All Saints CE (Aided) Primary School and Nursery

Mathematics Policy

Intent

At All Saints CE Primary School and Nursery, we want our children to love mathematics. We aim to make our maths curriculum purposeful, relating learning to real life. By delivering a 'mastery' approach in Maths lessons across All Saints, we aim to deliver the teaching of concepts through a wide selection of representations (concrete, pictorial and abstract), ensuring a deeper and more fluent understanding of the subject. In addition, teachers at All Saints intend to consistently build on the children's prior knowledge to make connections and links so that concepts can be understood further.

Through developing an ability to calculate, to reason and to solve problems, we help children to make sense of the world around us. We teach them to become fluent in the fundamentals of Maths, through varied and frequent practice, so that they have the ability to recall and apply knowledge rapidly and accurately. We enable children to reason mathematically by following a line of enquiry, predicting relationships and justifying answers using mathematical language. We teach children to solve problems by applying their understanding to problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions. This provides the children with essential skills that they require in the future, no matter what their background.

Unfortunately, Maths is stereotypically viewed as a 'difficult' subject that some are capable of, while others are not. We plan to challenge these views and celebrate resilience wherever we can. Therefore, we believe it is key that children understand a 'good' mathematician is someone who makes mistakes; keeps going when it is difficult and asks questions to address their own misconceptions.

Implementation

At All Saints, our classrooms provide a maths rich environment, which includes practical resources, inter-active working walls, maths vocabulary displays and daily challenges. We additionally use our outdoor learning environment to stimulate and encourage mathematical thinking, investigative powers and concept acquisition through practical activity.

The school is currently in the process of adopting a mastery curriculum. In KS1 and KS2, we follow objectives and sequence of learning from 'White Rose', as a basis for planning. Many opportunities are given for children to apply their maths using resources from White Rose Premium and other tools (upon teacher judgement). Whenever possible, we introduce learning in a real life context so that the children see maths as an instrument for life. In Maths lessons, our teachers strike a balance between teaching calculation methods (with the assistance of various representations to aid understanding), which are taught in line with the school's Calculation Policy and teaching problem solving skills, so that children develop confidence and competence with numbers and the ability to reason and find appropriate strategies when solving problems. Lessons may also include opportunities to develop mental strategies and improve recall of number facts. With a mastery approach, the children will travel on the same journey together each

lesson, with activities being labelled task 1-4 and allowing all children to access the same curriculum. These activities will develop understanding through the use of concrete resources, pictorial representations, abstract representations, reasoning and problem solving for all children to be exposed to. Plenaries are used, as appropriate, to summarise key facts, sort out misconceptions and to link ideas.

The teaching of mathematics will include:

- Direct - share learning objectives with the class and ensure that the class know what to do and how to set out their work.
- Instruct - give information clearly in a well-structured way, e.g. how to multiply a three digit number by a two digit number.
- Demonstrate - e.g. how to use manipulatives.
- Explain and illustrate - give the meaning of a mathematical term and represent it visually.
- Question and discuss - used to maintain and keep all pupils involved, and to assess understanding.
- Set problems - related to everyday situations.
- Consolidate - give opportunities to practise and develop what has been taught.
- Evaluate pupils' responses - identify and correct and any misconceptions.
- Summarise/Plenary - review what has been taught and what pupils have learned.
- Assess - formally and informally.

Teaching Methods and Approaches

At All Saints, children learn individually, in groups and as a whole class. They experience new concepts through visual representation (concrete materials and pictorial representation) before attempting to understand and apply abstract concepts. Learning is active; teachers model new learning and children practice to achieve fluency. Through pair talk, pupils have the opportunity to question and explain their reasoning.

We focus on helping children to:

- Become fluent in the recall of number facts through frequent practise
- Be able to use reasoning skills to explore, notice patterns, discuss, explain, generalise, justify and prove using mathematical language.
- Be able to solve problems by applying their maths and breaking the problems down into a series of simpler steps.
- Develop and celebrate perseverance and determination in all areas of maths.
- Apply mathematical skills with confidence and realise their relevance to everyday situations.
- Develop a sense of enjoyment and curiosity about mathematics and be encouraged to study it with confidence and a sense of achievement.

