Maths at Rokeby Primary School

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1. Subject statement

Intent

At Rokeby, we will ensure that our mathematics curriculum promotes a range of skills and knowledge and that the skills and knowledge are embedded, and progression is evident, within our curriculum. All children are given the opportunity to access a broad and balanced mathematics curriculum.

To become able and confident mathematicians, we want our children to:

- Become fluent in the fundamentals of mathematics.
- Be able to reason mathematically.
- Be able to solve problems by applying their mathematics.
- Be able to recognise the importance of mathematics in the wider world.
- Be able to use their mathematical skills and knowledge confidently in their lives, in a range of different situations and contexts.
- Enjoy mathematics and to have confidence to experience success in the subject.
- Develop their curiosity about the subject, as well as an appreciation of the power and importance of mathematics.

Implementation

Our whole school mathematics curriculum is underpinned with the following principles and features:

- All teaching staff (teachers and teaching assistants) reinforce an expectation that all children can achieve high standards in mathematics.
- Most of the children progress through the curriculum content at the same pace. Differentiation is achieved by emphasising deep knowledge and through individual support and intervention.
- Teaching is underpinned by methodical curriculum design and supported by carefully crafted lessons and resources to foster deep conceptual and procedural knowledge.
- Practice and consolidation are crucial. Carefully designed variation within this builds fluency and understanding of underlying mathematical concepts.
- All teaching staff use precise and targeted questions in class to test conceptual and procedural knowledge and assess children regularly to identify those requiring intervention, so that all children can succeed.
- Teachers promote key mathematical vocabulary and this vocabulary shows progression through the year groups and key stages.

At Rokeby, to ensure consistency across the whole school, we use the DfE approved 'Power Maths' scheme. This is fully aligned with the White Rose Maths scheme. Our mathematics leader and English leader were part of the Maths Hubs Teacher Research Group (TRG) and can develop and deliver whole school continuous professional development, to ensure that staff at all levels understand the pedagogy of the approach.

'Power Maths is structured to help you teach concepts for longer and to go deeper. For each year group, the UK curriculum strands have been broken down into core concepts. These are taught in blocks of lessons so you can give sufficient time to developing a deep and sustainable understanding of core maths concepts. Each concept has also been broken down into small steps (lessons). Each lesson and concept builds on prior knowledge to help children build a robust and deep understanding of the concept before moving on.'
(source: www.pearsonglobalschools.com accessed on 01/04/2020)

Impact

Children are becoming confident and keen mathematicians with natural curiosity and wonder.
All children are beginning to feel like they can access mathematics as the structure of Power Maths ensures that all children experience challenge and success by developing a growth mindset. Power Maths is now embedded across the school and each lesson, in every year group follows the same structure. Staff are trained in delivering Power Maths and from learning walks and staff feedback, their growing confidence in the teaching of mathematics is evident.

Teachers and Teaching Assistants carry out regular and accurate assessment, both throughout lessons and after lessons. By reacting during a maths lesson, and always having opportunities planned to both 'strengthen and deepen' children's learning, we ensure that both children make age-appropriate progress and we have a high standard of mathematics across the school. Our children will 'master' mathematics.

Teachers and teaching assistants support children to achieve and progress in maths through the CPA (concrete, pictorial, abstract) approach. This approach is used across the school and children 'master' maths using small steps between the key elements of mastery. Children can 'talk' about maths. It is not just about a correct answer, it is about the journey that they took to 'arrive' at this answer. Children are becoming more able to reason and explain how their answer is correct, using age-appropriate mathematical vocabulary.

Our children enjoy maths, this has become growingly evident, across several pupil voice questionnaires. Children can talk about maths and know what it means to both reason and problem-solve. Children can talk about a range of ways in which they could independently support themselves in maths, e.g they could talk about concrete resources they could find in the classroom.

Power Maths workbooks show that children at Rokeby are beginning to experience and understand the breadth of the maths curriculum. Children demonstrate fluency, which then leads to them being confident in solving problems and by reasoning.

