

The Batt C of E School **Mathematics Policy**

Vision

At The Batt C of E School, we encourage children to love the adventure of learning mathematics. We believe that mathematics is essential for everyone in daily life and through effective teaching and a high-quality, consistent curriculum, all children can achieve. We believe that all children can be successful in mathematics and foster a positive 'can do' attitude towards the subject.

Mission Statement

We provide all children with a high-quality mathematics education allowing them to become fluent in key mathematical concepts, communicate mathematical reasoning and problem solve. Children develop the skills of Communication, Innovation, Cooperation and Exploration in order to widen their learning experiences.

We intend to provide an engaging curriculum which allows all children to progress to the next stage of their learning and make progress in lessons. It is our intention to develop confident mathematicians who are curious, self-motivated and will challenge themselves to explore connections between their mathematical understanding.

Our mathematics curriculum fulfils the requirements of the National Curriculum and the Early Years Learning Goals and aims to promote the mastery of mathematical concepts. Our curriculum model values deep thinking and is delivered through a Mastery Approach; an approach which promotes the development of deep conceptual understanding.

Intent

It is our intention that children will:

- access age-appropriate ideas as detailed in the DfE ['Mathematics guidance: key stages 1 and 2'](#) (2020).
- receive a high-quality, broad mathematics curriculum which promotes the development of deep thinking through teaching small, logical steps.
- have the opportunity and time to master their learning through varied learning experiences
- be exposed to various mathematical models through the [CPA approach](#).
- develop a positive attitude towards mathematics and become self-motivated, independent learners.
- become fluent in the fundamentals of mathematics through high-quality, varied and fluent teaching practices.
- develop rapid recall of key number facts in turn reducing their cognitive load.
- use mathematical vocabulary precisely to articulate their mathematical reasoning
- use dual coding to support their mathematical reasoning and exploration.
- be confident problem solvers and develop these skills in real-life contexts through increasingly complex challenges.
- explicitly teach and model misconceptions in order to enhance learning opportunities
- have access to high-quality resources which help to facilitate independent work
- learn in mixed-ability classes and move through the curriculum at broadly the same rate.
- have access to differentiated practices which will support and challenge their learning.
- receive immediate feedback which will support and extend their learning

- have access to high-quality and effective interventions if necessary
- seek out their own correctives

Implementation:

At The Batt School, the teaching and learning in mathematics aims to follow a consistent, mastery approach which enables children to develop their fluency, reasoning and problem solving skills. Our teaching and learning approach is supported by research in [cognitive science](#) and [mastery pedagogy](#).

Curriculum planning

In EYFS, we have developed a personalised EYFS scheme of learning using the National Centre for the Excellence in the Teaching of Mathematics (NCETM) [progression charts](#). This scheme allows children to progress through the Early learning goals and encourages 'small numbers but big thinking' (Crook, 2021).

Key stage 1 and 2, follow the White Rose Maths Scheme. The use of White Rose helps to ensure a progression in key representations and structures which leads to an understanding of complex, abstract concepts. Teachers use the scheme as a scaffold in which they plan individual lessons using the developing [school lesson structure](#).

Lesson Structure

As part of our mastery approach, we have developed a coherent [lesson structure](#) which ensures children revise prior learning, revisit previously taught concepts and learn new knowledge. In each lesson, all children are encouraged to practice key skills and challenge themselves through reasoning and problem solving. The structure allows teachers freedom to use their own professional expertise but also ensures consistency across the school. The structure helps to ensure the key components of the mastery structure are visible in the teaching and learning throughout the school.

Practice and consolidation play a central role in pupils' learning experiences. Teaching is delivered through logically sequenced, small steps which promote the development of secure understanding. Children are given time to explore key ideas and generate connections between prior learning and new knowledge; an important part of learning (McCourt, 2019).

To secure firm foundations in early mathematics learning, children in Early Years benefit from daily adult directed teaching experiences, which are then supplemented through opportunities to further engage because of child-initiated learning. Through varied learning experiences, teaching recognises the interconnectedness of concepts. Pupils revisit concepts and connect them to new learning which enables them to absorb learning within their long-term memory.

In lessons, it is common for differentiation to appear in subtle forms such as through the use of manipulatives, adult support, peer support, group work or differentiated questioning. Through delivering maths lessons in mixed ability classes, children are exposed to different levels of thinking and are able to share their understanding. Further challenge is provided to all children through use of increasingly complex problem solving. Children are encouraged to 'Explain it' and 'Master it' in order to develop deeper conceptual understanding.

As part of our whole school implementation, we encourage the use of the [Concrete, Pictorial and Abstract \(CPA\) approach](#). Representing maths through the use of varied practical resources and models allows children to transfer new knowledge into different contexts but also increases the likelihood of an individual grasping the concept. This aligns with our vision that everyone can do maths, they just need to be shown a way that works for them. We use

a variety of practical resources and the children are encouraged to use 'Dual Coding' ([Clark and Paivio, 1991](#)) to explain their thinking whilst manipulating the practical resources.

