



St Peter's R.C. Primary School

POLICY FOR TEACHING AND LEARNING IN MATHEMATICS

Updated March 2025



Article 28 (right to education) Every child has the right to an education. Primary education must be free and different forms of secondary education must be available to every child. Discipline in schools must respect children's dignity and their rights. Richer countries must help poorer countries achieve this.

Article 29 (goals of education) Education must develop every child's personality, talents and abilities to the full. It must encourage the child's respect for human rights, as well as respect for their parents, their own and other cultures, and the environment.

Rationale

This policy, whilst allowing for individuality and diversity, reflects the shared values of our staff, pupils and parents.

The general framework of numeracy education within St Peter's is based upon the Curriculum for Excellence outcomes for number, money and measure; shape, pattern and movement, and information handling. Experiences and outcomes are used in planning for teaching and assessment. Numeracy benchmarks aid assessment and tracking and monitoring of progress.

We are at the beginning of creating a Maths Mastery approach to our teaching and learning. We value the importance of teaching approaches that give pupils the best chance of securing both deep understanding of mathematical concepts and a varied fluency in applying them. Teachers strive to deliver both depth and breadth and ensure that pupils grasp the fundamental concepts that unlock the door to mastery.

The specific aims of our mathematics programme are:

- To promote enjoyment and enthusiasm for maths;
- To promote confidence and competence with a secure knowledge of number facts and their application in money and measurement;

- To equip pupils with the skills to solve problems mentally, selecting an efficient strategy from a range of known approaches;
- To allow pupils to use Concrete, Pictorial and Abstract (CPA) approaches when learning new concepts;
- To quickly identify when a mental strategy is not appropriate and, in these cases, have an efficient, reliable written method which they can use;
- To develop the ability to solve problems through decision making and reasoning in a range of contexts;
- To develop practical understanding of the ways in which information is gathered and presented;
- To explore features of shape, position and movement;
- To understand the importance of mathematics in everyday life.

CURRICULUM

Pupils are entitled to a broad, balanced and interesting curriculum. We use the Mathematics and Numeracy Experiences and Outcomes in the Curriculum for Excellence to plan our curriculum. We adhere to the 7 Principles of Curricular Design (Challenge and Enjoyment, Breadth, Progression, Depth, Personalisation and Choice, Coherence and Relevance) to plan experiences in

Number, money and measure

- ❖ Estimation and rounding
- ❖ Number and number processes
- ❖ Multiples, factors and primes
- ❖ Powers and roots
- ❖ Fractions, decimal fractions and percentages
- ❖ Money
- ❖ Time
- ❖ Measurement
- ❖ Mathematics – its impact on the world, past, present and future
- ❖ Patterns and relationships
- ❖ Expressions and equations.

Shape, position and movement

- ❖ Properties of 2D shapes and 3D objects
- ❖ Angle, symmetry and transformation.

Information handling

- ❖ Data and analysis
- ❖ Ideas of chance and uncertainty.

LEARNING AND TEACHING

All pupils have at least one maths lesson every day. In all our maths teaching, we must be aware of the learning intentions and success criteria

- WHY we are teaching a particular topic
- WHAT we expect the children to gain / learn
- HOW we are going to approach / teach it
- HOW we are going to assess the learning

Effective learning and teaching in numeracy and mathematics will involve a mix of appropriate approaches. We are using aspects from Maths Mastery.

Using a Maths Mastery Approach:

Representation and structure:

- To provide concrete and pictorial experiences so that pupils acquire a sound understanding of mathematical skills and concepts.
- To use concrete and pictorial approaches to access the maths and reveal the 'big ideas'. Additionally, to see patterns and make connections.
- To develop pupils confidence in mathematical understanding so they see the relevance of mathematics in the outside world.

Variation:

- To enable pupils to think logically and work in a systematic way.
- To allow pupils to apply what they have learnt in a variety of ways, e.g. systematic, imaginative, independent and co-operative.

Fluency:

- To ensure that pupils become fluent and accurate at rapid recall of number facts. (Number facts, times tables, making connections.)