Practical Resources

At All Saints, resources for the delivery of the maths curriculum are stored both centrally and in classrooms. Everyday basic equipment is kept in classrooms. Additional equipment and topic-specific items are stored centrally. There are central stores in both KS1 and KS2 areas.

At All Saints children use a wide range of concrete apparatus such as multilink, number lines, number squares, digit cards and small apparatus to help them in understanding concepts. ICT is used in mathematics lessons where it will enhance their learning, as in modelling ideas and methods.

Early Years Foundation Stage

At All Saints, children follow the Early Years Foundation Stage Curriculum. We give all children the opportunity to talk and communicate in a widening range of situations and to practise and extend their range of vocabulary and numeracy skills. At this stage, mathematical development depends on becoming confident and competent in learning and using key skills. This area of learning includes counting, sorting, matching, seeking patterns, making connections, recognising relationships and working with numbers, shapes, space and measures. Mathematical understanding will be developed through stories, songs, games and imaginative play providing a broad range of contexts in which they can explore, enjoy, learn, practise and talk about them.

Mathematics is planned termly and then weekly to ensure progression of skills. In EYFS, mathematics is assessed using the Development Matters document, leading to their final Early Learning Goal assessment in the summer term of Reception. Mathematics is taught both as a discrete subject and within the whole Early Years Curriculum to give children opportunities to use their numeracy skills in real life situations.

Assessment

Children are assessed according to what they know and can do related to the National Curriculum. Teachers continually monitor, assess and make judgement about children's learning. Children also regularly mark their own learning with purple pen, so that they can see their success.
In both key stages, pupils are assessed by a termly PUMA test. In addition, the progress of children in Y2 and Y6 will be assessed using SATs materials.
When deciding on a Teacher Assessment judgement each term, teachers use the results of formal tests as well as work in books, lesson evaluations and observations of children to make the overall judgement. Achievement is recorded using the assessment tool, Target Tracker.

Parental Involvement

At All Saints CE (aided) Primary School and Nursery we recognise that parental involvement is an important factor in helping children achieve their best and actively encourage parents to become involved with their children's development in Mathematics through:

- Parents' meetings twice a year, along with opportunities to look at children's work.

- The school's 'open' attitude to visits from parents/carers, where teachers make themselves available whenever a discussion need is identified.
- Attending Maths curriculum workshops (on hold due to Covid)
- Use of the Homework Materials, Times Table Rockstars, Purple Mash, etc.
- Class newsletters informing them of curriculum information.

Health and Safety

All trips and visitors are risk assessed. Safety is the direct responsibility of the class teacher.

Reporting

All parents receive an interim termly report of their child's progress and an annual written report on which there is a summary of their child's effort and progress in mathematics over the year. Parents also have opportunities to discuss progress at two parents' evenings during the year. Within curriculum newsletters, parents will receive information on areas of development in mathematics for their child and our calculations policy is available on the website.

Equal Opportunities

This subject will be accessible to all children irrespective of their ethnic background, gender, disability, religious or linguistic background.
We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those who are more able, those with special gifts and talents and the children who are learning English as an additional language. We take all reasonable steps to achieve this.

Special Educational Needs

At All Saints, we aim to fully include SEN children in the daily mathematics lesson so that they benefit from the emphasis on oral and mental work and by listening and participating with other children in demonstrating and explaining their methods.

Where necessary teachers will, in consultation with the SENCO, draw up a target within an Individual Educational Plan for a child. If a child's needs are particularly significant they will work on an individualized programme written in consultation with the appropriate staff.
When planning, teachers will try to scaffold the child's needs by providing concrete or pictorial resources, activating prior knowledge, describe concepts in multiple ways, give the child time to practice the concept or the use of support staff.

