

Willow Tree Primary School – Maths Policy

Rationale

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to Science, Technology and Engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

Purpose of Study, National Curriculum 2014

Aims

The national curriculum for mathematics aims to ensure that all pupils:

- *become **fluent** in the fundamentals of mathematics, including thorough, varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately*
- ***reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language*
- *can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.*

Aims, National Curriculum 2014

Implementation

In line with guidance in the EYFS Framework and the National Curriculum 2014, children at Willow Tree Primary School will be given opportunities to study mathematics as part of a broad and balanced curriculum.

Willow Tree is currently in a process of transition to a new maths mastery curriculum based upon the Singapore approach to teaching mathematics. During this transitional phrase (up to the end of the 2017-2018 academic year) the children in Upper Key Stage 2 will continue to be taught mathematics based on the Lancashire Planning medium term plans. All other year groups will be taught using the Singapore approach to teaching mathematics.

The Foundation Stage

Children in Nursery and Reception will be taught maths through delivery of the mathematics area of learning in the Early Years Foundation Stage framework. The teaching of maths in the EYFS involves providing children with opportunities to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems; and to describe shapes, spaces, and measures. Children will develop their understanding through planned, purposeful play and through a mix of adult-led and child-initiated activity.

The teachers in the Early Years use the Singapore textbooks as a guide for their focused maths sessions and guided group work. There are opportunities to undertake maths activities within continuous provision/outdoor play and enhancements linked to the current learning. Where the ELGs are not covered by the Singapore maths, planning is devised to meet these outcomes.

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.

Key Stage 1 and Lower Key Stage 2

Teachers in KS1 and lower KS2 are supported in their teaching of mathematics by the Teacher's Guides, textbooks and workbooks published by 'Maths - No Problem!' With a focus on teaching maths for mastery, the series is designed to improve the maths confidence of both teachers and learners. It complies with the UK's High Quality Textbook guidance published by the NCETM and was selected by the DfE for use in the Maths Hub programme.

The Singapore approach to mathematics teaches pupils to understand maths in stages, beginning with **concrete** (using counters, Base 10, number disks and so on), then moving to **pictorial** (solving problems where pictures are involved), and finally working in the **abstract** (where numbers represent symbolic values). Through this process, children learn numerous strategies to work with numbers and build understanding.

The whole class works through the programme of study at the same pace with ample time and practice in each topic before moving on. The concept of teaching to mastery is to ensure that topics are well developed. An idea is well formed then reinforced by practice. New knowledge is then used in subsequent lessons so that all ideas build on top of each other and pupils have plenty of opportunities to develop relationships between topics. Ideas are revisited in a spiral as pupils progress through the years, each time at a higher level.

Lesson structure

Each lesson is divided into distinct parts: an anchor (or 'In Focus') task, guided practice and independent practice. During the anchor task, children work in groups on a single problem from the textbook allowing the teacher to assess what they currently know and extend their understanding. In the guided practice section, children work through further questions from the textbook with a partner but under the guidance of the teacher, to practise an idea that has been developed in the anchor task. The final section of the lesson is independent practice where the children work in the workbook to apply the ideas and taught that lesson.

Journaling

Journaling should take place at the end of the 'In Focus' section. It is the point of the Maths lesson where children record one or more methods/ideas from their 'In Focus' investigation. For more information see the Journaling Guidance.

Planning

Teachers use the online 'Maths – No Problem!' Teacher's Editions to support their planning. As the outline of the lesson and activities are already prepared, teachers are able to use planning time to think about the pedagogy of the lesson.

Differentiation and support

In a mastery approach, differentiation occurs in the support and intervention provided to different pupils, not in the topics taught. There is no differentiation in content taught, but the questioning and scaffolding individual pupils receive in class as they work through problems will differ, with higher attainers challenged through more demanding problems which deepen their knowledge of the same content. Pupils' difficulties and misconceptions are identified through immediate formative assessment and addressed with rapid intervention – ideally through individual or small group support later the same day.

Upper Key Stage 2

The children moving into Year 5 & 6 in September 2016 will follow the programmes of study set out in the Mathematics curriculum 2014, but will continue to use the Lancashire Planning format of weekly units, as advice suggests that moving older children to a Singapore approach at this stage of their learning would be counterproductive.

Teachers use the Lancashire Medium Term plans, along with the Lancashire Planning Support CD to guide them in their weekly planning. The weekly plan will detail teaching activities, independent and guided tasks, key questions and assessment opportunities, as well as where and how any adult support will be

<p>used within the lesson. An element of problem solving, reasoning should be incorporated into every lesson. To aid with this, teachers can use the Rising Stars Problem Solving and Reasoning Teacher's Books. Weekly plans should be completed on a weekly planning sheet, a template of which can be found in the Maths folder of the shared drive. Further planning guidance is also available in the Maths folder.</p> <p>The mastery approach will also be used in these year groups, with children working through the curriculum objectives at broadly the same pace. Additional teaching staff will work in these year groups to provide extra support for those children not working at the age-expected level.</p>
<p>Assessment</p> <p>Assessment will be based on observation, discussion and product, where appropriate, and will be a continuous process throughout school. Formative assessments will inform teachers' planning and the assessment of the mathematics statements within the Target Tracker system.</p> <p>At the end of each term, teachers in Years 1 to 6 will assess the overall achievement of each child in mathematics and enter their teacher assessment in the 'steps' section of 'Target Tracker'. This will be informed by the statements achieved that term, as well as any summative assessments carried out. Summative assessments will include the PUMA (Progress in Understanding Mathematics) tests which will be carried out at the end of each term. The result of teacher assessments and the standardised tests will form part of the school's monitoring procedures. SATs will also form part of the assessment process at the end of Key Stage 1 and Key Stage 2.</p> <p>In the Foundation Stage, children are assessed using the Baseline at the start of Nursery and Reception to inform their next steps of learning. Children's progress against the Early Learning Goals associated with the mathematics area of learning are assessed on an ongoing basis and recorded using 2Simple and Target Tracker. These judgments inform the Early Years Foundation Stage Profile at the end of Reception.</p> <p>For further details, see the school's Assessment Policy.</p>
<p>Reporting to Parents</p> <p>Mathematics is part of the written report given to parents at the end of the school year. Verbal reports are also made at the Parents' Evenings in the Autumn and Spring terms. Parents may ask for further details and clarification throughout the year.</p>
<p>Staff Development</p> <p>Identified training needs of individuals or whole staff will be supported by the provision of in-service courses either within school, within the LEA or by other providers.</p>
<p>Monitoring</p> <p>The subject leader/SLT will monitor the implementation of this subject, through pupil interviews, learning walks, observations in classroom, scrutiny of work and monitoring of planning files.</p> <p>Class teachers and the Headteacher meet on a termly basis for a pupil progress meeting to analyse the cohort data for each year group and identify children that need further help to meet age-related expectations.</p> <p>The governing body are kept updated through reports from the Headteacher and subject leader.</p>
<p>Policy Review</p> <p>This policy will be reviewed every two years, or as and when it is necessary due to changes in the curriculum or implementation of government initiatives.</p>