Subject Policy Document For Mathematics

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Subject Leader: Mrs S Robb

MATHEMATICS POLICY

Why teach mathematics?

Mathematics equips pupils with a uniquely powerful set of tools to understand and change the world. These tools include logical reasoning, problem solving skills, and the ability to think in abstract ways. Mathematics is important in everyday life, many forms of employment, science and technology, medicine, the economy, the environment and development, and in public decision-making. Different cultures have contributed to the development and application of mathematics. Today, the subject transcends cultural boundaries and its importance is universally recognised. Mathematics is a creative discipline. It can stimulate moments of pleasure and wonder when a pupil solves a problem for the first time, discovers a more elegant solution to a problem, or suddenly sees hidden connections.

(The National Curriculum Handbook for Primary teachers in England)

Aims and Objectives

Through the teaching of mathematics to children we aim to:

- Develop a positive attitude to mathematics in order that they may enjoy the subject and study it with confidence.
- Encourage an understanding of mathematics through a process of enquiry and experiment, to use mathematics in and apply mathematics to a variety of contexts and across the curriculum including problem solving.
- Develop an appreciation of the nature of number and the relationships between them leading to an awareness of the basic structure of mathematics.
- Provide opportunities where children can work systematically, independently or co-operatively in pairs or in groups, on a range of mathematical skills.
- Introduce pupils to a range of mathematical skills and knowledge to enable each child to develop a recall of basic facts, an understanding of numerical patterns and to identify relationships in number.
- Discuss and share ideas, in order to develop an understanding of the language of mathematics, to enable each child to express themselves fluently using appropriate mathematical vocabulary.
- To be involved in practical activities and be able to choose and use equipment appropriately.
- To record their work appropriately and logically e.g. in pictures, sentences, symbolically, graphically, using charts, tables and notation.
- To work in an environment in which children receive reassurance and support from the teacher
- To continually aim to raise the standards of achievement of the pupils.

Basic Skills Statement

Basic skills are the key to all learning. At St. Nicholas School we recognise that all subjects in the curriculum can be used to develop and nurture these necessary skills. We aim to incorporate the

teaching of Basic Skills throughout the curriculum in order to enable St. Nicholas children to acquire the ability to read, write and speak English and use Mathematics at a level necessary to function at work and in society in general.

Planning and Organisation

The National Curriculum Order for Mathematics describes what must be taught in each Key Stage. At St. Nicholas CE First School we follow the Collins Busy Ant Maths scheme in line with the new 2014 curriculum, ensures continuity, coverage and progression in the teaching of mathematics throughout school.

There are three levels of planning.

Long term planning

Our school mathematics scheme of work is based on the Collins Busy Ant Maths and links with the 6 identified areas of learning.

1. Place value
2. Calculation
3. Geometry
4. Measure
5. Fraction
6. Using and applying/problem solving

Medium term planning

Medium term planning is taken from the Busy Ant maths scheme and sets out all the units into blocks, (each block lasting 3 weeks) this ensures that all areas of learning are covered over the year. These blocks can be moved around to best suit the needs of the class and to give teacher ownership over when they want to teach topics.

Short term planning

Short term planning is carried out weekly by the class teacher and identifies the objective for the lesson, the success criteria for that objective, and the differentiated activities to be completed. Busy Ant plans are used and adapted where appropriate. The objective of each lesson is shared with pupils and displayed in 'child friendly' in the form of WALT – What are we learning today?

The Foundation Stage

The Framework for the Early Years Foundation Stage is used for the teaching of mathematics in Nursery and Reception. The Foundation Stage guidance provides the Early learning Goal for Mathematical Development through an awareness and use of number; mathematical language and practical activities to enable children to solve problems, develop understanding and record numbers. Short, medium and long term objectives are met through Development Matters in the EYFS and taught through practical and play opportunities which directly link to a themed approach to learning. In EYFS the 'Ten Town' scheme has

been used to deliver and understanding of number and number formation as well as other mathematical activities linked to it.

