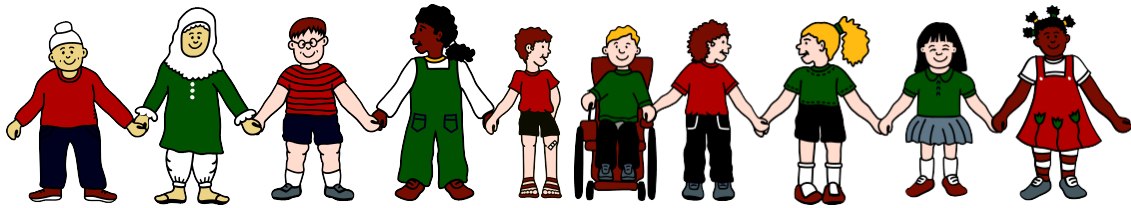


The Giles Nursery and Infants' School

THE GILES
NURSERY
AND
INFANTS' SCHOOL



Mathematics Policy

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Mathematics Policy

1 Aims

1.1 Mathematics teaches children how to make sense of the world around them through developing their ability to calculate, reason and solve problems. It enables children to understand relationships and patterns in both number and space in their everyday lives. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of mathematics.

1.2 The aims of teaching mathematics at the Giles Nursery and Infants' School are to:

- promote enjoyment of learning through practical activity, exploration and discussion;
- promote confidence and competence with numbers and the number system;
- to develop mathematical fluency and be able to move from one concept to the other applying learned skills;
- develop the ability to solve problems through decision-making and reasoning in a range of contexts;
- develop a practical understanding of the ways in which information is gathered and presented;
- explore features of shape and space, and develop measuring skills in a range of contexts;
- understand the importance of mathematics in everyday life.

2 Teaching and learning style

2.1 The school uses a variety of teaching and learning styles in mathematics. Our principal aim is to develop children's knowledge, skills and understanding. During our daily lessons, we encourage children to ask as well as answer mathematical questions. They have the opportunity to use a wide range of resources, such as number lines, number squares, digit cards and manipulatives to support their work. Mathematical dictionaries are available in the Year 2 classrooms. ICT is used in mathematics lessons for modelling ideas and methods. Wherever possible, we encourage the children to apply their learning to everyday situations.

In all classes, children have a wide range of mathematical abilities. We recognise this fact and provide high quality learning opportunities that enable all children to progress from their starting point. This is achieved through a variety of strategies, including: adapted work, open-ended tasks that can be explored on many levels, guided group work, adapted tasks that children can self-select, use of working walls, pair work, talking partners, prominent use of key vocabulary, extra opportunities to practise a core skill (including intervention work where necessary), and extensive use of concrete resources.

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- 2:2** Concrete, pictorial and abstract approaches are a key part of the mathematics curriculum. Concrete manipulatives such as tens frames and bead strings are used to introduce, explore or reinforce a mathematical concept with physical and 'hands on' experiences and form the basis for conceptual learning. They help pupils make sense of complex, symbolic and abstract ideas through exploration and manipulation. Concrete manipulatives promote reasoning and discussion and enable children to articulate and explain a concept with a deep and secure understanding. When pupils have sufficiently understood concepts through concrete experiences, pictorial representations allow them to progress their understanding and focus attention on what has happened and why. Pictorial methods encourage children to make a mental connection between the physical object and abstract levels of understanding, by drawing or looking at pictures, diagrams or models which represent the objects in the problem. The abstract stage facilitates the use of abstract symbols through mathematical notation to model and solve mathematical problems.
- 2.3** Vocabulary is an essential part of the curriculum and we ensure that each learning sequence exposes children to relevant and specific terminology that they understand and can use appropriately in their work. Vocabulary is embedded into daily lessons and modelled through the use of speaking frames. Children are given many opportunities to actively use speaking frames during paired or group work and are supported to articulate their understanding and develop their reasoning skills. We encourage children to ask as well as answer mathematical questions. Key vocabulary is displayed on working walls and referred to regularly.

