DALLAM PRIMARY SCHOOL

MATHEMATICS POLICY

Date of this Review	February 2023
Next Review due	
Approved by Governors	
Signed by Chair Of Governors	

Dallam Community Primary School
Mathematics Policy

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Intent

At Dallam School, we recognise that mathematics is a vital tool for everyday life, necessary for financial literacy and most forms of employment. It is a whole network of interconnected concepts and relationships which provide a way of viewing and making sense of the world. Through our maths curriculum we aim to equip our children with the skills to communicate information and ideas and tackle a wide range of real life problems, both routine and non-routine.

Using the Statutory Framework for the Early Years Foundation Stage (2017) and the National Curriculum for England (2014) to underpin our curriculum, we adopt a mastery approach, promoting:

- a positive attitude towards mathematics and a sense of curiosity about the subject
- The expectation that the vast majority pupils can achieve a standard appropriate to their age in mathematics and progress at broadly the same pace
- The importance of using concrete resources to develop conceptual understanding before moving to visual representations and then the abstract.
- the ability to communicate mathematical knowledge and understanding effectively, in a variety of ways
- perseverance and challenge through rich, sophisticated problems
- fluency, the ability to solve problems, reason, and think logically whilst working systematically and accurately
- the ability to make connections within and across areas of maths, developing number sense and efficiency
- the application of mathematics across the wider curriculum
- initiative and an ability to work both independently and in co-operation with others

Implementation

Maths is taught daily in all classes across the school. In KS1 and KS2 children also have additional opportunities throughout the week to practise their procedural fluency and recall of number bonds and number facts. The 4-a-day approach ensures that children's arithmetic skills remain sharp regardless of the strand of the curriculum currently being extended through daily maths lessons. Online resources, TTRockstars and Numbots, support rapid recall of number bonds and tables facts.

In all year groups, there is a strong emphasis on the Concrete – Pictorial – Abstract approach which develops children's conceptual understanding through using concrete resources to explore concepts practically before beginning to represent their understanding through pictures and diagrams until they are ready to use mathematical symbols and conventions to display their understanding.

EYFS

In the EYFS, teachers take into account, project questions, fixed themes throughout the school year e.g. Christmas, whole school focus areas e.g. Hopes and Dreams week and the children's interests when planning leaning in maths.

Teachers plan and deliver sequences of learning using the objectives outlined in Development Matters (2012) which are delivered in accordance with the principles of the Early Years Foundation Stage Framework (2019). Numberblocks characters and interactive activities are used to engage children in talking about, exploring and practising their developing mathematical knowledge and understanding with a clear focus on early number sense including subitising. Early concepts include: seeking patterns, making connections, recognising relationships, working with numbers, shapes and measures, and counting, sorting and matching. Children use their knowledge and skills in these areas to solve problems, generate questions and make connections across other areas of learning and development.

Children in the EYFS learn by playing and exploring, being active, and through creative and critical thinking which takes place both indoors and outside. Opportunities for children to develop and use their growing mathematical knowledge and understanding are provided through routine, continuous provision and incidental learning opportunities, as well as planned sessions and activities. Mathematical concepts and understanding are developed through stories, songs, games, routine, questioning, independent challenges, imaginative play, child initiated learning and structured teaching.

Resources used in EYFS are carefully selected to prepare children for the Maths No Problem scheme which is implemented in Year 1 and continued through KS1 and KS2 until Year 6.

Maths is taught daily in both Nursery and Reception. In Nursery, there is a strong emphasis on developing the vocabulary of early maths through songs, rhymes and counting. Opportunities are sought throughout the day to reinforce this through the routines of the session e.g. at snack time, when tidying equipment away or when taking the register. In Reception, lessons include a balance between whole-class

work, group teaching and individual practice. In the Autumn term, these sessions are similar to those in Nursery. However throughout the year there is a gradual shift towards adult-directed sessions being extended in preparation for Year 1.