Mathematical Thinking:

- To enable pupils to communicate through mathematics by discussion, so developing their conceptual understanding and verbal reasoning.
- To give opportunities for pupils to investigate and make discoveries for themselves.
- To follow chains of reasoning and make connections.
- To ensure that pupils have an in-depth knowledge of mathematical vocabulary and its meaning.
- To enable pupils to make links within mathematics and with other areas of the curriculum.

Within the terms mastery and greater depth mastery, all pupils require depth in their learning and understanding. All pupils are required to:

- Use mathematical concepts and facts and procedures fluently.
- Recall key number facts with speed and accuracy and calculate unknown facts.
- Use understanding to reason and explain a mathematical problem.

Mastery:

- The child can describe in his/her own words.

- The child can represent their learning in a variety of ways - concrete, pictorial, abstract.
- Explain it to someone else.
- Make up his/her own examples.
- Make links and see connections between facts/ideas/patterns etc.
- Recognise it in a new context.

Mastery with Great Depth:

- Solve problems of greater complexity (where the approach is not immediately obvious) and they can demonstrate creativity in their approach.
- Independently exploring and investigating mathematical contexts and structures.
- Communicating results clearly and systematically.
- Explain and generalise about mathematics.

PLANNING

Planning reflects the needs of the class, group and individuals. Teachers make medium term plans based on Curriculum for Excellence experiences and outcomes, blocking in the broad areas of learning and ensuring appropriate balance between practical activities and written work / recording (including jotters) Teachers then complete the details of activities, appropriate resources, homework, evaluation and assessment.

The plans should be shared electronically on the Google drive class plans folder. Full use is made of the planning materials and Numeracy Progressions on the ACC Curriculum Resources shared Google Drive.

CONCRETE, PICTORIAL, ABSTRACT (CPA) APPROACH

Planning has a concrete, pictorial and abstract approach because we believe that all pupils, when introduced to a key new concept, need the opportunity to build competency in this area by taking this approach. The conceptual understanding and fluency of pupils is strengthened if they experience concrete, pictorial and abstract representations of a concept. Moving between these approaches enables pupils to connect abstract symbols with familiar contexts, which supports pupils in making sense of maths.

Concrete - children should have the opportunity to use concrete objects and manipulatives to help them understand what they are doing.

Pictorial - along with concrete, children should use pictorial representations. These representations can then be used to reason and solve problems.

Abstract - both concrete and pictorial representations should support children's understanding of abstract methods.

THE LEARNING AND TEACHING ENVIRONMENT

All teachers create the climate for successful learning by promoting a positive environment:

Physical Environment All classrooms include displays that promote and celebrate mathematical thinking, including questions, problems of the week etc. Every classroom has access to maths resources and full use is made of games, concrete materials, the 100+ board, active learning materials such as 'Show Me' boards, number fans etc. The interactive whiteboard and other online resources are used to promote and consolidate learning. The vocabulary used in mathematics is displayed and discussed regularly.

Social Environment Learners are encouraged to share their thinking and understanding with each other and the teacher. Assessment for Learning strategies are used throughout the lesson. Peer support and collaborative learning are encouraged. Games are used as an important learning tool and not just for early finishers.

Emotional Environment Learners know that risk taking is encouraged and valued. Mistakes are seen as learning opportunities. Dialogue between learners has to be meaningful and supportive.

PROCESS

Maths lessons are delivered in a variety of ways to groups, individuals and the whole class using the Mastery for Maths approach. Direct interactive teaching methods and active pupil participation are encouraged at all times. Teachers have the responsibility and flexibility to deliver lessons in a manner which is most effective for the learners.

