

DREW PRIMARY SCHOOL

Mathematics Policy



‘Learning today for tomorrow's world.’

Agreed at Governing Body Meeting on

Signed Headteacher:

Signed Chair of Governors:.....

To be updated: November 2016

Introduction

This document is a statement of the aims, principles and strategies for the teaching and learning of Mathematics at Drew School. It has been developed through a process of consultation with school staff and governors.

Mathematics at Drew

Aims

In order to fulfil the requirements of the National Curriculum (2014), we, at Drew, use the 'Maths Makes Sense' (MMS) learning system.

Our aims in teaching Mathematics using this learning system are to:

- Ensure deep conceptual and procedural understanding through a carefully planned and co-ordinated learning system of concrete objects, exaggerated actions and special vocabulary - developing fluency, reasoning and problem-solving skills.
- Transform children's understanding and enjoyment, encouraging all children to excel and become excited about maths.

As a result of these, we therefore aim that all children will:

- Enjoy the subject and study it with a sense of confidence and achievement.
- Achieve a high standard in Mathematics and gain a secure foundation of knowledge, skills and concept
- Use the calculation skills consistently and with confidence.
- Use and apply these skills with confidence and understanding in real life problems and within mathematics itself
- Develop persistence through sustained work over a period of time
- Develop an ability to think logically and to use mathematical language with confidence and understanding
- Have an appreciation of mathematical pattern and relationships
- Have a positive attitude towards mathematics as an interesting and creative subject.
- Gain experience of working independently, investigating their own ideas and developing their own mental and written methods.

Implementation

Clear DfE guidance encourages schools to design their own curriculum, in that:

- Aspects/objectives may be brought forward to earlier key stages or moved within a key stage.
- National expectations must be met by the end of KS1 and end of KS2.
- There is no statutory requirement to match by year.

The MMS programme has been matched to every National Curriculum (NC) yearly objective showing the places where MMS teaches those aspects of mathematics and meets NC statutory end of Key Stage expectations.

Further MMS guidance explains how the statutory objectives are:

- met in earlier or later stages of the MMS programme.
- practised through less explicit means e.g. Daily Practice.
- developed through flexible planning and opportunities to include problem solving or test materials.

In *Maths Make Sense*, the curriculum is split into five key areas, with each being taught on a different day of the week. These are:

- Arithmetic 1
- Geometry
- Data and Measure
- Arithmetic 2
- Reasoning

The school will follow the requirements of the National Curriculum as set out in:

The National Curriculum in England: Mathematics programmes of study (2014)

And will follow the guidance contained in:

- *Maths Makes Sense 1 and the National Curriculum (2014)*
and
- *Maths Makes Sense Progress Ladders (2014)*

Teaching and Learning

We teach *Maths Makes Sense* with a teaching cycle of instruction and assessment to help every child succeed and to help make sure no child is left behind. The cycle consists of 'Direct Instruction', 'Guided Practice', 'Partner Teaching' and 'Independent

Practise', with a focus on partner work embedded throughout. During 'Direct Instruction', our teachers use big teaching to teach a new concept or idea to the class. The instruction also encompasses heavily scaffolded examples of how to implement new learning, giving children the opportunity to follow along. During 'Guided Practice', the children practise what they have been taught during 'Direct Instruction' under careful guidance from their teacher. Partner Teaching is a proven technique that works on the premise that the best way to understand if you really understand something is to try and explain it to somebody else. Children teach each other what they have learned and, in this way, they consolidate and deepen their own understanding. Moving on from 'Partner Teaching', children are expected to implement their learning independently. Assessment is at the heart of this cycle; our teachers carefully monitor and assist children where necessary.

The National Curriculum (2014) has three key aims for teaching and learning - Fluency, Reasoning and Problem solving. MMS meet these in the following ways:

Fluency

MMS, as a consistent learning system, ensures fluency through the daily practice of maths facts and the rigour of precision teaching across all aspects of mathematics.

Reasoning

The richness of mathematical connections in the MMS programme comes through teaching 5 strands alongside each other every week - one of these strands is devoted to reasoning.

Problem Solving

MMS is unique amongst Primary Maths programmes in that it has a consistent approach to teaching teachers how to assist children in becoming fluent, using reasoning to become confident and competent problem solvers. In effect, children use and apply what they know.

Children will record their work in appropriate ways for a variety of purposes, with a high emphasis on the quality of presentation with clear guidelines for all teachers to follow.

At the Foundation Stage:

Maths Makes Sense Foundation focusses on a different strand or a combination of strands each week, including counting, number, writing, calculation, shape, position, sorting and data and meets all the 2012 objectives.

MMS Foundation also goes beyond these objectives, for example:

Counting

The 2012 EYFS Framework: count objects to 20 and read/write number to 20.

The MMS Foundation materials: count objects to 30 and use counting rhythms to 100 and beyond.

In the second/third term children could use 'maths counting' to support their understanding of 'teen' numbers and counting in tens, which are normally introduced early in MMS1:

Say it in English - 'twelve'.