Intervention and Support

Despite starting to develop a mastery approach in the learning and teaching of mathematics, we are aware that some children have gaps in their pre-requisite knowledge, including 'number novices' who begin school having had fewer opportunities to think mathematically in comparison with some of their 'number expert' peers. By adapting a mastery approach from EYFS, we aim to reduce the possibility of gaps opening in children's learning in the future and ensure they can all continue to learn age appropriate knowledge.

When gaps in learning are evident in EYFS, we provide children with a wide variety of opportunities to engage with the cardinality, comparison and composition of numbers to ten, as well as providing opportunities for them to count to 20 and beyond. In key stage 1 and 2, our medium term planning allows for some flexibility and therefore accounts for the needs of those children who require 'catch up' or further support.

In addition, we support individual needs through the delivery of small group interventions. These provide extra support to individuals who are finding it difficult to access age related content.

Mastery and challenge:

In cases where children's learning is most effectively being deepened, the following descriptors can be seen in their learning:

Depth:

- describe it in his or her own words;
- represent it in a variety of ways (e.g. using concrete materials, pictures and symbols – the CPA approach)⁸
- explain it to someone else;
- make up his or her own examples (and non-examples) of it;
- see connections between it and other facts or ideas;
- recognise it in new situations and contexts;
- make use of it in various ways, including in new situations.⁹

Greater depth:

- solve problems of greater complexity (i.e. where the approach is not immediately obvious), demonstrating creativity and imagination;
- independently explore and investigate mathematical contexts and structures, communicate results clearly and systematically explain and generalise the mathematics.

We used a variety of resources to assess children's ability to master a concept:

- *White Rose 'Reasoning and Problem Solving' activities*
- *Nrich*
- *NCETM – ['Teaching for Mastery: Questions, tasks and activities to support assessment'](#) (2015)*

Role of support staff

Teaching Assistants support the implementation of the mastery approach by:

- enhancing the delivery of the teacher's planning
- supporting 1:1 children achieve mathematical fluency (stage appropriate)
- provided differentiated adults support
- scaffolding learning for lower attaining children
- support higher attainers to deepen their understanding
- teach and correct key vocabulary
- enforce sentence stems during discussions
- address misconceptions immediately
- provide formative assessment which helps the teacher to adapt practice and planning
- complete observations of learning (especially in EYFS)

Staff Development

The above decisions taken in terms of curriculum design and intended teaching and learning are inextricably linked to necessary Continuing Professional Development (CPD) for all staff. School leaders ensure a range of CPD is made available, which means that strong consistency in practice is enabled across Years 1-6. Early Years practitioners are also aware about the mastery agenda and adopt relevant approaches to ensure strong foundational understanding. This supports the effective implementation of our mathematics curriculum throughout the school.

Assessment:

Assessment gathering is kept meaningful and is viewed as a diagnostic tool whereby collated information is used purposefully when planning pupils' next-steps. We understand the need for pupils to achieve key objectives for their current stage of learning. 'Cold pieces' are used at the beginning of each unit, allowing teachers to assess the children's prior knowledge and therefore plan an effective and logically sequenced curriculum. Then, 'Hot Pieces' are used at the end of a topic to assess whether the children are ready to move on to the next stage of learning.

Staff use formative assessment every lesson to assess the elements of learning children need to develop further. This may include observations, listening to children's conversations, marking books or questioning. We ensure our formative assessment is used to plan the next lesson or series of learning.

Additionally, we use Summative tests, three times a year, which provide staff with the opportunity to summatively assess the children's progress over time.

Marking and Feedback

In alignment with the school Marking and Feedback policy, pupils receive immediate and purposeful feedback within maths lessons. The children, especially in KS2, are encouraged to take responsibility for their own learning and correct errors or misconceptions using a purple pen. Children are identified quickly if they need extra support or a challenge and this formative assessment is used to inform future planning and interventions.

Impact:

We expect our mathematics curriculum to have a positive impact on every child as they progress through our school. The curriculum will:

- ensure all children develop a secure conceptual understanding of the age appropriate maths content evident in the DfE ['Mathematics guidance: key stages 1 and 2'](#) (2020).
- ensure children are ready to move on to the next key stage of learning. This can be assessed by each pupil's capacity to access age appropriate ready-to-progress criteria in Years 1-6 as detailed in the ['Mathematics guidance: key stages 1 and 2'](#) publication or Early Years Framework for EYFS.
- ensure all EYFS children gain a secure understanding of the concepts and skills detailed in [progression charts](#). This is expected to further impact the children positively by allowing them to attain the Early Learning Goals (ELGs) for mathematics.
- encourage children to develop a love of learning mathematics.
- encourage children to see mathematics as a vital part of our community and allow them to contextualise their learning in real-life contexts.
- allow children to develop in confidence and feel happy to express their mathematical reasoning and communicate their understanding publicly.
- empower staff and encourage their own passion for mathematics.
- have a positive impact on children's mathematical understanding which will be reflected in our end of key stage SATS results.