There is an expectation that each lesson has a clear start and sustains a good pace:

- Starter – Begin each lesson by linking the learning to previous lessons. Interactive mental maths helps pupils to 'warm up' and develop agility and confidence.
- Learning and Teaching – The Learning Outcome and Success Criteria are shared with pupils. Using a whole class theme (e.g. money), pupils and teachers develop learning in the chosen experience and outcome. There should be lots of dialogue and opportunities for all pupils to develop and test their thinking.
- "I Do, We Do, You Do" approach for all lessons
- Teachers use deeper questioning and check pupils' understanding as they go along. E.g. Can you explain? What did you notice? Can you compare? What is the same/different? How do you know? Can you prove it? What is the odd one out? True or false?
- Activity – Activities should be differentiated for varying abilities. Groups should be engaged in challenging and achievable activities which meet the learning outcomes. Teachers have a specific role to target and support individual

learners and groups with differentiated questions which check understanding and extend learning. There is continuous assessment which helps teachers to plan next steps and decide how Pupil Support Assistants can support identified children.

- Plenary – Each lesson should end with a plenary to assess what has been learned and to inform future planning.

There is an expectation that pupils will regularly have opportunities to apply their learning in numeracy and mathematics through problem solving contexts and holistic tasks which draw upon high quality skills.

MEETING PUPIL'S NEEDS

In order to meet the needs of each pupil, we try to provide all pupils with appropriate challenge and opportunities to experience success. In all classes, there are children of differing mathematical ability. This is recognised by staff, and suitable learning opportunities are provided for all children by matching the challenge of the task to the ability of the child. This may be through differentiation by outcome, differentiated group work, differentiated resources, working in mixed ability pairs or amount of adult support etc.

TRACKING, MONITORING AND ASSESSMENT

Staff recognise the importance of assessment in providing a clear picture of children's progress, and in planning for further learning to ensure progression and consolidation. Each child is given regular feedback in a range of ways, including Assessment is for Learning, to identify next steps and set personal targets.

Staff include specific assessment tasks when planning, for example through interdisciplinary topics, to assess how well skills taught in numeracy lessons are applied in other curricular areas and contexts. Progress will also be measured by children's competence and confidence in applying mathematical concepts in their learning, in their daily lives and in their path towards the world of work.

Through assessment children's mathematical skills are identified, in

- interpreting and analysing information
- simplifying and solving problems
- assessing risk and making informed choices
- collaborating and working independently

Staff will assess numeracy skills through children's

- understanding of number processes and concepts
- ability to solve problems, drawing on previously learned skills and concepts
- ability to tackle problems in unfamiliar contexts
- ability to apply skills accurately when working independently
- evaluation of their solutions/data
- understanding of personal finance
- capacity to engage with and complete tasks

Periodic holistic assessments give pupils the opportunity to demonstrate their knowledge and skills across several experiences and outcomes. Teachers work together to create appropriate holistic assessments which are completed throughout the year.

Children complete formal computer-based National Standardised Assessments (NSAs) once in P1, once in P4 and once in P7.

Pupil progress is recorded in teachers' trackers and forward plans. Dates of achieving milestones are entered and predictions are made about when children are likely to attain the next level (Early, First, Second and, in exceptional cases, Third level). During learning and teaching meetings, pupil progress is tracked so that additional support can be put in as necessary.

RESOURCES

A wide variety of resources are available for each learning topic. These include

- Cubes
- Numicon
- Place value counters
- Base 10 or Dienes Apparatus
- Number lines
- 100 squares
- Multiplication squares
- Bead strings/dice
- Clocks, stopwatches
- Measuring equipment
- Key mathematical vocabulary linked the objectives being taught

QUALITY ASSURANCE

Implementation

Class Teachers have responsibility for the effective implementation of this Policy in their own classrooms and for contribution to the further review, development and improvement of the policy.

The Senior Leadership Team are responsible for ensuring the provision of materials and for the organisation of appropriate opportunities for Continuing Professional Development for all staff.

Monitoring and Self Evaluation

The Head Teacher and Depute Head Teacher have responsibility for monitoring the implementation of the Policy throughout the school through

- Learning and teaching meetings
- Scrutiny and discussion of forward plans, checking for evidence that mental strategies are being taught
- Learning walks/ classroom observations

- Sampling pupils work on a regular basis through pupil interviews, jotter discussions, jotter quality assurance and assessment folder quality assurance activities
- Working alongside teachers in classes
- Evaluation and review of assessment data

Findings will inform all staff of areas of strength and those areas set out for improvement.