It is expected that the vast majority of children in Nursery and Reception will be taught maths in mixed ability groups, with the whole cohort working towards the early learning goals at broadly the same pace. Pupils who grasp concepts rapidly will be challenged through having access to a wider variety of problems, whilst those children who are not sufficiently fluent in their understanding will be given opportunities to further develop their understanding before moving on

KS1 and 2

From Year 1 to Year 5, teachers use the DfE approved Maths No Problem (Singapore Maths) Scheme which has been developed in alignment with the principles of maths teaching and learning found in high-performing countries. Maths No Problem fully covers the requirements of the National Curriculum for England (2014)

Underpinning this mastery approach is:

- The belief that all pupils are capable of achieving high standards in maths
- The expectation that the majority of pupils will move through the curriculum at broadly the same pace
- Methodical curriculum design that fosters deep procedural and conceptual knowledge
- Carefully designed variation to build fluency and understanding
- Precise questioning to assess children regularly and identify those requiring intervention quickly so that the vast majority of children "keep up"

Decisions about when to progress will always be based on the security of children's understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly will be challenged through being offered rich and sophisticated problems as well as exploratory, investigative tasks, within lessons to deepen their knowledge and understanding before any acceleration through new content. Those who are not sufficiently fluent with earlier material will consolidate their understanding, including additional practice, before moving on.

In Year 6, as in other year groups, maths content is blocked to enable children to spend enough time to fully explore a concept before moving on to a different topic. In preparation for their learning in Year 7, a range of resources, including Maths No Problem, are used to ensure that children are familiar with a variety of approaches. The long term plans for each year group are available on the school's website. The Year 6 plans have been developed using White Rose Hub plans, Y1 to 5 reflect the chapters in the Maths No Problem scheme. Objectives for each year are available on the website in the Curriculum overview documents. As a child moves through the school, key concepts are revisited and built on through a spiral curriculum.

Learning and Teaching

Each class teacher is responsible for the mathematics in their class in consultation with and with guidance from the mathematics subject lead. Teachers in all classes have access to online resources from the Maths No Problem scheme which support their choices of practical apparatus and effective questioning as well as identifying common misconceptions which the children may have developed.

Typically a Maths No Problem lesson will follow the same structure:

- Maths is taught daily, usually during the morning.
- Children begin with an 'Explore' task in which a problem set in a context that the children will understand and is shared for the children to discuss in partners. This helps promote discussion, and develop mathematical vocabulary. It ensures that mathematical ideas are introduced in a logical way to support conceptual understanding.
- These problems are almost always presented with objects (concrete manipulatives) for children to use to help them to develop conceptual understanding. Teachers use careful questions to draw out children's discussions and encourage them to explain their reasoning. The children learn from misconceptions through whole class reasoning.
- Following this, the children are presented with varied similar problems which they might discuss with a partner or within a small group (Guided Practice). At this point, scaffolding is carefully reduced to prepare children for independent work. At this point, the children might record some of their reasoning in their journals or on a whiteboard. The teacher uses this part of the lesson to address any initial errors and confirm the different methods and strategies that can be used.
- The class then progresses to the 'Workbook' part of the lesson, which is designed to be completed independently. This practice uses conceptual and procedural variation to build fluency and develop greater understanding of underlying mathematical concepts. The children may then complete a 'Mind Workout' which promotes a greater depth of thinking.
- Children who complete this and/or demonstrate a secure understanding of the concept through their discussion and journaling, are provided with further 'rich and sophisticated' problems e.g. from White Rose Maths, NCETM, Classroom secrets, I See Reasoning etc which they complete in their journals or are added to their Maths No Problem workbooks.
- At the end of each chapter, children have the opportunity to complete a 'Review' to consolidate the learning in each chapter and may complete a 'Revision' which provides an assessment of the consolidation of concepts and skills across strands and topics.

The pace of learning is rapid as children progress through the Maths No Problem units. Teachers are encouraged to continually use their professional judgement to assess whether key concepts have been firmly grasped. Where a number of children have not secured firm understanding, teachers plan supplementary lessons and activities to ensure that they have firm foundations to build on.

On occasion, teachers may wish to leave a concept and return to it later in the year when the children are more ready to access it. However teachers should not miss out sections of the workbooks entirely, as sequences are carefully planned to build on and practise prior learning both within a year group and across year groups.

In Year 6, learning follows a similar format, beginning with a problem and providing opportunities for the children to discuss and practise using concrete apparatus and visual representations before applying understanding to a range of situations which require reasoning and problem solving skills. Children work in 1cm squared maths books where they are encouraged to set their work out neatly in order to support the communication of their reasoning and understanding. This helps to prepare the children for the next stage of their education in KS3.

