Mathematics Policy

March 2016

Mathematics Policy

Introduction

This policy has been established to replace the Mathematics Policy 2014.

Mathematics is a core subject and this is with good reason. It does not involve simply learning rote procedural methods to solve out-of-context calculations which bear no relation to the real world. Mathematics is a highly creative and interconnected discipline which requires a deep level of understanding in order to be utilised to solve problems in the real world. Furthermore it is a vital component in the advancement of technology, engineering and science. A good understanding of Mathematics is essential for preparing young people for everyday life and providing a high level of education in this subject is essential for creating the foundations for understanding the world. Successful teaching of Mathematics involves helping to develop a sense of excitement about the beauty of mathematics and an appreciation of its power.

Aims of National Curriculum:

- Pupils become fluent in the fundamentals of Mathematics through 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.
- Pupils reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.
- Pupils 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 of the Subject

At St Albert's Catholic Primary School we aim to develop:

- A positive attitude, enthusiasm and curiosity about mathematics.
- Increased confidence so pupils are able to express themselves and their ideas using mathematical vocabulary
- An understanding of factual, procedural and conceptual knowledge
- An ability to apply knowledge to help solve problems
- An ability to reason mathematically and think logically
- An ability to work systematically and accurately

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- The ability to work both cooperatively and independently
- The ability to use and apply mathematics across the curriculum and in real life.

St Albert's is committed to continually raising standards for the benefit of our pupils. CPD is a high priority towards this end. The Maths Lead has completed the Maths Specialist Teacher course (MaST) and the school is accessing CPD from the St Helen's Maths Hubb to ensure that our staff have access to high quality and cutting edge training. We have been investigating the Shanghai approach to teaching maths and are working towards adapting some of the teaching methods to suit our education system.

Planning

In the Early Years Foundation Stage (EYFS), we relate the mathematical aspects of the children's work to the Development Matters statements and the Early Learning Goals (ELG), as set out in the EYFS profile document. Mathematics development involves providing children with opportunities to practise and improve their skills in counting numbers, calculating simple addition and subtraction problems, and to describe shapes, spaces, and measures. The profile for Mathematics areas of learning are Number (ELG 11) and shape, space and measures (ELG 12)**.** We continually observe and assess children against these areas using their age-related objectives, and plan the next steps in their mathematical development through a topic-based curriculum.

Long term planning

The National Curriculum for Mathematics 2014 is the first point of reference for planning in maths. School has purchased a scheme of work which has helped inform a long term plan.

Medium term planning

A clear medium term plan has been devised to ensure coverage of the programme of study as set out by the National curriculum 2014.

Short term planning

Short term planning is carried out weekly. A set planning format is used from years 1 to 6. This encourages teachers to plan to:

- Meet the three aims of the National Curriculum for maths (fluency, problem solving and reasoning.)
- Challenge children with activities promoting depth.
- Include differentiation via depth
- Key mathematical vocabulary
- Key questions for AFL.
- Reference to Bloom's Taxonomy questioning
- Include success criteria

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Cross Curricular Links

Cross curricular links are made as often as possible. We identify mathematical links in planning.

Teaching Methods and Approaches:

- Maths is taught on a daily basis.
- Follow White Rose documents
- Use NCETM mastery documents
- A scheme of work has been purchased to assist teachers' planning as required. However it is an aid only and teachers plan to suit the individual learning needs of pupils and to meet the aims of the National Curriculum.
- Lessons have a flexible approach to best suit the needs of the children. This might include whole class teaching, co-operative group work or individual work as appropriate
- Teachers plan using information gathered from Pre Learning Assessments
- Children are not in fixed groups and may change depending on the objective. Groupings change according to the assessment information gathered from Pre Learning tasks/assessments.
- Teaching approach responds to learners' needs. It may involve small group work using a differentiated approach (if the gap is too wide) or a whole class approach if appropriate.

Lessons may include opportunities for:

- Demonstration
- Modelling
- Guided whole class
- Group work
- Practical activities to provide meaningful context
- Written methods
- Development of mental strategies
- Investigational activities
- Mathematical discussion using precise language
- Justifying and explaining reasoning
- Consideration of basic skills and routines
- Problem solving
- Developing fluency and making connections
- Accessing personalised learning via online tutoring 'Maths Whizz'.

In order to develop a secure foundation in mental maths, and to develop fluency, classes access a CLIC maths session which involves: counting; learning key number facts; It's Nothing New (making links and developing fluency); and calculation. Big Maths lessons assess and support the learning of these core skills.

