



Key Elements of a Maths lesson at NHFS:

Asking questions and conjecturing

Making, sharing and exploring mistakes

Spotting patterns, making connections... investigating!

Collaborative problem solving



Teaching for Mastery



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.

5. Children will not be left alone and isolated.

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

An illustration showing a group of children and an adult on a 'maths hunt' in a park. One adult is carrying a child on their shoulders. The children are holding sticks and looking around. The background shows trees and a blue sky.

We're Going on a **Maths Hunt**

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Our road to mastery

Our journey towards developing a new maths mastery curriculum began in September 2017 and since then, we have invested a lot of resources and time in developing staff CPD to support this shift of teaching and learning. In September 2018, the school maths coordinator became part of the NCETM Mastery Specialist Teacher Research Groups as part of the Maths Hub National Programme to support mastery in primary schools. As part of this they had the opportunity to work alongside the maths mastery leads from North Tyneside schools and to observe teaching.

At NHFS, staff worked collaboratively to consider the key values upon which to lay the foundations of our new approach towards mathematics across school. The 'growth mind-set' is instrumental in the success of our mastery curriculum and, at NHFS we are working hard to nurture an environment in which children relish the opportunity to make mistakes from which they can learn. The belief that 'everyone can be successful in maths' is central to our new approach and this led us naturally to our first whole school focus: the introduction of a mixed ability setting, where children were not positioned according to their prior mathematical attainment. Instead, all children work together towards the same objective, some with the support of adults or resources, while other children may be given the opportunity and time to explore a concept in more depth, applying their newly mastered skill to a range of contexts and problems. The concrete, pictorial, abstract approach which we have adopted works hand in hand with the mixed ability setting and allows children to explore complex concepts with the support of equipment, prior to the application of their knowledge and understanding. The school has invested in specific and carefully chosen equipment to support our new calculation policy, and this equipment is available to children in the newly established 'Maths Station' in each classroom.

The maths coordinator had the opportunity to observe a Shanghai teacher teach a 'mastery lesson' and to reflect on this style of teaching with other practitioners who are also introducing a mastery approach. The 'small steps' which are central to the design of lessons delivered using the Shanghai method, are key to the White Rose Hub maths schemes of work, which are now being used as a spine to the maths planning in each phase. Additionally, through close working with the maths mastery specialist in NHFS's link school, continuous assessment documents and termly assessments have been introduced from Years 1-4 and are used to inform planning, teaching and intervention.

The focus in school for 2018/2019 was to redesign the calculation policy so that it matches the mastery principles and the use of representations such as Singapore Bar Model and Part Part Whole model. Additionally, has been the creation of a mathematical fluency policy which will be introduced to staff in the 2019/2020 academic year with the introduction of HI-5 maths sessions to allow children to become fluent in the fundamentals of maths. 2019/2020 will see the Maths Coordinator support staff in the use of these policies to support planning and teaching.

What you will see in a Maths lesson at NHFS

At NHFS, teachers are there to facilitate the learning of the children, in accordance with their needs. We teach whole class objectives in a mixed ability setting, in line with our

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steadfast belief that 'all children can do maths'. Children's ability is not labelled on the basis of their prior attainment, although teachers are aware that some children may take longer to master concepts and may require the additional support of resources and equipment or of an adult. Such support is planned ahead of each lesson; however decisions are not always made about which children may require this support prior to the lesson. Children are given the time that they need to explore new concepts and, conversely, those children who master a concept quickly are provided with opportunities to then apply their newly acquired understanding. Children are sat in mixed ability groupings and seating arrangements change on a regular basis depending on the children's needs and content of the lesson. We follow a lesson design of teacher input; fluency activity, then application through a star challenge which may challenge children to problem solve or may allow children to conjecture. There may be repeated 'bouts' of teacher input and subsequent supported practise before children are given the opportunity to apply their understanding independently. This approach has been designed to provide support at each step of learning, complementing the growth mind-set and positive 'can do' attitude which are central to our mathematical mind-sets.

Lessons are designed on the principle of 'concrete, pictorial to abstract' and where applicable, a range of manipulatives are used across the school to support children to understand key concepts, and to become fluent in methods of calculation. Careful questioning is also used to probe the pupil's understanding throughout a lesson, and children are encouraged to answer in full sentences, using the modelled STEM sentences for guidance. In order to address the aims of the NC, our long/medium term plans have been adjusted to allow longer on topics. Each lesson focus is on one key conceptual idea and connections are made across mathematical topics. To outsiders it may appear that the pace of the lesson is slower, but progress and understanding is enhanced. Our assessment procedures recognise that the aims of the curriculum cannot be assessed through coverage (ticking many objectives off a list) but through depth within a topic.

Tracking attainment and progress

The school has introduced the 'Small Steps Progression' document from the White Rose Maths Hub and is now using this as an assessment tool for mathematics. Staff use these small steps and assess children's progress against these as they are taught. This data is then used by class teachers to inform 'master class' interventions, which take place every day during assembly time. Master classes may be used as an opportunity to provide further challenge, pre-teaching ahead of particular concepts, or to address misconceptions prior to the next maths lesson. Additionally, termly assessment papers are used in Year 1-4 and these are in line with the White Rose Maths Hub planning blocks of teaching. Pupil Progress meetings are then held to review the successes of the term, and to identify next steps for those children identified. The maths coordinator reviews pupil progress notes and data analysis half termly to identify children for target children and a plan of support is designed with class teachers. This data analysis is supported by lesson observations, planning and book scrutinies and small step progression monitoring.

Additionally, 2019/2020 will welcome two new staff members to our team at NHFS. Both

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new staff members will work closely with the maths coordinator through a bespoke coaching programme to support planning and teaching which is consistent with the values and principles which underpin our approach to teaching and learning in maths at NHFS.