youcubed® Maths Class Norms

Everyone can learn maths to high levels!

Believe in yourself, it changes what you can do!

Maths is about creativity and making sense!

Mistakes and challenge are the best times for your brain!

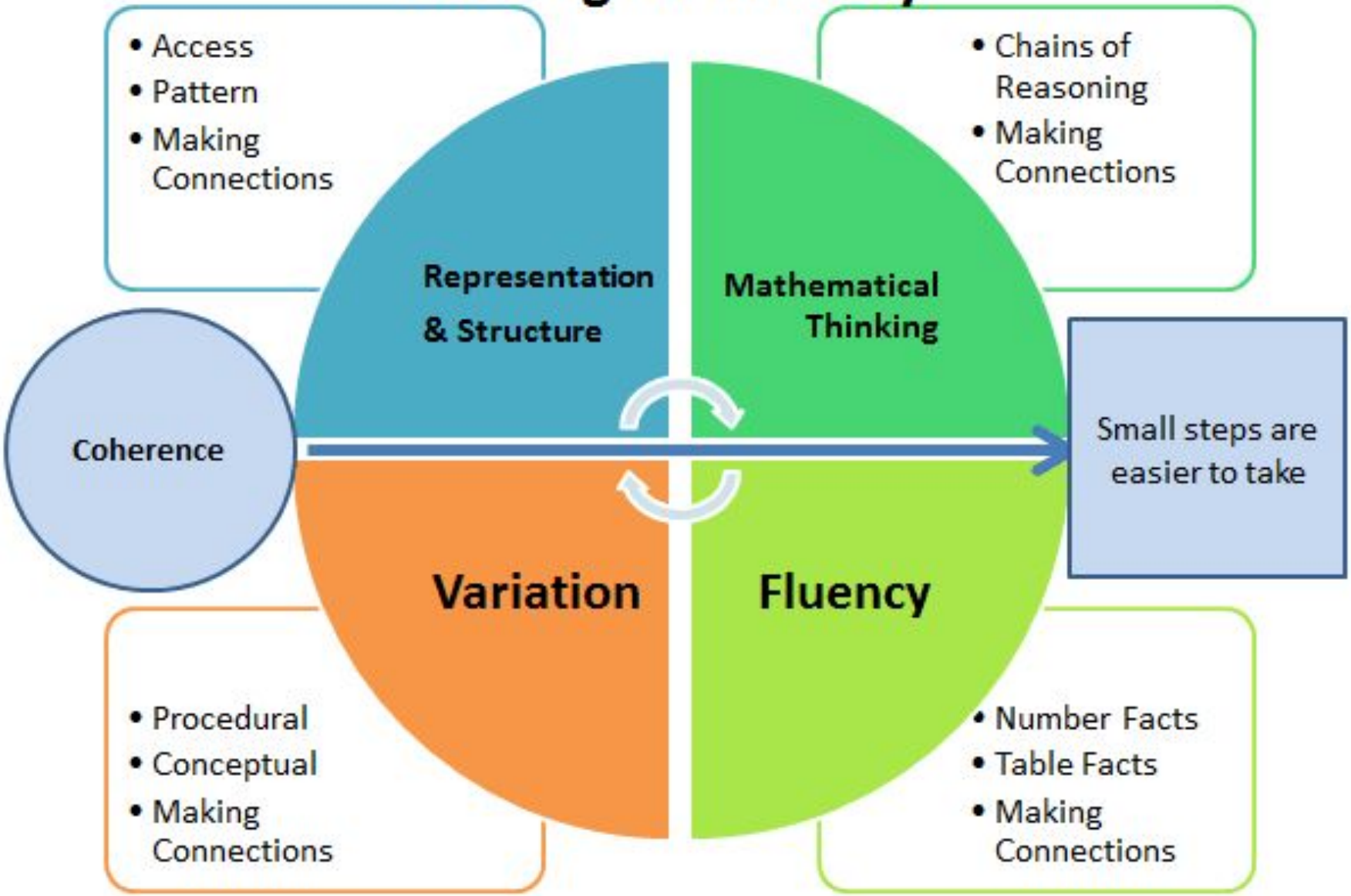
Maths is about learning not performing!

Questions & discussions deepen your mathematical understanding!

Visualize and make connections to strengthen your brain!

Depth is more important than speed!

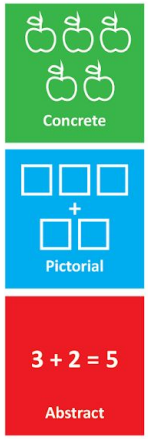
Teaching for Mastery



See: The essence of maths teaching for mastery

Maths Mastery

Pupils are taught through whole-class interactive teaching, where the focus is on all pupils working together on the same lesson content at the same time, as happens in Shanghai and several other regions that teach maths successfully. This ensures that all can master concepts before moving to the next part of the curriculum sequence, allowing no pupil to be left behind.



Concrete
Pictorial
Abstract
Make sense
Prove or disprove

Representation and structure

Fluency

Reduce cognitive overload
Number facts
Times tables
Procedural fluency
Fluency is tracked

Small steps easier to take

1.What is the answer?
2.Describe the method you used
3.Why does the method work, what relationships are involved, what generalities or rules can we glean?

