

Representation and Structure

1. The representation needs to clearly show the concept being taught, and in particular the key difficulty point. It exposes the structure.
2. In the end, the students need to be able to do the maths without the representation
3. A stem sentence describes the representation and helps the students move to working in the abstract ("ten tenths is equivalent to one whole") and could be seen as a representation in itself
4. There will be some key representations which the students will meet time and again
5. **Pattern and structure are related but different:** Students may have seen a pattern without understanding the structure which causes that pattern

Mathematical Thinking

1. Mathematical thinking is central to deep and sustainable learning of mathematics.
2. Taught ideas that are understood deeply are **not just 'received' passively but worked on by the student**. They need to be thought about, reasoned with and discussed.
3. Mathematical thinking involves:
 - looking for pattern in order to discern structure;
 - looking for relationships and connecting ideas;
 - reasoning logically, explaining, conjecturing and proving.

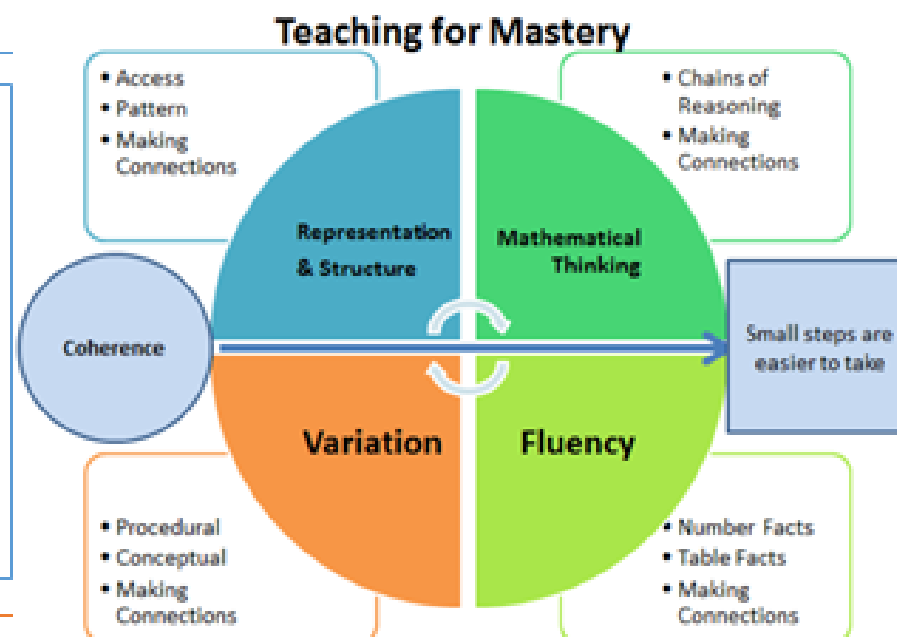
Coherence

1. Small steps are easier to take.
2. Focusing on one key point each lesson allows for deep and sustainable learning.
3. Certain images, techniques and concepts are important pre-cursors to later ideas. Getting the sequencing of these right is an important skill in planning and teaching for mastery.
4. When introducing new ideas, it is important to make connections with earlier ones that have already been understood.
5. When something has been deeply understood and mastered, it can and should be used in the next steps of learning.

Variation

1. The central idea of teaching with variation is to **highlight the essential features** of a concept or idea through varying the non-essential features.
2. 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.
3. When giving examples of a mathematical concept, it is useful to add variation to emphasise:
 - a. What it is (both standard and non-standard examples);
 - b. What it is not.

When constructing a set of activities or questions it is important to consider what connects the examples; what mathematical structures are being highlighted? Students are encouraged to avoid mechanical practice and, instead, to practice the thinking process (intelligent practice)



Fluency

1. Fluency demands more of learners than memorisation of a single procedure or collection of facts. It encompasses a mixture of efficiency, accuracy and flexibility.
2. Quick and efficient recall of facts and procedures is important in order for learners' to keep track of sub problems, think strategically and solve problems.
3. Fluency also demands the flexibility to move between different contexts and representations of mathematics, to recognise relationships and make connections and to make appropriate choices from a whole toolkit of methods, strategies and approaches.

Intent

At Hatch Warren Infant school we want children to leave us being confident in the five main elements of Mastery: representation and structure, coherence, variation, mathematical thinking and fluency. We want to instill confidence into our children so they can accurately and confidently answer questions and talk about their mathematics to show their understanding. We want to give children the language to confidently explain their thinking and to be creative when solving problems. This is underpinned by high expectations of all; where all children move through the curriculum at broadly the same pace; high quality modelling and reinforced ambitious vocabulary. The children are introduced to a wide variety of models, methods and equipment so they can become independent to support themselves in their own chosen way.

Implementation

In order to achieve this, we use the following documents to support our planning;

- **White Rose:** small step materials to help expose the structures of the mathematics to then help support children to learn and break down the maths appropriately into smaller steps.
- **Primary Stars:** We use these resources to support planning.
- **Mastery Document:** We use the Mastery Documents to support our resources in KS1. https://www.ncetm.org.uk/media/qjpctp24/mastery_assessent_y1.pdf
- **Numberblocks:** Numberblocks are used to help support the early concepts of maths. <https://www.ncetm.org.uk/media/tncbnsq3/numberblocksepi-sodesseries1to5.pdf>
- **I See Reasoning:** we use this high-quality resource to help drip feed in reasoning examples within lessons.
- **Dip and Pick cards / Thinking Tom:** We use these for problem solving and reasoning.

Impact

- **Pupil voice:** Pupils will be able to confidently articulate their understanding of mathematics and will talk enthusiastically about solving problems.
- **Evidence in knowledge:** Children will be able to make links in their learning.
- **Evidence in skills:** Children will be taught progressively at a pace appropriate to each individual child. Teachers subject knowledge will ensure that children's learning is closely matched to the Early Learning Goals and National curriculum objectives with a focus on depth not breadth.
- Pupils have opportunities to experience a practical approach to Maths using a range of resources and outdoor opportunities where possible.
- Pupils enjoy Maths and show resilience when faced with a challenge.
- Pupils are engaged in their learning and make significant progress.
- **Outcomes:** At the end of each year we expect the children to achieve the Age Related Expectations for their year group. Some will have progressed further and reached greater depth whilst others will still be working towards. These children will receive interventions to help consolidate and plug gaps

Year 2 – Yearly Overview

The overview:

- ✚ Has number as its central concept;
- ✚ Spends large proportions of time reinforcing number to build competency;
- ✚ Ensures teachers stay in the required key stage and support the ideal of depth before breadth;
- ✚ Ensure students have the opportunity to stay together as they work through the schemes as a whole group;

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13
A u t u m n	Statistics	Number: Place Value			Number: Addition and Subtraction					Geometry: Properties of Shape			
S p r i n g	Measurement: Money		Number: Multiplication and Division					Number: Fractions		Measurement: Time			
S u m m e r	Number: Addition and subtraction			Problem Solving and efficient methods		Measurement: Length and Height	Measurement: Mass, Capacity and Temperature			Investigations/ Consolidation			

- ✚ Provide plenty of time to build reasoning and problem solving elements into the curriculum.

