Teaching for Mastery Lesson Design at

Stonebroom Primary & Nursery School

A Primary Case Study

Teaching for Mastery Lesson Design Work Group

One of the biggest challenges facing schools as they adopt a teaching for mastery approach is how to design lessons. Working collaboratively with practitioners from across the East Midlands the project, we began by identifying the key features of mastery, before exploring a route through a lesson, that allowed teachers to link these together in a coherent manner. Essentially we were looking at how to turn theory into outstanding classroom practice. Though our research often went much wider what is captured here in these case studies, each participant school was asked to focus in on one aspect of lesson design, how it has been incorporated into classroom practice, and the impact it has had on learners.

Overview

Tonya Kaye is the Maths Co-ordinator at Stonebroom Primary & Nursery School. Tonya took part in the East Midlands West Hub Teaching For Mastery Lesson Design Workgroup Project 2017/18. This academic year. At Stonebroom, we felt a key target was to develop a shared whole school understanding and development of the Maths Mastery approach. With this in mind, Tonya embarked upon the project. We looked at all of the aspects of a successful Mastery lesson and have been developing our skills in introducing these into our pedagogy. For each objective, the mantra has been 'teach it once and teach it well' therefore each aspect of the maths curriculum has been taught over an extended period of time. We have supplemented this technique with additional fluency sessions during the afternoons.

Using the Mastery approach, has had a very positive impact on the children. They have improved their reasoning skills and have started to explain their understanding of the mathematics they encounter.

What we did at Stonebroom Primary & Nursery School

Our Starting Point

We began by refreshing and updating our resource bank and researching appropriate representations to scaffold the children's learning for specific objectives and trying to match the manipulatives to the representations and vice versa, including:

- Place value counters & cards
- Ten frames with removable counters
- Base ten sets
- Numicon
- Double sided counters
- Bar modelling kits
- Unfix cubes

We have also been introduced to a fantastic resource called, 'mathbot.com' http://mathsbot.com/#Manipulatives, which has an excellent range of effective resources to use both as manipulatives and representations. The children have used it to support their learning on the I-PADS, which is a lot less arduous than providing the children with all of the physical resources and it has a very wide range so that the one resource can scaffold many different aspect of the maths curriculum. The teachers have also made good use of this resource coupled with the 'snipping tool' to create representations for the interactive white board.

Using Manipulatives

One aspect of the Mastery Approach that has been particularly successful, has been the use of manipulatives to scaffold and support the children's learning. Children are now confident to use a wide variety of different manipulatives and representations throughout the school. They are able to move forwards and backwards between concrete, pictoral and abstract versions to describe and explain their understanding of a range of mathematical concepts. The consistent use of manipulatives throughout the school has had a significant impact on the children's learning, especially when they are all introduced simultaneously from an early age. Working with manipulatives and representations has become the norm throughout all age ranges and has no stigma attached to it regarding the older children, as in previous years. Children from 3 – 11 are happy to use manipulatives to show their understanding and support their learning.

Independent Learning

By exposing the children to a wide range of manipulatives and representations, they can best choose the ones which help them to see the process. The children are exposed to ten frames in reception but can use them to solve equations and challenges using more complex numbers later on in their maths journey. One thing we found particularly effective was to use numicon representations under the multiples to help the children understand the and reinforce the idea of lots/groups pictorially (eg. It's another lot of 7 and another lot of 7). Moving towards the children selecting when they need to use a piece of equipment and which they think would be the most appropriate for the maths they are currently doing has been very productive. The representations used by teachers also reflected the manipulatives used in class.

Becoming Efficient

Currently, we are developing the skills of using specific manipulatives eg. some children were not sure how to use a place value chart so needed some input on this. As the years go by, the idea is that the children will become more proficient. From using the manipulatives, the children begin moving towards the pictoral version themselves by creating jottings in their books eg. Of a place value mat – this is often modelled by adults within the classroom too. It then becomes more efficient, a quick way to use the method without having to get out all of the equipment. We have completed several staff meetings sharing the resources available on-line and within school, and have completed some CPD on how best to use the equipment and what they can be used for.

Summary and next steps

Manipulatives have had a great impact on the children's procedural and problem solving skills in maths. The children are also creating their own representations (based on the manipulatives they have encountered in lessons) to complete their calculations.

We aim to move towards having a range of manipulatives in each class, in order that the children can self-select in a way that suits the teacher and lay-out of the classroom, of course this has monetary restrictions.

An additional next step will be to access more CPD esp. use of bar modelling in problem solving.

More Information

For more information about this project, or other workgroups and opportunities available through the East Midlands West Maths Hub:

Visit our website: http://www.emwest.co.uk

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