St. Giles CE Primary School

Achieving through adventure

Mathematics Policy

Introduction

At St Giles, we see Mathematics (as stated in the National Curriculum) as 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.

We aim to ensure that all pupils become confident in the three interconnected strands of mathematical understanding, being:

- **Fluent** in the fundamentals of mathematics
- **Able to reason mathematically**, following a line of enquiry and developing arguments, giving justifications and proofs using mathematical language
- **Able to solve problems** by applying their mathematics to a variety of routine and non-routine problems.

The National Curriculum sets out the year-by-year programmes of study for Key Stages 1 and 2, while the EYFS Statutory Framework, supported by the Development Matters non-statutory guidance, sets standards in relation to the mathematical learning for children from birth to five years old and aims for our pupils to:

- Develop counting skills
- Understand and use numbers
- Use basic mathematical language to compare and order numbers and groups of objects
- Calculate simple addition and subtraction problems
- Describe shapes, spaces and measures

Vision

The vision of our mathematics teaching at St Giles is to ensure that **all children**:

- **develop confidence** in the core concepts of mathematics (as set out in the Department for Education's *Mathematics guidance* document, June 2020) and are able to apply their knowledge and skills across the curriculum and in real life
- **develop positive attitudes** towards maths and an awareness of mathematics in the real world
- **develop resilience** in the face of challenges, working together and sharing ideas to overcome problems
- **are able to solve problems, reason and work systematically and accurately**

- **become confident communicators of mathematics,** asking and answering questions and knowing that mistakes are valuable learning tools

In order to achieve these goals, we follow a mastery approach at St Giles. This means that every teacher believes that:

- **every child is a mathematician**, regardless of their starting points
- **the goal of mathematics teaching is deep understanding** rather than memorising procedures to achieve a 'correct' answer
- deep understanding is evident in a child's ability to make connections, solve unfamiliar problems and undertake complex reasoning using appropriate mathematical vocabulary
- **every child can and will master the core concepts for their Key Stage** so that they can move forward confidently
- **quality first teaching, following a concrete – pictorial – abstract approach,** is key to all children mastering the learning first time
- **accurate and immediate teacher assessment** is key in order to address misconceptions and gaps as they arise so that they do not become embedded

Programme of Study

Teaching across KS1 and KS2 follows the White Rose schemes of work, ensuring thorough coverage of the National Curriculum objectives. Each objective is broken down into small steps which allows pupils to master each small step before moving on to the next and build a secure grasp of the concept.

The White Rose content is designed to support a mastery approach to learning and teaching, with a focus on building competency in number. It ensures teachers do not move children beyond the required key stage by supporting the ideal of depth before breadth and ensures students are able to stay together as they work through the scheme as a group. Reasoning and problem solving are built into the teaching approaches and include a range of standard and non-standard variations, including addressing misconceptions.

The White Rose approach is built on the concrete-pictorial – abstract approach and blocks are designed around this concept.

Planning

Long term planning

Teaching follows the blocks as set out by White Rose, beginning with place value each year to ensure the fundamental concepts of number are secure before moving onto addition and subtraction and multiplication and addition within the first term. These areas are covered earlier in the year as understanding of place value and the four operations underpins all other areas of maths.

The yearly overviews can be found at: Primary SOL | White Rose Maths | Primary Schemes of Learning.

Teachers may choose to use the mixed age overviews instead, which can be found at by selecting mixed age resources on the drop down menu on the above page.

Medium term planning

In Years R-6, the White Rose schemes of learning are used for medium term planning.

In mixed-age classes, the topics are aligned so that teaching can be as focused as possible. Where year group content in mixed age classes differs significantly, teachers may choose to focus teaching in smaller groups or to introduce new concepts to both year groups if the appropriate foundations are in place.

Each small step is not necessarily one lesson, so teachers must use their judgement in assigning timetable time to each step of the progression. Some may require only part of a lesson while others may require several to grasp the content securely.

Short term planning

Individual lessons are structured around the White Rose small steps; one lesson may cover more than one small step or a small step may take several lessons. Include standard, non-standard and what it's not style questions.

Supporting resources are provided for every small step which ensure fluency of skills alongside reasoning and problem solving. The resources include a range of standard and non-standard questions and provide opportunities for discussion of misconceptions. Teachers may choose to supplement these resources with additional resources for further fluency practice or deeper exploration of the concept.

