

Our Trust Purpose:

Our Trust exists to create transformational educative opportunities in a shared culture of collaboration.

Mathematics - Concept of Quality

Maths is a universal language that helps us understand the world. Being proficient at maths is a crucial life skill. Proficiency opens doors to employment and contributes to supporting economic well being. Teaching should help pupils build confidence and fluency. All pupils should be supported to keep up an with the school's curriculum.

Contents

- * This document sets out our shared 'conception' of effective mathematics teaching.
- * It draws upon our collective expertise and is **evidence/research informed**.
- * It references insights from Ofsted, the DfE, the EEF and other organisations invested in research and 'best bets'.
- * This is not an exhaustive list of factors that can create quality!
- * Our key reference points for statutory requirements are: [The National Curriculum](#), [The Ofsted handbook](#) / [research](#) and [reports](#) / & [SEND COP](#).

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The Curriculum - what we want children to learn



Key curriculum thoughts:

- ⇒ **Cognitive Load** - knowing facts and methods to a proficient level is critical in terms of managing cognitive load. Reasoning and problem solving is compromised when pupils working memory is monopolised by basic calculations that should be fingertip knowledge.
- ⇒ Pupils should experience a **high success rate** to build confidence and belief.
- ⇒ As much as possible, all children should progress through the **same curriculum**.
- ⇒ The curriculum sets out how subject specific **vocabulary** is taught and used.

Facts:

- ⇒ Plans should set out the number facts that all children will learn to automaticity at each stage of their development. Automaticity means 'available at their finger tips' - instant recall.
- ⇒ Outcomes in MTC should demonstrate this proficiency - any children not achieving high marks at any stage of teaching should receive additional support (akin to phonics Y1 screening check).
- ⇒ Plans should detail the relevant NC content for ratio and proportion, algebra, measurement, geometry and statistics.



Methods:

- ⇒ As with 'facts', proficiency in the written methods set out in our calculation policy is key - coupled with automaticity of basic facts, this is the phonics equivalent of 'cracking the code'.
- ⇒ Children should be taught to set out calculations systematically and neatly using squared paper matched to their stage of development.
- ⇒ Deeper fluency with the steps set out within each calculation will lead to the adoption of increasingly efficient methods.



Reasoning & Problem Solving:



- ⇒ Plans detail how children will be explicitly taught to BOTH reason and problem solve
- ⇒ It is not an 'add on' or the end point to a series of lessons.
- ⇒ Plans detail how R&PS is modelled and scaffolded over time - children are taught when and how to draw upon their knowledge of facts and methods.
- ⇒ R&PS is taught in multiple and varied contexts.

Pedagogy - how we help children to learn

We use Rosenshine's principles of instruction to help guide our approach to teaching (image reproduced here from Tom Sherrington).



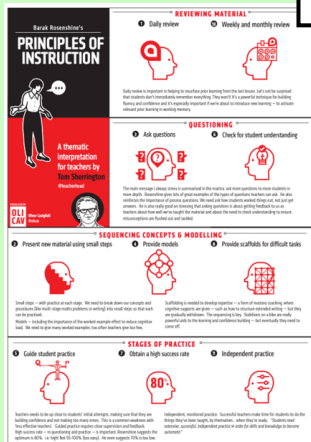
Review - 'the most important single factor influencing learning is what the learner already knows' (Ausubel) - this should be the overriding thought as teachers plan for mathematics. Activating relevant prior learning is crucial.

Questioning - we need to ask lots of questions in depth and encourage children to explain how they have worked things out. Any identified gaps should be quickly addressed before moving on.

Sequencing concepts and modelling - 'memory is the residue of thought' (Willingham) - thinking carefully about what children 'attend to' is the secret to remembering. Well designed activities, that are appropriately sequenced and chunked are important. There should be ample practice at every stage. Clear worked examples (modelling) and structures and supports to manage cognitive load (scaffolds) help children journey from novice to expert.

Proficiency requires Practice - practice through different stages from guided to independent as children build automaticity.

Adaptive teaching - teachers are alert to the 'demands that learning places on memory' and they make changes to their approach accordingly.



Assessment - checking what children have learnt

Effective assessment is based upon a strong knowledge of its purpose and the intended curriculum



Assessment is understood in three ways: 'for', 'of' and 'as'. There is considerable overlap between each approach...

Assessment for learning (formative) involves providing feedback for practitioners and children that is used to improve teaching and learning. It is used in an 'live' way to adapt the curriculum e.g. checking that a written method is laid out correctly and extending time for practise.

Assessment of learning (summative) identifies when specific curriculum goals/end points have been achieved - it is less frequent than AfL and has limitations as it often provides more limited information about children's security with smaller steps e.g. end of key stage tests such as SATs or MTC.

