



St Joseph's Primary School

Mathematics and Numeracy Policy

November 2019

Rationale

'All schools and nurseries should use a wide range of effective learning and teaching approaches to promote positive attitudes and develop high expectations, confidence and resilience in maths.'

Making Maths Count Final Report 2016

Numeracy promotes the development of the number-based skills that are needed regularly by everyone in their lives and is a part of Mathematics.

Mathematics is the study of the properties, relationships and patterns in number and shape, and the application of this knowledge to analyse, interpret, simplify and solve problems.

Numeracy is not only a subset of mathematics but also a fundamental life skill which permeates all areas of learning. It gives increased opportunities within the world of work and provides individuals with the knowledge, concepts and skills required for life-long learning. It is therefore essential to equip children with these skills to contribute effectively to society, and for teachers to look for opportunities to apply, develop and reinforce numeracy and mathematics skills within their own teaching activities and through contextualisation in real life.

This policy focuses on the development of numeracy and mathematics at St Joseph's Primary School.

Our Vision

In our school community we will work together as a team to develop our children as successful learners, confident individuals, effective contributors and responsible citizens by providing a safe, friendly and inclusive environment for motivating and challenging learning experiences.

Aims

As well as realising our school aims this policy will develop specific aims related to numeracy:

We aim to:

- Provide an effective framework for the delivery of high quality learning and teaching in numeracy and maths
- Ensure all learners are provided with maximum opportunities to acquire, understand and apply numerical and mathematical skills effectively and with confidence

- Ensure alternative curriculum pathways are suitable and accessible for all learners
- Promote progression and continuity at all stages and across areas of transition to ensure a seamless, coherent and relevant numeracy and maths curriculum for all
- Increase staff skills and confidence in teaching numeracy and maths
- Provide guidance and support to parents to ensure consistency and understanding of mathematical approaches.
- Raise levels of achievement and attainment in numeracy and maths among all learners

Our children will be able to:

- Understand and apply key concepts, facts and techniques
- Explain the process and strategies they are using
- Develop, use and apply a variety of mathematical strategies in a variety of contexts
- Lead their learning
- Develop problem solving skills across learning
- Develop core mental maths skills and quick recall of basic facts
- Understand and use mathematical language
- Use technology to support and enhance learning
- Develop mathematical knowledge and understanding

Learning, Teaching and Assessment

Curricular planning

Our curriculum design reflects the values, principles and purposes of Curriculum for Excellence. It will provide opportunities for children to think deeply about mathematical ideas, construct their own understanding and use their existing skills and knowledge in different contexts to solve problems.

In planning, teachers will:

- Use skills tracking planners to ensure breadth, depth and progression
- Set out clearly the Experiences, Outcomes and associated skills pupils are expected to learn using guidance from the maths progression planners and Numeracy benchmarks
- Record a range of learning experiences, teaching approaches and resources
- Identify appropriate mental activities and reinforce previously taught concepts regularly
- Include differentiated plans, ASN and support/challenge for identified children
- Identify interdisciplinary links and numeracy across the curriculum
- Identify focus for assessment ensuring a balance of formative, summative and diagnostic assessment.
- Use termly professional dialogue to inform next steps in planning
- Use profiles and dialogue to enable children to identify strengths and next steps
- Ensure engaging learning opportunities and daily interactive mental maths sessions are planned to provide *Challenge and Enjoyment*

- Use a variety of pedagogical approaches including Playful pedagogy, critical thinking and enquiry and DIY classroom to develop application and depth.
- Discuss medium term planning termly with the SMT
- Medium term planning is broken down into learning outcomes which then inform short term planning. Short term planning is recorded on a weekly/daily basis. The weekly/daily planner outlines learning outcomes, activities and resources to be used including deployment of SfL within the lesson

Learning and Teaching Strategies

All teachers will use CPA approach- CPA stands for concrete, pictorial, abstract. The CPA approach builds on children's existing knowledge by introducing abstract concepts in a concrete and tangible way. It involves moving from concrete materials, to pictorial representations, to abstract symbols and problems. Children's conceptual understanding of a skill will develop from being actively engaged in their learning progressing through these three stages.

Number Talks is used as a mental maths starter with the whole class. The use of number talks is a pivotal vehicle for developing efficient, flexible, and accurate computation strategies that build upon the key foundational ideas of mathematics such as composition and decomposition of numbers, our system of tens, and the application of properties. Classroom conversations and discussions around purposefully crafted computation problems are at the very core of number talks. These are opportunities for the class to come together to share their mathematical thinking. The problems in a number talk are designed to elicit specific strategies that focus on number relationships and number theory.

All classes have access to numeracy Blueprints and should use these as a learning aid. They include the 100 Square, the Big Grid, ten 10 Frames, an empty number line, two 10 Frames, a vertical number Line and white space for demonstrating thinking skills. These are essential building blocks for a learner to make progress in Numeracy. All this comes on one practical write-on white board. Teachers should use this high-quality resource for learning and teaching as it is an invaluable aid for learners who require additional support.

Our structure for a primary maths lesson consists of:

Introduction

- 10-15min interactive mental maths session. This can be to consolidate or revisit previous learning or to lead into new learning but it doesn't necessarily have to link to the learning outcome of the lesson that follows.