More Able Learners

Learners that are more able will be identified as part of our formative and summative assessment procedures. We will provide for their needs through a framework of high quality first teaching, which focuses on ensuring the children are challenged appropriately. In addition, we will focus on developing their

learning behaviours, including: greater reflection, problem solving and enquiry, making connections, higher order thinking skills and independent learning. The progress of more able learners will be tracked at the teachers' discretion to ensure more able children reach their full potential.

Contribution in Mathematics to Teaching in Other Curriculum Areas

English

At All Saints CE (aided) Primary School and Nursery, Mathematics contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. For example, there are opportunities for children to 'use a range of oral techniques to present a persuasive argument'.

ICT

At All Saints CE (aided) Primary School and Nursery, the effective use of ICT can enhance the teaching and learning of mathematics when used appropriately. When considering its use, we take into account the following points:

- ICT should enhance good mathematics teaching. It should be used in lessons only if it supports good practice in teaching mathematics.
- Any decision about using ICT in a particular lesson or sequence of lessons must be directly related to the teaching and learning objectives for those lessons.
- ICT should be used if the teacher and/or the children can achieve something more effectively with it than without it.

Science

At All Saints CE (aided) Primary School and Nursery almost every scientific investigation or experiment is likely to require one or more of the mathematical skills of classifying, counting, measuring, calculating, estimating and recording in tables and graphs. In science children will, for example, order numbers, including decimals, calculate simple means and percentages, use negative numbers when taking temperatures, decide whether it is more appropriate to use a line graph or bar chart, and plot, interpret and predict from graphs.

Art, Design and Technology

Measurements are often needed in art, design, and technology. Many patterns and constructions are based on spatial ideas and properties of shapes, including symmetry. Designs may need enlarging or reducing,

introducing ideas of multiplication and ratio. When food is prepared a great deal of measurement occurs, including working out times and calculating cost; this may not be straightforward if only part of a packet of ingredients has been used.

History, Geography and Religious Education

In history and geography, children will collect data by counting and measuring and make use of measurements of many kinds. The study of maps includes the use of co-ordinates and ideas of angle, direction, position, scale and ratio. The pattern of the days of the week, the calendar and recurring annual festivals all have a mathematical basis. For older children historical ideas require understanding of the passage of time, which can be illustrated on a time line, similar to the number line that they already know.

Physical Education and Music

Athletics activities require measurement of height, distance and time, while ideas of counting, time, symmetry, movement, position and direction are used extensively in music, dance, gymnastics and ball games.

Personal, Social and Health Education (PSHE) and Citizenship

At All Saints, our mathematics contributes to the teaching of personal, social and health education, 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.

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 often group children so that they can work together and we give them a chance to discuss their ideas and results. Mathematics contributes to children's spiritual development. Children can find shapes and pattern in nature. They can see the order, logic and pattern that numbers offer.

Role and Responsibilities of Mathematics Coordinator

- Monitor the teaching and learning in mathematics, to ensure continuity and progression.
- Monitor standards in mathematics throughout the school, including SEN, PPG, LAC, GRT etc.
- Identify strengths, areas for development, and lead on improvements within the school.

- To carry out the areas of development in Mathematics with regard to the school improvement plan.
- Keep up to date with new initiatives and train staff on these (also to facilitate in or out of school training for staff).

Monitoring and Review

Mathematics subject leaders monitor children's learning, wall displays and carry out pupil interviews.
The mathematics subject leaders support colleagues in the teaching of mathematics and bring updates to staff meetings; keep informed about current developments in mathematics and provide a strategic lead and direction for this subject.
The mathematics subject leaders also carry out book scrutiny and learning walks alongside other members of the SLT to ensure consistency and to moderate assessment judgements.

Disability Equality Impact Assessment

Assessment will include consideration of issues identified by the involvement of disabled children, staff and parents and any information the school holds on disabled children, staff and parents.

Any questions or concerns regarding this policy should be made to William Hatton, Michael Sayer or Tracey Stanton