3 Mathematics curriculum planning

- 3.1** Mathematics is a core subject in the National Curriculum. We use the White Rose Maths planning, which follows the programmes of study laid out in the 2014 National Curriculum.
- 3.2** We carry out the curriculum planning in mathematics in three phases (long-term, medium-term and short-term). The National Curriculum for Teaching gives a detailed outline of what we teach in the long term. The White Rose Maths scheme organises the key objectives from the curriculum into blocks which are then broken down into steps. The steps in each block progressively build upon each other to develop children's knowledge and understanding through positive links and connections. The White Rose Maths blocks are written as a spiral curriculum in which learning is built upon systematically, block by block and year on year. It is aspirational and ensures progression and coverage through the primary phase.
- 3.3** Each block has a scheme of learning that is broken down into a series of teaching steps. Each step has a clear learning intention and states how it builds upon prior knowledge. It also draws attention to areas of possible difficulty and misconceptions. The key vocabulary is encapsulated in simple speaking frames that the teachers model and the children learn to use. The planning includes suggestions of where use of concrete resources is particularly recommended, reasoning and problem-solving challenges, quick recall activities, and opportunities to discuss with

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a talk partner. The planning ensures that across each term children are given a range of mathematical experiences such as practical activities, mathematical games, group problem solving activities, individual, group and whole class discussion activities, and open and closed tasks.

Plenaries may occur during a lesson, for example to address a common misconception arising, or to move the learning forward a small step to deepen a skill. Plenaries also occur at the end of a lesson to summarise the key learning that has taken place to meet the learning objective. They are an opportunity for the children to also reflect on their own progress.

We ensure that children can use a range of methods to calculate and have the ability to check whether their chosen methods are appropriate, reliable and efficient.

- 3.4** Daily evaluations are completed and noted on assessment note sheets. These notes feed into daily and weekly planning. At the end of each block of learning there is an assessment, and another at the end of each term.
- 3.5** Every year the staff plan and run a motivating and inspirational maths week in which all children in the school take part.

4 The Foundation Stage

- 4.1** We teach mathematics in our Reception class using the White Rose Maths schemes. As the class is part of the Foundation Stage of the National Curriculum, we relate the mathematical aspects of the children's work to the objectives set out in the Early Years Framework, which underpins the curriculum planning for children aged three to five. We give all the children ample opportunity to develop their understanding of number, measurement, pattern, shape and space, through varied activities that allow them to enjoy, explore, practise and talk confidently about mathematics.

5 Contribution of mathematics to teaching in other curriculum areas

5.1 English

The teaching of mathematics contributes significantly to children's understanding of English in our school by actively promoting the skills of reading, writing, speaking and listening. For example, in mathematics lessons we expect children to read and interpret problems, in order to identify the mathematics involved. They are also improving their command of English when they explain and present their work to others during plenary sessions. In English lessons, too, mathematics can contribute: younger children enjoy stories and rhyme that rely on counting and sequencing, while older children encounter mathematical vocabulary, graphs and charts when reading non-fiction texts. They also have the opportunity to use practical equipment such as Bee Bots to help them write and follow instructions.

5.2 Personal, social and health education (PSHE) and citizenship

Mathematics contributes to the teaching of PSHE and citizenship. The work that children do outside their normal lessons encourages independent study and helps them to become increasingly responsible for their own learning. The planned activities that children do within the classroom encourage them to work together and respect each other's views. We present older children with real-life situations in their mathematics work on the spending of money.

5.3 Spiritual, moral, social and cultural development

The teaching of mathematics supports the social development of our children through the way we expect them to work with each other in lessons. We group children so that they work together, and we give them the chance to discuss their ideas and results.

6 Mathematics and ICT

6.1 Information and communication technology enhances the teaching of mathematics significantly, because ICT is particularly useful for mathematical tasks. Teachers can use software to present information visually, dynamically and interactively, so that children understand concepts more quickly. Younger children use ICT to communicate results with appropriate mathematical symbols. Older children use it to produce graphs and tables when explaining their results, or when creating repeating patterns, such as tessellations. When working on control, children can use both standard and non-standard measures for distance and angle. They can also use simulations to identify patterns and relationships. The staff plan the use of mathematics computer software for the children to use independently to reinforce or extend learning and as part of whole class teaching. Programs such as NumBots, Maths Whizz, ICT Games and Number Shark are used.

7 Mathematics and inclusion

7.1 At The Giles Nursery and Infants' School we teach mathematics to all children, whatever their ability and individual needs. Mathematics forms part of the school curriculum policy to provide a broad and balanced education to all children.

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Through our mathematics teaching we provide learning opportunities that enable all pupils to make good progress. We strive hard to meet the needs of those pupils with Special Educational Needs, those with disabilities, those with special gifts and talents and those learning English as an additional language, and we take all reasonable steps to achieve this.