Main Teaching Activity

- Reference made to real life or other familiar context for the intended learning
- Reference made to St Ninian's Cluster common language and methodology
- Revisiting previous learning to ascertain skills and knowledge to build on
- Sharing of learning intention (L.I), which will be used to elicit success criteria (S.C) with the pupils, both of which should be clearly displayed or discussed.
- Interactive teaching with effective use of ICT and IWB , if appropriate to support learning and teaching
- Class work, group work and individual work should be used as part of the lesson when appropriate
- Effective use of concrete materials where appropriate.

Plenary Session

- Plenary session relating back to learning outcomes and success criteria in order to identify success and next steps

Pedagogy

Playful Pedagogy

Primary 1 and 2 children will participate in playful pedagogy where they develop their skills and abilities through completing targets in various contexts.

Critical thinking and enquiry

Children in primary 3 will engage with tasks that draw upon critical thinking and enquiry to showcase the skills learned. They will independently complete targets, challenging them to develop their skills and knowledge through a variety of contexts.

Child led learning

Children in primaries 4-7 will be leaders of learning as they challenge themselves to apply the skills learned in various contexts; developing these through breadth and depth in the curriculum.

- Co-operative and independent learning
- Regular opportunities to discuss, communicate and explain thinking to develop mathematical thinking skills and develop their use of mathematical language.
- Contextualised learning linked to real life context or a context that is familiar to pupils' experiences
- Development of problem solving skills.
- Interactive mental maths to develop mental agility including SEAL, Number Talks and Numeracy Blueprints
- Appropriate and effective use of technology
- Assessment is for Learning approaches such as effective questioning, sharing of outcomes, self and peer assessment
- Developing the ability to effectively check work and identify and address any inaccuracies.
- Effective questioning used throughout lessons to elicit understanding, challenge and probe thinking, and assess understanding
- Practitioners should make use of the Teacher's Manual to ensure consistency in approach and shared methodology. Including reference to St Ninian's Cluster shared language and methodology.
- Exemplification of learning and understanding included on class interactive learning wall. This should include current written examples and evidence of practical learning.

Resources

A variety of resources should be used to support active learning and teaching methodologies. Commercialised resources are not used to drive learning but are used as a tool to support delivery of lessons and activities.

Assessment/Retention of Evidence/ Retrieval Practice

Staff are trained in Assessment is for Learning approaches and this is regularly revisited to develop a range of approaches and encourage effective practice.

The principles of Curriculum for Excellence mean that progress is defined in terms of application, breadth and challenge of achievement at the level for each stage. To ensure that children become confident and secure in their mathematical learning, teachers plan opportunities for children to demonstrate their learning in both familiar and unfamiliar contexts. Effective assessment informs next steps in learning as well as reassurance that children have achieved the skills, attributes and knowledge required to demonstrate confidence within a level.

Assessment will be undertaken in a variety of ways and different forms of evidence will be gathered:

- On-going evaluations of progress by linking back to learning outcomes set at planning stages. This will inform changes in daily/weekly plans to accommodate changes in pace of learning.
- On-going use of formative assessment strategies during lessons to give effective feedback and monitor pupil understanding
- Use of peer/self-assessment by pupils
- Continuous observation of pupils demonstrating their learning
- Use of summative assessment and diagnostic assessments:
 - Baseline – Primary 1
 - MALT - Primary 2
 - TeeJay Diagnostic – Primary 1,4,7 (End of Level)
 - SNSA - Primary 1, 4 and 7
 - ERC Standardised Assessments - P3, 5 and 7
- Use of end of unit check-ups to assess knowledge and ensure Retrieval Practice:
 - Heinemann Check Ups
 - TeeJay 'Topic in a Nutshell'
- Assessment spreadsheets used to track group progression in P1-7 and this is used to inform planning
- Establishment tracking at termly Professional Dialogue meetings
- Pupil profiles will provide a range of experiences and outcomes covered (P2-7).

Homework

Homework should provide rich opportunities for children to demonstrate, extend and explore learning through a variety of exciting and enjoyable activities. Quality homework tasks allow learners to practise or process information, introduce them to material that will be discussed in the future, or provide feedback to teachers so they may check for understanding.

As well as reinforcing concepts and revisiting prior learning, effective homework:

- Has a clear purpose and demands active learner engagement;

- Provides opportunities for parents and children to talk about learning in maths and see real life connections and applications; and
- Develops higher-order skills such as analysing and researching.

Monitoring and Evaluation

- Collegiate planning at stage to moderate pace and progression including use of St Joseph's moderated benchmarks.
- Departmental meeting/Staff meetings focussed on pedagogy
- Cluster moderation events to ensure shared standards of achieving a level.
- Authority moderation events
- Having Professional Dialogue meetings every term to discuss planned learning, breadth, pace, progression and assessment of pupils
- Updating tracked spreadsheets
- Monitoring maths jotters/workbooks/homework jotters, and discussing learning and teaching with selected focus groups of pupils
- Formal observations of maths lessons and learning walls
- Carrying out regular audits to review school's progress against national standards