



EUXTON PRIMROSE HILL

Primary School

"Together we will make a difference."

Case Study for Mastering Number 2021-2022

School Context

Euxton Primrose Hill Primary School is situated in Chorley, Lancashire and is a larger than average primary school with 420 pupils on roll. Pupils' performance is consistently above regional and national outcomes, and our school was rated 'Outstanding' by Ofsted (Nov 2011). During the period of COVID lockdowns (2020-2021), school pupils were educated both on site as part of key work provision and through online/blended learning.

Intent:

Outcomes intended for pupils:

The rationale for the implementation of Mastering Number during 2021-2022 academic year was twofold. Firstly, as a consequence of the recent global pandemic and subsequent school/nursery provision lockdowns, it was identified that some of our younger pupils had missed the opportunity to develop the founding principles of early number due to gaps in nursery education. In addition, the maths subject leader and teaching staff identified that although pupils were secure in number bonds, some pupils were not able to reason effectively or identify all the bonds within a number with automaticity. As a result, as the curriculum progressed, some pupils were struggling to reason mathematically and were often over reliant on procedural methods rather than using declarative knowledge, thus resulting in working memory becoming overloaded. Outcomes identified through programme for pupils:

- develop ability to clearly articulate mathematical ideas using stem sentences
- use manipulatives to reason and show mathematical understanding
- increased fluency and automaticity with number

Secondly, the programme offered to develop teacher pedagogical knowledge in early mathematics.

Outcomes intended for staff:

Ball et al (2008) identified that it is important for teachers to develop specific pedagogical content knowledge, in order to secure a deep understanding of mathematical structures which in turn will raise outcomes in pupils. Consequently, the Mastering Number programme seeks to develop mathematics specific knowledge for teachers in both knowledge about teaching mathematics and knowledge about mathematics (ACME, 2016). Outcomes identified for teaching staff and support staff:

- develop a secure understanding of how to build firm mathematical foundations
- develop intentional teaching strategies focused on developing fluency in calculation and number sense for all children
- develop understanding and use of appropriate manipulatives to support your teaching of mathematical structures

Overview of programme:

The programme is designed by the NCETM to secure firm foundations in the development of good number sense for all children from Reception through to Year 1 and Year 2. The aim over time is that children will leave KS1 with fluency in calculation and a confidence and flexibility with number. Attention will be given to key knowledge and understanding needed in Reception classes, and progression through KS1 to support success in the future.

Implement:

Mastering Number was implemented initially in September 2021 in Years 1 and 2, with EYFS beginning later on in the Autumn term. The NCETM provided school with 15 rekenreks per class, which the children use in their sessions. Children completed 3 sessions per week for 10 – 15 mins in addition to the daily Maths lesson. In EYFS, Mastering Number became the principle foundation of teaching, with supplementary White Rose lessons to ensure all teaching strands were covered. All teachers were trained via online sessions with the head of NCETM Debbie Morgan each term, where the pedagogical specifics of each session were unpicked and the use of vocabulary and sentence stems was discussed in detail. Lead teachers from each year group were identified and contributed to an online community (Basecamp) to allow time to critically reflect on the programme.

Impact:

Pupil outcomes

Mastering number had a significant impact on pupils number sense, fluency in facts and flexibility in number which was seen from EYFS-KS2.

- In EYFS, 76% of pupils met the Number ELG and 94% of pupils met ELG for Numerical patterns.
- In Key Stage 1, the end of year data showed that 77% of children were at the expected standard for Maths with 22% at the Greater Depth standard. Both of which were above national averages.
- The end of Year data for Year 1 showed that 65% of children were at the expected standard with 17% at Greater depth. This shows that the Mastering Number had a positive impact of the children's basic number sense and, in turn, allowed them to make substantial progress. The children used these number skills across other areas of the Maths curriculum, for example in money, measure and time.
- Pupils' were confident in using a range of strategies effectively and using sentence stems to structure their mathematical reasoning.

Next Steps

- Mastering Number will continue to be embedded further in 2022 – 2023 academic year
- Staff will explore the use of Mastering Number as an intervention in LKS2

- Maths subject lead to continue monitoring pupil outcomes through a range of strategies – pupil voice, small group led work, feedback from teaching staff, formative and summative assessments.

Teachers comments relating to mastering number:

Mastering number has had a huge impact of the understanding of number for children in EYFS. They are able to look for patterns, give reason and apply their learning in continuous provision. It has helped them remember number bonds and they can confidently talk about how numbers can be made. As a teacher I think the progression and pace in each lesson is perfect and beneficial for both high and low achievers. I feel it supports our curriculum and each lesson builds upon the previous session, helping with sticky knowledge. I have loved having the PowerPoints and resources ready, which take into account different ways children retain information (visual, kinaesthetic and auditory). The children have enjoyed watching the number block episodes and the activities that are suggested in the planning, especially when our puppet Cara gets it wrong!

Children are able to clearly communicate their mathematical ideas better through the use of Stem sentences. They are using an applying stem sentences now in the main mathematics lesson and are more confident in mathematical reasoning using correct terminology.

Children have said:

I now know what resources I can use to support my learning and the rekenreks have helped me to spot patterns in number. Year 2

Parents have said:

My child has developed a secure understanding of how to build firm mathematical foundations in Year 1.