- 7.2** When progress falls significantly outside the expected range, the child may have Special Educational Needs. Our assessment process looks at a range of factors – classroom organisation, teaching materials, teaching style and adaptations – so that we can take some additional or different action to enable the child to learn more effectively. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected levels. This ensures that our teaching is matched to the child's needs. We also produce provision maps which help to monitor progress and identify early children who need interventions or extra support.
- 7.3** A child who has special educational needs may have an Individual Map of Provision (IMP), as part of an Assess, Plan, Do, Review (APDR) process. These provision maps may include, as appropriate, specific targets relating to mathematics and strategies for meeting them.
- 7.4** We enable all pupils to have access to the full range of activities involved in learning mathematics. Where children are to participate in activities outside the classroom (a 'mathematics trail', for example) we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.
- 7.5** Thorough, planning, assessment and adaptations for disadvantaged children, and those attaining in the lowest 20%, enable those learners to make at least expected progress and attain to the best of their ability. Guided group sessions, intervention sessions and adult support enable the children to maximise their learning and enjoyment of mathematics.

8 Assessment for learning

- 8.1** Teachers will assess children's work in mathematics from three aspects (long-term, medium-term and short-term). We use short-term assessments to help us adjust our daily plans. These short-term assessments are closely matched to the teaching objectives.

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- 8.2** We make medium-term assessments to measure progress against the key objectives, and to help us plan to close any gaps. We use the end of block and end of term assessments provided by White Rose Mathematics. White Rose conducted careful research into the most common errors children were making in national assessments and have developed their schemes of learning and assessments to ensure the children have every chance of success. In this way, we know that the assessments we are conducting are in line with national curriculum expectations. We also refer to the KS1 Hertfordshire Phase system to show pupil progress and, in the Foundation stage, the children are assessed using the Early Learning Goals. Data is entered onto our information management system, ARBOR, on a termly basis and analysed in detail by both the mathematics curriculum leaders and the assessment coordinator. This data is used to identify target groups and make sure all pupils are on track.
- 8.3** We make long-term assessments towards the end of the school year, and we use these to assess progress against school and national targets. We can then set targets for the next school year and make a summary of each child's progress before discussing it with parents. We pass this information on to the next teacher at the end of the year, so that s/he can plan for the new school year. We make the long-term assessments with the help of end-of-year tests and teacher assessments. We also make annual assessments of children's progress measured against the level descriptions of the National Curriculum.
- 8.4** The mathematics curriculum leaders keep samples of children's work in a portfolio. This demonstrates the expected level of achievement in mathematics in each year of the school. The year 2 teachers and curriculum leaders attend cluster meetings with other local teachers to review individual examples of work against the national exemplification material produced by the DfES.
- 8.5** A member of the teaching staff from each year group attends regular cluster moderation meetings. This ensures that assessment is as accurate as possible as it is compared with other work from other schools and is also assessed by other teachers from across the County.

9 Resources

- 9.1** All classrooms have a number line and a wide range of appropriate small apparatus. The library contains a number of books to support children's individual research. A range of software is available to support work using computers. Each classroom has an interactive whiteboard used to aid teaching and learning.

10 Communication

- 10.1** Termly targets go home to parents of children in Reception and Key Stage 1. These contain expected outcomes for children by the end of the year and various activities that parents can easily do at home to support mathematics. At the beginning of the year, parents are given some simple resources to support their child at home. As part of the parent consultation process all parents receive a

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report. In autumn and spring terms this report has targets for each child as an individual, these targets will be explained by the teacher during the consultation. In the summer a detailed report goes out explaining to parents their child's strengths and weaknesses. In Year 2 parents also receive their child's national curriculum level based on the end of Key Stage 1 and teacher assessment.

- 10.2** Parents receive weekly updates about the children's learning in the school newsletter. These include what the children have done that week and what they will be doing the next week.

Monitoring and review

- 11.1** Monitoring of the standards of children's work and of the quality of teaching in mathematics is the responsibility of the curriculum leaders. The work of the curriculum leaders also involves supporting colleagues in their teaching, being informed about current developments in the subject, and providing a strategic lead and direction for mathematics in the school. The curriculum leaders give the head teacher an annual summary evaluating strengths of the past year and indicating areas for further improvement. The head teacher allocates regular management time to the curriculum leaders to review samples of children's work and undertake lesson observations of mathematics teaching across the school. A named member of the school's governing body is briefed to oversee the teaching of mathematics. A report is delivered to the school Governors annually by the mathematics curriculum leaders.

- 11.2** This policy will be reviewed at least every three years.

Date: December 2023

Next Review: December 2026