Say it in maths '1ty 2'

Say it in English - 'twenty'.

Say it in maths 'two-ty'

Estimation

This should be a part of experiential learning, particularly with measures. The language of estimation features strongly in MMS Foundation through grouping and in games played with dice, dominoes and cards.

Sharing

'Sharing' should not be modelled with the cups as in MMS1 but the idea of 'sharing' developed as an everyday idea through social play, such as sharing apples or orange juice drinks. Teaching Division has a very careful progression through MMS1 using the ideas of 'grouping' and 'sharing' and their link with reasoning and problem-solving.

For more on how specifically MMS foundation meets the 2012 objectives, please refer to

MMS Foundation Medium-Term Plan (2014)

MMS Progress Ladders (2014)

Key Stages One and Two

Teaching in Key Stages One and Two follows the teaching and learning cycle as already explained with emphasis on Direct Instruction, Guided Practice, Partner Teaching and Independent Practise. This helps to ensure that children become efficient at fluency, reasoning and problem solving. Teachers are delivering the full program specific to their year group, with children having been through the 'Getting Started' programme at the beginning of the 2014-15 academic year. The MMS programme ensures that children have met the new Nation Curriculum objectives by the time they finish Year 6.

Teaching Assistants support learning in Mathematics by:

- giving focused support to individuals and small groups
- delivering targeted intervention programmes
- supporting differentiation within the classroom
- preparing and managing resources
- supporting assessment

Early Morning Activity sessions in KS1 & 2

Teachers begin the day with a 'Soft Start' activity which will include mathematics problems and challenges twice a week.

Use of ICT Numeracy resources

Each class has access to iPads and laptops to use as each teacher sees fit. They may be used to reinforce an activity completed in class or as an extension for gifted and talented children.

Planning

Medium term plans are laid out by the MMS learning system. Weekly planning is also set out by MMS and includes specific vocabulary and/or actions to be covered by teachers. Teachers are expected to use the weekly planning to create a 'Weekly Overview' for Maths. On the Weekly Overview, teachers add learning objectives and success criteria to each lesson and have the opportunity to note any further resources needed or key questions that are not already in the Maths Makes Sense planning. Teachers are also expected to annotate planning to include 'What if Not' questions. These include support and extension questions and/or activities. All planning (medium term and weekly lessons) is stored in planning folders and is saved on the shared server.

Assessment

At Drew Primary School assessment is an integral part of the teaching process. Assessment is used to inform planning and to facilitate differentiation. The assessment of children's work is on-going to ensure that understanding is being achieved and that progress is being made. Success and Improvement marking is completed weekly to address misconceptions and move the pupils on in their learning.

Feedback is given to the children as soon as possible, and marking work will be guided by the school's Marking and Feedback Policy.

- This aims to encourage and to give guidance for future work.
- Written comments are clear, with errors indicated.
- Some marking will be immediate, depending on the activity.
- Displays of mathematical work reinforce mathematical concepts, assist in learning and celebrate achievement.

- Oral feedback is given to enhance understanding.

Formative assessment enables the teacher to identify a child's understanding and progress, to inform their immediate teaching and to plan for their coming lessons. This can take the form of:

- discussing mathematics in the context of a practical task;
- **'I Can' statements stuck into children's books.**
- observation;
- individual discussions with children to evaluate progress.

Summative assessments consist of;

- Foundation Stage Profile
- Teacher Assessment in Year One
- Key Stage One SATs
- **Half-Termly** Renaissance Learning assessments
- Key Stage Two SATs

In addition to this, teachers undertake regular mathematical assessments as outlined in the school's Assessment Policy.

Target Setting

Our assessment policy sets out the strategies that we use to ensure continuity and progression in the teaching of Mathematics. Target setting is an important part of this process.

Making use of national curriculum assessments, teacher assessments and progress expectations for the individual child, all children will have targets related to National Curriculum Objectives and MMS objectives set at the teachers discretion. EAL and G&T pupils to be given individual targets. These targets can be achieved in written work; on whiteboards; during the EMA session; on working walls or in weekly progress books.

Inclusion

Children with SEN and /or learning difficulties or disabilities

Where possible, through the use of appropriate support and differentiation, children with SEN will be working towards the same learning objectives as their peers. From time to time, those working well below the level of the whole class may be working towards related objectives chosen from the relevant progression MMS programme from an earlier year. They may also receive specific support from the teaching assistant during Maths lessons.

Those children with special needs may have specific targets relating to mathematics, where appropriate. They may be given additional support or extra teaching in small groups to help them achieve these targets. The lower attaining

pupils will have access to all practical resources from the MMS toolkit to help develop mathematical thinking and understanding.

Children who are gifted and talented

Children who are working well above the overall level of the class will be given a range of experiences designed to broaden or deepen their learning while working on the same learning objectives as their peers. This may be done by providing more demanding questions and investigations, often with a more open-ended approach. Where a child is exceeding the expected objectives for the end of the year group they are in, they will be given activities that will extend their understanding of the objective that the class are working on rather than being moved onto a different objective.