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These are additional initiatives aimed at developing the knowledge, skills and mathematical understanding of specific groups e.g. booster classes for Year 6 children.

- One to one tuition
- Numicon interventions
- Success @ arithmetic
- Power of 1 and the Power of 2
- Access More Able workshops
- Personalised learning to challenge individuals – Maths Whizz.

Inclusion

Our school aims to be an inclusive school. The equality of opportunity is a priority for us for our children. We make this a reality through the attention we pay to the different groups of children within our school. These may include:

- Girls and boys
- Ethnic and faith groups
- Children who need support to learn English as an Additional Language
- Children with Special Educational Needs
- More Able children
- Any children who are at risk of disaffection or exclusion

The teaching and learning, achievements, attitudes and well being of every child is important. All adults and children in our school feel secure that their contributions are valued and appreciated and value the differences that they see in others.

Effective use of 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.
- The use of IPad's may be incorporated into maths activities where possible.

Resources

The school uses a variety of resources to assist the teaching and learning of mathematics. These resources are routinely monitored and updated after consultations with staff and in response to CPD needs. New and relevant materials are constantly investigated as they become available.

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Recourses include:

- NRich
- NCETM
- Maths Whizz
- 100 squares of various shapes and sizes
- Counters
- Base ten apparatus
- Base ten stamps
- Number lines
- Counters (discus, cubes, etc)
- Dienes materials including stamps
- Cuisenaire
- Various number squares
- Number games
- Number cards
- Number fans
- Dominoes (also for fractions, decimals, etc)
- Fraction equipment including fraction fans
- Decimal equipment including decimal fans
- Playing cards
- Dice (various)
- Spinners
- Multi – link
- Place value cards
- Compare bears
- Counting sticks
- Abaci
- Magnetic numbers
- Abacus interactive whiteboard resources
- Singapore Bar Model

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Assessment

Teacher assessment of mathematics will be recorded throughout the year and reported to parents during parent interviews and through the annual report. Foundation Stage pupils are assessed using the Early Years Foundation Stage Profile.

Formative assessment

SIR Mark is used to provide effective feedback to children so that they have specific advice about how to more forwards with their learning (See separate marking policy for more information.) Children are given 'Fix It' time each day during which they respond to teachers' comments and make corrections. Children are encouraged to self assess via ticking a smiley/sad face at the end of each lesson. Mini half termly Rising Stars assessments aid formative assessment and inform

planning. Teachers also assess children against key performance indicators and yearly objectives on 'Primary Progress'. Teachers aim to provide immediate feedback to pupils within the lesson via class discussion and use high level questioning to assess pupils' understanding.

Reporting to Parents

Staff report individual pupil's progress on a termly basis through Pupil Progress Meetings. An annual written report is also sent home. All assessment follows the Policy for Planning, Assessment, Recording and Reporting.

Leadership Management

The Mathematics Subject Leader:

- Takes the lead in policy development, ensuring the continuity and progression of Mathematics throughout the school.
- Supports colleagues in their development and implementation and adaptation of schemes of work and in assessment and record keeping activities.
- Takes responsibility for the purchase and organisation of central mathematics resources.
- Keeps up to date with developments in Mathematics education and new technologies and disseminates information to colleagues as appropriate.
- Highlights areas for the development of Mathematics within the school Development plan and assists in the setting of layered curriculum targets where appropriate.
- Reviews CPD needs of all staff and provided suitable CPOD to meet individual needs.
- Disseminates relevant information from courses to all members of staff.

Monitoring and Evaluation

Monitoring of the mathematics curriculum is carried out in the following manner:

- Lessons monitored by the mathematics co-ordinator, headteacher and assessment co-ordinator
- Peer monitoring
- Review of planning from lesson observations
- Pupil voice. Pupil interviews.
- Analysis of test/assessment results
- Routine book scrutiny
- Learning walks
- Maths displays in classrooms. Use of Help Desks

Safe practice in Maths

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- It is imperative that all electrical equipment is kept in good working order and that the school guidelines are followed. (see ICT policy)
- Special care needs to be taken when working with some apparatus, such as scissors and compasses.
- Aprons are recommended for messy work.
- Close supervision should take place of all cooking activities.

Homework

In EYFS and KS1 maths homework is set when the class teacher feels it is appropriate. This may include 'talk homework' or maths games amongst other activities. In KS2, children receive homework each week. The majority of homework will consolidate learning from the classroom. However it may sometimes involve new learning via 'Maths Whizz' (a personalised ICT tutoring programme which teaches via videos and quizzes.)

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