2. Assessment

Assessment for learning:

- The structure of our lessons allows many opportunities for teaching staff to pick up on misconceptions. The children are given the opportunity for guided practice, during the 'Think Together' part of the lesson and they can then apply the skills, knowledge and skills from the 'Discover and Share' section of the lesson.
- As per NCETM guidelines, all lessons are taught in small steps as 'small steps are easier to take.' (www.ncetm.org.uk accessed 01/04/20) Learning in small steps also allows teaching staff opportunity to pick up misconceptions, as soon as they arise.
- Children receive feedback, during lessons, both orally and through written feedback, as per our Marking and Feedback Policy.

Assessment of Learning:

- Children receive feedback in their books, through written feedback, as per our Marking and Feedback Policy (appendix 1).
- Teachers carry out ongoing assessment and this is recorded on each child's individual maths tracking grid.
- We follow the PiXL calendar of assessment and children sit assessments at different points of the year. This data is then analysed to inform both lesson planning and therapy groups.
- Each half term, teachers report children's current attainment on OTrack, based on the current year group that each child is working within, using the following indicators: Developing, Developing+, Meeting, Meeting+, Exceeding and Exceeding+.

3. Planning and Resources

We use resources in all our lessons and follow the 'concrete, pictorial, abstract' (CPA) model. All classes have their own bank of resources and there is also a wider range of resources that is accessible to the whole school. As part of our subscription to Power Maths, all staff have access to interactive teaching tools which further support the CPA model. Power Maths also clearly sets out which resources will support the teaching and learning in each lesson (appendix 2). We use high-quality, DfE endorsed textbooks and workbooks to further develop learning within the classroom or within smaller group work.
**This overview runs on collaboration with our Calculation Policy-appendix 3*

4. Teaching and Learning in the Early Years Foundation Stage (EYFS)

Children in Nursery have a short daily mathematics teaching session, during which time they begin to develop their understanding of simple mathematical concepts through using physical resources, pictorial resources, songs, games and role-play.

In Reception, children have a three-part lesson.
This consists of:

- Whole class oral and mental starter
- Whole class main teaching
- Focus activity for a small group of children

Throughout the week a child will work with teaching staff to complete an activity . Reception also have access to Power Maths journals, it is at the teacher's discretion, to decide when and where these journals are appropriate. In both Nursery and Reception, the independent activities in the maths link to the focus for the week. In addition to these planned independent activities, children also can self-select maths resources to consolidate their learning during child-initiated activities. Regular observations and assessments help to ensure that children that need additional intervention to consolidate their mathematical understanding are identified and supported by appropriate interventions.

5. Teaching and Learning- Key Stage One and Key Stage Two

Power Maths lessons usually last one hour in Key Stage One and Key Stage Two. The teaching and learning follow this structure:

'Power Up!'	This is a whole-class starter and supports with fluency in all number facts.
'Discover and Share'	The children have a hands-on problem to discuss and provides opportunity for the class teacher to target their questioning. Children share their ideas and reason with one another.
'Think Together'	The class discuss the problem and consider solutions and methods that can be used.
'Practice'	This part of the lesson is completed independently (support can be given, if needed by groups or individuals). It builds fluency and a deeper understanding of the concepts from the lesson. The children are also given the opportunity to complete a challenge question, to give a greater level of depth.
'Reflect'	During this final part of the lesson, the children are given the opportunity to review, reason and reflect on their learning.

6. Gifted and Talented Children in Maths

Children may be gifted and talented in a specific area or in all areas of maths. Through the use of Power Maths, we promote maths mastery, which gives an emphasis on depth, not just breadth. Children who are gifted and talented are able to access challenges at the end of each lesson. The challenges focus on using and applying of the fluency skills that they already feel secure in using independently. Teachers also plan for 'children to deepen'. These children are identified throughout the lesson and activities/tasks are ready for these children to access, if teachers/ teaching assistants feel that they need more challenge and are able to access the learning at Greater Depth Standard (GDS).
Teachers make assessments at the end of every lesson, and this informs future planning and next steps in learning for those children who show that they are gifted in specific areas.

7. SMSC in Maths

Spiritual:
Mathematics supports spiritual development by engaging children with depth of thinking and problem solving. Mathematics enables children to make sense of the world around them and we strive to enable each of our children to explore the connections between their numeracy skills and every-day life. Power Maths supports this concept, as during the 'discover' task in every lesson, the class are challenged with a real-life problem related to the strand of maths being taught.