Children learning EAL

Children learning English as an additional language may need support in developing mathematical language and concepts. Care is taken to ensure that pupils are supported in developing their language through additional support and that they are paired/grouped in a Kagan group that will further develop this support. Through the use of appropriate support and differentiation EAL pupils experience the same level of cognitive challenge as their peers.

Equal Opportunities

All children have an equal opportunity regardless of gender, race or ability, to progress and succeed in their mathematical learning and understanding. We pay particular attention to ensuring there is no gender bias in materials or in access to resources, including ICT. Teachers should pay attention to the equal distribution of their questions across all groups. Any displays and references to mathematics in society should show positive role models of gender, race, ethnicity and disabilities.

ICT

The use of ICT is an integral part of mathematics teaching and learning. The teaching of mathematics is supported by the ICT software that accompanies the MMS learning system. This provides tools for assessment, planning and teaching and learning. Staff make use of online resources, software and hardware where necessary to enhance their teaching and learning. A wide range of ICT software is available for pupils to use to reinforce concepts, to provide reasoning activities and to develop fluency and problem solving. Teachers also use the MMS Interactive Teaching Programme to enhance their teaching. Daily Practice powerpoints are used in line with the planning of the lesson. Pupils are able to access programs at home that are used at school with their passwords: 'I Am Learning.'

Maths across the curriculum

Although the mathematics curriculum is organised as a discrete subject, there are many potential cross-curricular activities. Making links between areas of learning deepens children's understanding by providing opportunities to reinforce and enhance learning. Learning is enhanced by:

- Giving further opportunities to practise taught skills through purposeful use in other curriculum areas;
- Providing real experiences, context and meaning for the development of core mathematical skills;
- Assisting memory through providing opportunities for children to use skills in a different context;
- Providing opportunities for the application of knowledge in new contexts, to involve children in higher order thinking skills, such as reasoning and problem solving;
- Providing opportunities for learners to recognise and develop key aspects of learning, e.g. looking for patterns and relationships, problem solving and reasoning;
- Building concepts by providing children with opportunities to meet the same or related information in different ways, adding to the richness of their experience.

Record Keeping

Class assessment results are available online in the form of diagnostic reports generated by the Renaissance Learning software. This will be monitored through pupil progress meetings.

Reporting to parents

Reporting to parents is carried out throughout the year; three times a year parent/teacher consultation meetings are held and annually through the written report. Parents are given teacher assessments and the results of any testing carried out. They are provided with information on children's areas of strength and / or weakness and on their rate of progress in mathematics. Any specific areas of difficulty or clarification can be discussed with the parents on an informal basis.

Monitoring and evaluation

The purpose of monitoring and evaluating activities is to raise the overall quality of teaching and levels of pupil attainment. The mathematics co-ordinator, the Head Teacher, Deputy Head Teacher and Assistant Head Teachers will monitor the quality of teaching and learning and the monitoring will include:

- **Scrutiny of planning including annotations**
- Quality of teaching and learning through lesson observations and feedback
- Moderation of standards in children's work

- Evaluation of children's attainment against targets

The quality of mathematics in the school will also be inspected as part of any Ofsted inspection of the school as a whole. The LA inspector and numeracy consultant may carry out similar evaluations from time to time.

The role of the mathematics co-ordinator is to:

- Lead in policy development and review, including implementation of the MMS learning system
- Keep up-to-date on local and national initiatives and disseminate information;
- Take responsibility for the purchase and organisation of mathematics resources;
- Monitor the planning of teaching and learning for mathematics across the school;
- Write, review, implement and update the Numeracy Action Plan.
- Encourage the professional development of staff.
- To monitor Mathematics books, planning and lessons when necessary.

Essential Classroom Resources

See attached list in appendix.

MMS Resources and Publications

Maths Makes Sense and the National Curriculum (2014)

Maths Makes Sense Progress Ladders (2014)

Maths Make Sense: Teacher Guides

Maths Makes Sense: Software Multi User

Maths Makes Sense Toolkit

Maths Makes Sense Progress books

Maths Makes Sense: Co-ordinator's Handbook

Maths Makes Sense: In the Classroom DVD

Policy monitoring and review

The Maths coordinator is responsible for the monitoring of the implementation of this policy. The coordinator reports on the effectiveness of the policy to the Head Teacher and the governing body. The Head Teacher reports to governors through the Head Teacher's report.

The policy will be reviewed every year.

November 2015

Appendix 1 - Essential Classroom Resources

What do I need to teach *Maths Makes Sense?*

Level	Toolkit 1 per classroom recommended	Teacher's Guide 1 per year	Software 1 per year	Progress Book 3 per year	Coordinator's Handbook 2 per course	In the Classroom DVD 1 per course
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(Age 4-5)
Maths Makes Sense
Foundation

Available
now!



(Age 5-6)
Maths Makes Sense