Across the curriculum, opportunities exist to extend and promote mathematics. Teachers seek to take advantage of these opportunities. For example, science medium term planning includes opportunities to use mathematical knowledge and understanding through each unit.

Opportunities are sought by teachers to enhance learning in mathematics through the use of ICT when appropriate. For example, Year 5 and 6 have access to a Learner Response System for practising a wide variety of maths skills, computing software includes graphing programmes and the computing curriculum includes the use of spreadsheets to apply formulae to practical problems.

4-a-day

4-a-day maths takes place in classrooms from Y1-Y6 daily. It is intended to keep children's skills sharp in the four basic operations and provide opportunities to overlearn and develop fluency. Initially in KS1, children will practise the operations that they have encountered so far. As the curriculum covers multiplication and division, they will be included. Children have 1cm squared A5 books in which they record their 4-a-day work. This work is marked with the children so that mistakes can be identified and corrected immediately. As soon as the children are able, they mark their own 4-a-day work under the supervision of the teacher.

Higher and Lower Attainers

We teach maths to all children, whatever their ability. It is an integral part of the school curriculum policy to provide a broad and balanced education for all children. Work takes into account any targets set in Individual Education Plans and children may have additional maths intervention targeted at a specific need. Teachers and teaching assistants may provide opportunities for pre teaching prior to a lesson where they know that a child may struggle with a concept or address a misconception or difficulty after a lesson where marking or formative assessment has highlighted this.

Similarly, we recognise the needs of those children who are more able mathematically, planning rich tasks that require the child to reason and solve problems with independence at greater depth.

Teachers in designated provision classes plan using Maths No Problem. This is matched to the children's ability and may not reflect the current year groups that the child is in. Children in designated provision may progress at a slower rate through the scheme than that which is expected in main stream.

Learning Environments

In each classroom, teachers maintain a maths working wall which provides support for children in their current learning. Children are able to use this to work independently when required.

Commonly used resources are kept in classrooms. They are clearly labelled and accessible to children as appropriate.

Assessment

Wherever possible, children's work should be marked with the teacher or TA so that misconceptions and mistakes can be addressed immediately.
Work should always be marked before the next lesson.

In EYFS, assessment is predominantly through practitioners' observations of children in different teaching and learning contexts, including adult focused activities and child initiated play. Observations take place on a daily basis (both formally and informally).

Leaders seek to avoid unnecessary burdens on staff or children in regards to assessment expectations.

Homework

Children throughout the school practise either number bonds or times table facts every day as part of their homework. Additional maths homework may be set by teachers to consolidate work done in class, especially as children progress through KS2.

Impact

Pupil interview shows that children typically enjoy their maths lessons. They say that they enjoy being challenged and like to talk about their work with their peers. When data is analysed, it can be seen that the majority of pupils make at least good progress and attainment for mainstream pupils is broadly in line with National averages.

Formative assessment of children's progress and achievement is an ongoing feature of every lesson. Teachers and teaching assistants listen carefully to children's explanations and discussions to identify misconceptions and use journals and workbooks to establish what children know and understand.

Children are encouraged to use self and peer assessment throughout their learning in maths. Teachers give positive feedback, support and challenge in line with the marking policy.

Summative assessment takes place termly during assessment weeks to inform teacher assessment which is recorded as part of school tracking processes. Results of assessments are discussed with senior leaders at pupil progress meetings and

interventions put in place as appropriate.

Parents are informed termly about their child's attainment and progress as part of the schools reporting process.

Results of summative assessments at the end of each year are used to inform teacher assessment which is used to track children's progress as they move through the school and set targets for future improvement.

Regular moderation of assessments in maths enables teachers and TAs to develop assessment practice and ensure that assessments are accurate.

The maths subject leader monitors and evaluates standards of children's work and the quality of learning and teaching in maths. Management time is allocated to the maths subject leader so that he/she can monitor planning, scrutinise children's work, seek pupil voice and carry out learning walks across the school. Feedback is given to staff and support and advice where necessary.

The subject leader reports to the governing body at least termly about standards, progress and developments in the subject.

Supporting Policies

Calculations policy
Marking policy
Assessment policy
Presentation policy
Equal opportunities policy
SEN policy
Inclusion policy