok to make mistakes)
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. Mathematics lessons are about learning, not performing.

### Teaching for Mastery Principles:

- Success in mathematics is achievable for all - we have high expectations and encourage a positive 'can do' mindset towards mathematics, we create learning experiences which develop children's resilience when faced with challenges and carefully scaffold learning so everyone can make progress.
- Lessons are designed with careful small steps, the whole class is taught together with no differentiation, individual learning needs are addressed through carefully scaffolded questioning, support and challenge.
- Pupils are encouraged to make connections and spot patterns between concepts using discussion and include precise mathematical language.
- Pupils learn factual knowledge (e.g. number bonds and timetables), procedural knowledge (e.g. formal written methods) and conceptual knowledge (e.g. place value) as these are key elements of mathematical learning.
- Problem solving is key to developing pupils' understanding of mathematics and why it is essential to everyday life, science, technology and engineering.
- Sufficient time is spent on key concepts to ensure learning is well developed and deeply embedded before moving on.

### Curriculum Design:

- Staff use White Rose Maths Schemes of Learning as a starting point in order to develop a coherent and comprehensive conceptual pathway through the mathematics curriculum.
- Learning is broken down into small, connected steps, building from what pupils already know.
- Potential misconceptions are identified in advance and strategies to address these are planned.
- Key questions are planned, to challenge thinking and develop learning for all pupils.

- Contexts and representations are carefully chosen to develop reasoning skills and to help pupils link concrete ideas to abstract mathematical concepts.
- The use of high quality materials and tasks to support learning and provide access to mathematics is integrated into lessons. These may include but are not restricted to; White Rose Maths Schemes of Learning and Assessment materials, NCETM Mastery materials, NCETM Professional Development materials, NRICH,
- Learning of number facts in Key Stage 1 is supported through Number Sense. Number Sense Maths is a highly visual number fact teaching programme for schools that leads to a deep understanding of number and number relationships, and fluency in addition and subtraction facts.
- Learning of timetables facts is supported through Times Tables Rockstars.
- Early Bird Maths is used in Key Stage 2 to support revision and pre-teach opportunities of key concepts.
- The Concrete, Pictorial, Abstract model is used throughout school from foundation to year 6.
- Practical apparatus is used to support conceptual understanding.
- Same day interventions are used to address misconceptions.

#### Lesson structure:

- Lessons are focused; digression is generally avoided.
- New learning is explicitly identified.
- Regular interchange between concrete/contextual ideas, pictorial representations and their abstract/symbolic representations are made.
- Mathematical generalisations are emphasised as they emerge from underlying mathematics, which is thoroughly explored within contexts that make sense to pupils. The questions 'Is it always?', 'Sometimes true?' and 'Never true?' are used to explore these moments.

- Making comparisons is an important feature of developing a deep mathematical knowledge and understanding. The questions 'What's the same?' and 'What's different?' are used to draw attention to essential features of concepts.
- Repetition of key ideas (e.g. in the form of whole class recitation, repeating to a learning partner etc) is used frequently. This helps to verbalise and embed mathematical ideas and provides pupils with a shared language to think about and communicate mathematics.
- Teacher-led discussion is interspersed with short tasks involving pupil to pupil discussion and completion of short activities.
- Formative assessment is carried out throughout lessons, with the teacher regularly checking pupils' knowledge and understanding. Gaps in pupils' knowledge are identified and lessons are adjusted accordingly in order to address these along with any misconceptions.
- Teachers regularly discuss their mathematics teaching with colleagues, share teaching ideas and classroom experiences to improve practice.

#### Marking:

- Work is marked following the schools marking policy.
- Next step marking will not always be necessary as the next lesson is normally the next step in learning. Marking will pick up any misconceptions/mistakes which will then be addressed either through live marking opportunities or same day interventions. Children will respond to errors using a purple pen.

#### Exercise books for recording:

EYFS - general work books with evidence being placed on Seesaw.

Year 1/2 - maths folders to hold White Rose Maths sheets and 1cm square paper with evidence being placed on Seesaw.

Year 3/4 - Maths folders to hold White Rose Maths sheets and 1cm square paper

Year 5/6 - 7mm squares

### Assessment and Record Keeping:

In addition to the formative assessments undertaken during lessons and from daily activities, teachers will also use summative assessments from White Rose Maths. These are end of unit and end of term assessments, assessments are used as a cold task to identify gaps and inform planning. Teacher judgements are entered into the school assessment tracking document at the end of each term.

### Teaching in attainment groups:

With the transition to mastery, Downlands is no longer teaching maths in attainment groups throughout the school.

### Inclusion and Special Needs:

Downlands School aims to meet the needs of all children. The provision for children with Special Educational Needs is detailed in the SEND policy. SEND pupils may be supported by additional adults or require different resources. Some children may take longer to grasp key concepts and may need careful scaffolding or extra time or extra support. We have high expectations of all children and strongly believe that all children are able to achieve in mathematics.

Date agreed - 19/10/21

Review date - October 2023