Organisation

Mathematics is taught daily in a dedicated mathematics lesson for all children. When children are in Nursery and Reception the organisation is flexible with children gaining confidence through play opportunities and practical contexts. During the Summer Term in reception the teaching of mathematics builds up to a daily 40 minute lesson in preparation for the transition to Year 1. In KS1 the lesson lasts for 45-1 hour and in KS2 it will last for 60 minutes.

In Reception Mathematics is taught in classes and children are grouped according to their mathematical ability for teacher led actitivities. Teacher led activities focus on Numbers and Shape, Space and Measure as outlined in the specific strand of Mathematics for the EYFS. Children are taught key concepts by their teacher and activities are differentiated to suit the needs and abilities of children. Independent activities allow children to explore mathematics in practical and play contexts to develop understanding of key mathematical concepts.

In KS1 and KS2 children are grouped within the class according to their ability and confidence for all mathematics lessons.

Cross curricular links

Mathematics is taught mainly as a separate subject but every effort is made to link maths with other areas of the curriculum. We try to identify the mathematical links across the curriculum at the planning stage. We also draw children's attention to the links between maths and other curricular work so children do not see maths as an isolated subject.

Quality of Teaching and Learning

In mathematics teachers should:

- Have a clear objective for that lesson (WALT), and share it with the children
- Ensure children acquire skills, knowledge and understanding to make progress and they are aware of the 'steps to success'
- Differentiate the tasks and questioning according to the skills, age, knowledge and understanding of the children to support their learning
- Use suitable teaching methods to deliver the lesson objective
- Set high but attainable targets
- Motivate and enthuse children to enjoy mathematics
- Give regular feedback to children through effective marking of work and discussion
- Make use of assessments to aware pupils a LOA and to set them further targets.

In mathematics pupils should:

- Organise themselves and the resources needed
- Select an appropriate method of working where appropriate
- Respond to the challenge of the task
- Make good progress
- Raise appropriate questions
- Evaluate their own learning

The classroom furniture will be appropriately situated for the lesson with all resources readily available and accessible to the children to create a good working environment. Lessons should have a clear introduction and plenary. Children are encouraged to develop a positive work ethos through behaviour and attitude and to work co-operatively with others when required to do so.

Display

We recognise the important role display has in the teaching and learning of mathematics by having maths work displayed in school. Every class has its own equipment and other display materials that provide a visual support for the children's mental processes. In all classes, practical equipment should be readily available for children to select their own appropriate materials. KIRS (Key Instant Recall Facts) are to be displayed and shared with parents. These should also build a building block for mental oral starters to develop fluency.

Equal Opportunities

At St. Nicholas CE (VA) First School we that all children are entitled to a broad and balanced curriculum irrespective of social background, culture, race, gender, differences in ability and disabilities.

In order to provide equality all pupils should benefit from their experience of mathematics. Work is differentiated to allow success for all children.

Inclusion

At our school it is a statutory requirement that we teach mathematics to all children, whatever their ability and individual needs daily. 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. For further details see separate policies: Special Educational Needs; Disability Equality Scheme and Access; Gifted and Talented.

SEN

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 differentiation – 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 helps ensure that our teaching is matched to the child's needs.

Intervention through School Action and School Action Plus will lead to the creation of an

Individual Education Plan (IEP) for children with special educational needs. The IEP may include, as appropriate, specific targets relating to mathematics.

Within mathematics children considered to have special educational needs are supported in their learning by:

- An Individual Education Plan written by the class teacher.
- Differentiated tasks appropriate to support their learning
- Working individually or in small groups with a learning support assistant
- Working individually or in a small group with the teacher
- Provision of resources to support their learning experience

Gifted and Talented pupils

In mathematics able pupils can typically;

- Grasp new materials quickly
- Are prepared to approach problems from different directions and persist until a solution is found
- Generalise patterns and relationships
- Use mathematics confidently
- Develop concise arguments

(*Mathematical Challenges for Able Pupils DfES 2000)*

Provision for able pupils in mathematics will be met through a range of extension and enrichment activities including problems solving and using and applying activities to broaden the child's understanding rather than to push them onto to a higher level.