Variation

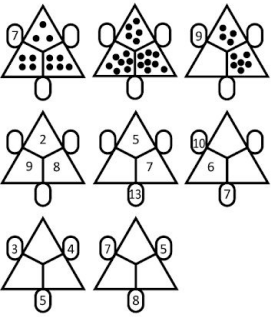
Procedural variation
Conceptual variation
(same idea,
different problem)

Mathematical thinking

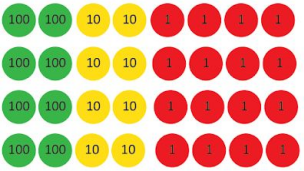
Make connections
Sequenced journey
Questioning
Misconceptions
Deep understanding
Intelligent practice

From the simple to the more complex

Procedural variation



Conceptual variation



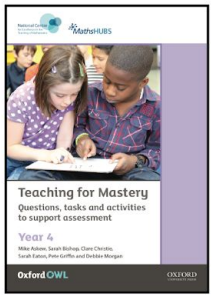
224 x 4 =

$$\begin{array}{r} 224 \\ \underline{\times\ 4} \end{array}$$

x	2	0	0	2	0		4	
4	8	0	0	8	0	3	2	

In a typical lesson pupils sit facing the teacher and the teacher leads back and forth interaction, including questioning, short tasks, explanation, demonstration, and discussion.

Intelligent practice



Teaching for Mastery

MathsHUBS

1. We ALL start the journey TOGETHER

2. Some children will need a little additional support along the way

3. Some children, who feel confident, will be let loose. They'll be able to explore deeper into the woods, before returning to the group to continue on with the journey.

4. Children will not be racing off ahead on a different journey.

5. Children will not be left behind alone and isolated.

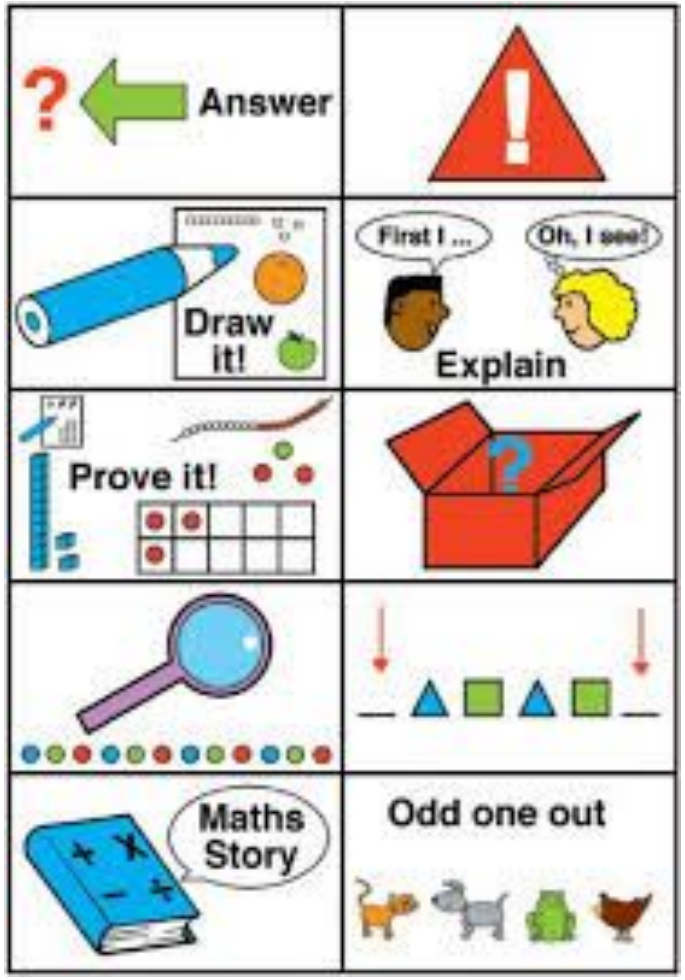
Martin Adsett
Mastery Specialist

We're Going on a Maths Hunt

Maths mastery means learning for all; it is the opportunity for all learners to access the mathematical concept being taught but at different levels of depth.

Curricular principles

- Fewer topics in greater depth
  Opportunities are provided throughout Mathematics Mastery for pupils to use reasoning skills to make connections between prior knowledge and newly presented material. These connections will help foster a deeper understanding of the maths concepts.
- Mastery for all pupils
  Differentiation through depth, cumulative learning, AfL
- Number sense and place value come first
  Traditional algorithms meaningfully taught
- Problem solving is central
  Comprehension, calculation and problem solving developed simultaneously.



I Can MASTER Maths!

By explaining it.

By drawing it.

By showing it in different ways.

By teaching it.

MASTERY QUESTION STARTERS

Can you draw..

Prove that..

Teach your friend..

Are you able to show me that..

Can you investigate..

Can you explain your reasoning?

Find out how..

Why is that correct?

Can you show me another way?

How accurate is..

What would happen if..

Explore..

MASTERY MATHS

CAN YOU MAKE IT?

CAN YOU DRAW IT?

CAN YOU EXPLAIN IT?

HOW COULD YOU DO IT DIFFERENTLY?

WHY DID YOU CHOOSE THAT METHOD?

CAN YOU MAKE IT EASIER?

CAN YOU MAKE IT HARDER?

HOW MANY DIFFERENT WAYS COULD YOU SOLVE IT?

HOW DO YOU KNOW IF IT'S RIGHT?

CAN YOU SPOT AN ERROR?

HOW EFFICIENT IS THE METHOD USED?

CAN YOU CREATE YOUR OWN PROBLEM USING THE SAME STYLE?

CAN YOU TEACH SOMEONE ELSE?

CAN YOU WRITE INSTRUCTIONS FOR SOMEONE TO FOLLOW?

WHAT NEW MATHS LANGUAGE HAVE YOU LEARNT? CAN YOU EXPLAIN IT?

EXPLAIN WHAT WAS DIFFICULT ABOUT THE PROBLEM? HOW DID YOU OVERCOME IT?