Moral:
Mathematics threads through many other subjects that support and promotes moral development. This can be in geography lessons, by encouraging children to look, discuss and evaluate a range of social and moral issues found in the world. For example, when Year 6 learn about the deforestation of the rainforest, they use their maths skills to work out how much has been cut down over time. They then relate this to everyday measurements that children are used to, such as the children learn that, 'an area of Amazon rainforest roughly the size of a football pitch is now being cleared every single minute.'

Social:
Mathematics supports social development by requiring verbal reasoning. Children have opportunities to discuss their learning with their peers. At the end of every maths lesson, children have the opportunity in their Power Maths book to reflect on their learning. When they have reflected, they can share their reflections with a peer. Once every 2 weeks, children take part in investigations in maths. They work with their peers to solve a range of maths investigations/challenges.

Cultural:
Mathematics supports the cultural development of a child by exposing them to a range of different approaches to solving problems and reasoning skills. Links are made to geography and history topics where possible. For example, during the topic on the Romans, children use their knowledge of Roman numerals to complete their history work.

8. The Role of the Subject Leader

The main role of the mathematics subject leader is to develop, promote and enhance an interest and understanding of the subject in both children and staff.
The subject leader will:

- Promote mathematics through high-quality mathematics displays around the school.
- Support Continuous Professional Development (CPD) for all teaching staff.
- Carry out learning walks and lesson observations and work with teaching staff to identify strengths and weaknesses.
- Carry out monitoring of children's books.
- Monitor progress through analysis whole school data- PiXL and O Track.
- Organise, audit and purchase maths resources.
- Through the TRG, keep up to date on current developments within the teaching and learning of mathematics and disseminate information to teaching staff.
- Attend network meetings with mathematics leaders from other schools in the local consortium and within the Stowe Valley Multi Academy Trust.
- Develop opportunities for parents/carers to become more involved in Maths education.

9. Parents/ Carers

We aim to involve our parents and carers in many different parts of school life. We involve our parents and carers in maths by:

- Sending a maths learning card to work on at home, number bonds, times tables and then number facts, relevant to the level that the child is currently working on.
- All children have their own account, set up by the maths leader on www.timestables.co.uk and their performance can be tracked by their teacher.

- A half-term and end of year report is sent home, indicating current attainment and progress in mathematics.
- Parents evenings are held twice and year and give parents/carers the opportunity to discuss their child's progress.
- Parents/Carers can communicate with their child's teacher on Class Dojo, if they need any support with their child's learning in mathematics.

10.Safeguarding in Maths

For children to be successful mathematicians, with the ability to reason and problem-solve, then they must feel safe in the classroom environment to take safe risks with their answers. During problem-solving and reasoning parts of maths lessons, there can be a range of different answers and challenges the children face, so they must feel safe and secure in knowing that it is ok if their answer is not 'correct'.

11. Supporting Children with SEND (Special Education Needs and Disabilities) in Maths

To ensure maths is accessible to all groups of children, including those children with SEN, we teach maths using a concrete, pictorial and abstract approach. Children are first taught a new skill/ method through the use of concrete materials, e.g unifix cubes or Numicon. Most children will then move on to approaching the concept pictorially. For some of our children with SEN, they may stay working on the concrete approach, rather than moving on to pictorial and abstract. Our teachers and teaching assistants work closely together and use assessment for learning to decide on a daily basis, what differentiation is needed.

We use Power Maths, which follows the 'mastery approach', where all children are learning the same content, at the same time. At Rokeby we recognise that this approach would not work with some of our children with SEN. There are many provisions put in place for these children, such as working on a lower year groups content or focusing just on mathematical fluency.

We promote flexible grouping in maths as a child with SEN may be particularly below in one strand of maths but excel in the other. They are still exposed to a range of concepts, even if they are working a lower year group. Our maths curriculum is carefully sequenced and ambitious, so that children with SEN are still challenged at an appropriate level and pitch.

During maths lessons teaching promotes meta-cognitive skills and teach children how to 'think about thinking' when tackling maths problems. As part of the mastery approach, teachers break down concepts into small steps and explicitly model how to work out and solve each part of a calculation/ problem. Teachers carefully explain their thinking at each small step.