ASSESSMENT AND RECORD – KEEPING

At St. Nicholas CE First School we are continually assessing our pupils and recording their progress. We see assessment as an integral part of the teaching process and endeavor to make our assessment purposeful, allowing us to match the correct level of work to the needs of the pupils, thus benefiting the pupils and ensuring progress. Assessment is carried out on three levels.

Short-term assessments are an informal part of every lesson and are closely matched to the teaching objectives. These tend not to be recorded because they are for the teacher's immediate attention and action; however, pertinent comments are occasionally recorded on the reverse of the short-term planning sheets.

Medium term assessments are carried out after each half term currently linked to the 'Wigan maths assessment' but moving to using the Collins published assessments in September 2015. . The purpose of these assessments is to review and record the progress the pupils have made in relation to the key objectives.

These assessments currently provide a Level for each child are reported each term on Assessment Manager. This will be moving towards a non-level based assessment for September 2015 in line

with new government guidelines where staff will award pupils with an emerging, secure or exceeding grade in each half termly assessment.

Assessment

Purposes

- To assess individual pupils' level of mastery in a specific National Curriculum attainment target (NC AT).
- To identify individual pupils' strengths and weaknesses in a specific NC AT.
- To provide guidance about what to do for those pupils who are achieving *above* or *below* expectations.
- To inform future planning and teaching of individual pupils and the class as a whole.

Assessment of learning (AoL) – summative assessment

Assessment of learning is any assessment that summarises at what level individual pupils, and the class as a whole, are working at a given point in time. It provides a snapshot of what has been learned. Within St. Nicholas CE First School AoL is used appropriately, e.g. to provide a Teacher Assessment level and grade at the end of KS1.

Assessment for learning (AfL) – formative assessment

"Assessment for learning is the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to get to and how best to get there."

Assessment Reform Group, 2002

Assessment *for* learning:
– is part of the planning process
– is informed by learning objectives
– engages pupils in the assessment process
– recognises the achievements of *all* pupils
– takes account of how pupils learn
– motivates learners.

(Busy Ant Assessment guidelines 2015)

The assessment procedures within our school encompass:

- Making ongoing assessments and responding appropriately to pupils during 'day-to-day' teaching. These 'immediate' responses are mainly verbal and are not normally recorded;
- Using knowledge of pupils drawn from ongoing pupil tracking records and from the 'prior learning' section at the beginning of each unit of work within the Renewed Framework to guide our planning and teaching;
- Adjusting planning and teaching within units in response to pupils' performance;
- Use of the 'assessment for learning' questions to check learning against objectives at the end of each unit of work. If necessary future planning is adapted in response to assessment outcomes;

The Busy Ant Maths Assessment Guides consist of seven key components:

- Assessment Tasks
- Assessment Exercises
- End-of-unit Tests
- Pupil Self-assessments

- Record-keeping formats
- Resources to accompany the Assessment Tasks
- Tracking back and forward through the Mathematics National Curriculum attainment targets

Target setting

KIRF targets are set at the beginning of each half term year and based on mental arithmetic and rapid recall of facts, doubling and halving, addition, subtraction, multiplication and division. The targets are in 'child speak' and are shared with parents.

Contribution of Mathematics to Teaching in Other Curriculum Areas

English

Mathematics contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening.

ICT

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

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 pupils 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 and 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

Athletic 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

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.

Reporting to parents

The progress and achievements made by each child in mathematics are reported verbally to parents in the Autumn and Spring Terms, and as part of the end of year annual written report. At the end of Key Stage 1 and Key Stage 2 each child's level of achievement against national standards is included as part of their annual written report.

Monitoring and Review

Monitoring of the standards of children's work and of quality of teaching in mathematics is the responsibility of the Headteacher and Senior Leadership Team supported by the subject leader.

The work of the subject leader also involves supporting colleagues in the teaching of mathematics, being informed about current developments in the subject, and providing a strategic lead and direction for the subject in the school.

A named member of the school's governing body is named as a link co-ordinator in maths. This governor meets regularly with the mathematics subject leader to review progress. All governors are kept informed through Headteacher reports.

This policy will be reviewed by the Mathematics Subject Leader Autumn 2014

Signed	
Date	

Mathematics Policy 2014-2016