One maths lesson a week is dedicated to reasoning and problem solving. While reasoning and problem solving is to be embedded throughout the teaching of each topic, this lesson provides an opportunity to focus on developing the language and strategies needed to follow a line of enquiry, develop arguments, and give justifications and proofs using mathematical language.

SEND

Daily mathematics lessons are inclusive to pupils with special educational needs and disabilities. Where required, children's IEP's incorporate suitable objectives from the National Curriculum or Development Matters and teachers keep these in mind when planning work. These targets may be worked on in the lesson and on a 1:1 basis at other times outside the lesson. Focused interventions to address gaps in learning may be delivered within a lesson to individuals or groups by the teacher or TA, and additional intervention may be delivered outside lessons by a TA, and overseen by the class teacher.

Within the lesson, teachers have a responsibility to provide accessible activities for children with SEND but also activities that provide sufficient challenge for children who are working at greater depth. All children should be challenged at a level that they can access.

Lessons

Reception children are taught through a mixture of adult-led and child initiated activities both inside and outside the classroom.

In KS1 children are taught the equivalent of a maths lesson a day, which may be taught in larger blocks across 2 or 3 days a week rather than daily.

All children in KS2 have a daily maths lesson of 45 minutes to 1 hour. This includes a short time for fluency or recap of previous learning.

In all maths lessons, the learning objective and success criteria are stuck into books and these are discussed with the children. The emphasis in lessons is to create many opportunities for discussion and interactive engagement with the learning. Use of physical resources will be a key part of many lessons across the school.

Lessons are structured around:

1. Direct instruction
2. Demonstration and modelling through concrete, pictorial and abstract
3. Questioning and discussing, including opportunities for guided practice where students are guided through the process
4. Consolidation and independent practise
5. Reflecting on progress and learning from mistakes

Pupils' Written Work

Pupils are taught to record their mathematical thinking in line with the White Rose calculation policies for addition and subtraction and multiplication and division, following a progression from Year 1 through to year 6. Mental strategies involving jottings or pictorial representations are prioritised early to ensure a secure understanding of the concepts that underpin formal written methods and to support fluency. Children are encouraged to use mental strategies and jottings before resorting to formal written methods and mental strategies are taught alongside the written methods.

Marking

Marking is an essential part of the formative assessment process, allowing teachers to identify gaps and misconceptions that need to be addressed before moving on. Work is marked against success criteria, in line with the school marking policy. Immediate feedback through live marking is ideal, but if this is not possible children are encouraged to respond to marking as soon as possible after the work is completed. Time is given for children to respond to teachers' comments or make corrections. Self-marking is encouraged when children are able to do this themselves, but should result in immediate self-correction and deeper understanding if it is to be effective.

Assessment

Formative

Assessment is an ongoing process which occurs through:

- Regular marking of work
- Questioning and listening to answers
- Analysing errors and identifying misconceptions
- Facilitating and listening to discussions

This ongoing assessment informs future planning and teaching. Short term planning is evaluated and adapted in light of these assessments.

Before beginning a new topic, teachers should assess prior learning and secure this before introducing new content. Teachers may choose to use a pre-assessment at the beginning of a topic to identify misconceptions and gaps in prior learning. The previous end-of-topic assessment provided by White Rose for that topic can be used as a pre-assessment. For example, for the start of a Year 3 Place Value topic, the Year 2 Place Value end of topic test can be completed to identify if pupils are secure on prior learning.

An end-of- topic assessment may be used to assess whether pupils are secure on the content taught in that topic if the teacher feels this would be helpful. Teachers may choose to use ongoing teacher assessment in place of a test.

Over the course of each topic, teachers track the progress of each child using 'Steps to Success' progression targets, which cover the mathematics objectives for that year group. This allows teachers to see clearly which children have gaps in their learning and need further intervention.

Summative

Years 1 -6 complete PUMA tests each term to track progress. Years 2 and 6 complete SATs in May.

Resources

Each class has a stock of manipulatives and concrete resources that are age-appropriate.

Times Tables Rockstars

This is a fully interactive online tool which helps pupils to develop fluency in multiplication facts. In KS2, time is given within the weekly timetable for practise on ipads or laptops and children are encouraged to access it regularly at home.

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