Assessment as learning (the testing effect) draws on the cognitive principle that children are likely to remember knowledge that they re-encounter and retrieve from their long term memory e.g. providing planned opportunities for children to retrieve key number facts in a series of lessons.

Assessment discussions should give particular focus to the needs of the **lowest attaining pupils** - are they building proficiency with facts and methods?

Monitoring and Governance

Monitoring:

- ⇒ This COQ is used to evaluate the impact of maths teaching.
- ⇒ There should be a clear focus to monitoring which utilises the **pupil book study** approach we are learning as a Trust.
- ⇒ Ideally, a whole school monitoring schedule, aligned to training, should set out the priorities for the year ahead.

Link Governor visits prioritise 3 themes:

1. Discussing the effectiveness of maths with leaders (with reference to this COQ, the local action plan and outcomes).
2. A focus on the automaticity that children have with basic facts and methods (particularly those at the earlier stages of maths and cross referencing data points/MTC).
3. The quality of staff training - what is the impact on teaching? What do children know? What can they do?



SEND and Inclusion

Every teacher is a teacher of SEND.

- ⇒ Where appropriate and possible, staff should provide pre-teaching and extra practice as children encounter new and/or more complex knowledge
- ⇒ Maths specific targets within APDRs/EHCPs should be known by the classroom team and reflected in daily teaching and learning. Refer to our Trust wide **COQ for SEND**.

Principles for securing 'Greater Depth':

- ⇒ The principles within this COQ result in children acquiring increasing fluency - they are taught to work systematically, strategically and efficiently.
- ⇒ **Non routine** R&PS and the application of **variation theory** support teachers to extend children's thinking.



Resources, Environment & Culture

The environment services the mathematics curriculum.

- ⇒ Staff create a positive culture for learning mathematics - mastery is valued and celebrated.
- ⇒ Vocabulary is explicitly taught and present in all classes.
- ⇒ Mathematics language is modelled and encouraged.
- ⇒ A dedicated learning wall, where appropriate, to support teaching and learning.
- ⇒ Resources are of a high quality and appropriate - they effectively support a Concrete, Pictorial, Abstract approaches.



Subject Myth Busting

Some common myths about mathematics:

- ⇒ **'Some people just aren't great at maths'**. That's not the case - like lots of things in life, proficiency is gained through practice and a sense of achievement.
- ⇒ **'Automaticity with facts and methods isn't needed as we've got calculators on our phones'**. Not true. As outlined overleaf - maths is a universal language that everyone is entitled to be fluent with - we make use of it continually - sometimes without even knowing.
- ⇒ **'Practising what is known indicates a lack of challenge'**. Not necessarily the case - mastery/securing learning takes enormous amounts of practice (not just encounters).
- ⇒ **'Children learn things that they will not need in later life'**. ALL learning contributes to alterations in LTM - the schemata we build in LTM help us think critically, problem and solve and take part.



Early Years - Firm Foundations

The mathematics curriculum begins in the early years - this is where firm foundations are established:

- ⇒ Children master early number, patterns and geometry.
- ⇒ ELGs are high level aims that the curriculum builds towards. The maths curriculum should therefore be sufficiently detailed so that the small steps that children are being taught (through explicit instruction and continuous provision) are understood - ample time is given to practice.
- ⇒ Specific mathematical vocabulary and language should be identified, taught and be present (where appropriate) in the environment as prompts for children and practitioners.
- ⇒ All learning develops and promotes the COEL.



Research, reading and Staff CPD

This document, and practice within provision, are informed by:

Ofsted [research review](#) and [subject report](#)
[Rosenshine's principles of instruction](#)
[The National Curriculum](#)
[North Mids Maths Hub](#)
[White Rose Maths](#)
[researchED series](#)
[NCETM](#)
[The EYFS Framework](#)

You can find out more about our curriculum for leaders and teachers of mathematics at:

[Creative Learning Hub](#).



Our Trust Vision:

Our vision for pupils:	Our vision for people:	Our vision for communities:
<ul style="list-style-type: none"> ✿ Strong attendance and outcomes for all. ✿ Freedom and Justice. ✿ A knowledge rich curriculum. ✿ Research/evidence informed teaching. 	<ul style="list-style-type: none"> ✿ Collaboration and kindness. ✿ Opportunities to develop and learn. ✿ A focus on wellbeing and workload. 	<ul style="list-style-type: none"> ✿ Schools at the heart of the community they serve. ✿ A range of benefits to support families and vulnerable groups. ✿ Ongoing support as pupils transition to their next school and beyond.

Our Trust Values:

Integrity: Courage to do the right thing for the child.	Collaboration: Working together, enabling each other.	Dedication: Committed to supporting and improving.
Kindness: Acting with compassion	Understanding (Openness): Listening and valuing one another	Innovation & Creation: Using expertise and research to transform.