



Numeracy Policy

2017-2018

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CONTEXT

Whilst this policy has been agreed by all staff to define our particular principles, practices and provision, it should be noted that our work lies within the wider context of the NI education system. The following are the main structures within which we operate:-

- The stated vision of the Department of Education for Northern Ireland: “to ensure that every learner fulfils his or her potential at each stage of his or her development.”
(DE 2010).
- The overall aim of the NI Curriculum: “The Northern Ireland Curriculum aims to empower young people to achieve their potential and to make informed and responsible decisions throughout their lives.”
(DE 2008)
- The characteristics of effective practice, defined in “*Every School a Good School – a Policy for School Improvement*” (DE 2009), grouped under the four headings:
 - Child Centred Provision
 - High Quality Teaching and Learning
 - Effective Leadership
 - A School Connected to its Local Community
- The prominence of Literacy and Numeracy within the NI Curriculum, emphasised in “*Count, Read: Succeed- a Strategy to Improve Outcomes in Literacy and Numeracy*” (DE 2011) :

“Literacy and numeracy are at the very heart of the revised curriculum.” (para.2.3)
“Developing literacy and numeracy therefore must be central elements of a school’s delivery of the revised curriculum, and of the support and professional development for teachers in implementing the curriculum.”
(para. 2.5)
- The characteristics of the most effective practice in numeracy provision in NI primary schools, identified by ETi in “*Better Numeracy in Primary Schools*” (ETI 2010)

INTRODUCTION

This policy will set out the agreed key principles and practices that guide the development of numeracy in our school, drawing on the indicators of effective provision from *“Every School a Good School”* using the four headings noted above.

At Tullygally PS we believe that numeracy skills are the key to future educational success and to ensuring that each child has the opportunity to develop as an individual, as a contributor to society and as a contributor to the economy and environment.

We have adopted the definition of Numeracy from *“Count, Read: Succeed”* (para. 1.10) :

“The ability to apply appropriate mathematical skills and knowledge in familiar and unfamiliar contexts and in a range of settings throughout life, including the workplace.

It involves the development of:

- a. An understanding of key mathematical concepts and their inter-connectedness
- b. Appropriate reasoning and problem-solving
- c. The proficient and appropriate use of methods and procedures (formal and informal, mental and written)
- d. Active participation in the exploration of mathematical ideas and models

OBJECTIVES OF NUMERACY POLICY:

At Tullygally PS we intend that, by the end of Key Stage 2 and at a level appropriate to their ability, children will be able to:

- Choose the appropriate materials, equipment and mathematics to use in a particular situation
- Use mathematical knowledge and concepts
- Work systematically and check their work
- Use mathematics to solve problems and make decisions
- Develop methods and strategies, including mental mathematics
- Explore ideas, make and test predictions and think creatively
- Identify and collect information
- Read, interpret, organise and present information in mathematical formats
- Use mathematical understanding and language to ask and answer questions, talk about and discuss ideas and explain ways of working
- Develop financial capability
- Use ICT to solve problems and present their work

From: Requirements for Using Mathematics, NI Primary Curriculum, p.6 (CCEA 2007)

STATUTORY REQUIREMENTS:

The detailed statutory content requirements are set out in the NI Curriculum (primary) document (CCEA 2007) and together with the progression exemplified in the revised Lines of Development document (CCEA), informs our Scheme of Work for Mathematics.

The NI Curriculum (primary) document also sets out guiding principles, which we endorse and have agreed to include in our policy:

Foundation Stage (p.23), including:

- Activities should involve children in playing, exploring and investigating, doing and observing, talking and listening and asking and answering questions
- Through engaging in a wide variety of activities, children should understand mathematical language and then begin to use the language to talk about their work
- Mathematical activities should be presented through contexts that have a real meaning for children and provide opportunities for them to investigate their ideas

Key Stage One and Two (p.57 – 60), including:

- Mathematical ideas should be introduced to children in meaningful contexts
- Activities should be balanced between tasks which develop knowledge, skills and understanding, and those which develop the ability to apply mathematical learning and solve problems
- Children should use their knowledge of mathematical language to talk about their work and explain their findings
- Children should be given regular opportunities to develop their skills in mental mathematics, to estimate and approximate and to investigate and make predictions and decisions:
 - within mathematics
 - across the curriculum
 - in real-life situations

CHILD-CENTRED PROVISION:

The following ESaGS indicators will be reflected in our provision for Mathematics and Numeracy:

- Decisions on planning, resources, curriculum and pastoral care reflect at all times the needs and aspirations of the pupils within the school
- A clear commitment exists to promoting equality of opportunity, high quality learning, a concern for individual pupils and a respect for diversity
- A school culture of achievement, improvement and ambition exists with clear expectations that all pupils can and will achieve to the very best of their ability
- Effective interventions and support are in place to meet the additional education and other needs of pupils and to help them overcome barriers to learning
- There is a commitment to involve young people in discussions and decisions on school life that directly affect them and to listen to their views

Specifically:-

Taking Account of the Needs of all Learners (differentiation – planning, teaching):

Differentiation in 2 weekly short term plans (Groups 1, 2, 3) by activity or by level of support – evaluated by coordinator on a regular basis.

Differentiation in learning and teaching activities – children grouped by ability (Groups 1, 2, 3) and activities designed to provide appropriate level of challenge for each group, evaluated by coordinator on a regular basis.

Children who require over and above due to Stage 5 interventions are given additional support within class.

The Nurture Unit supports children within all learning areas and children are withdrawn during class time (P2/P3)

Mathletics is an online learning space which they can access both within school and at home.

Identifying and Supporting Under-achieving Learners:

Identified through comparing PTiM score with CAT; where PTiM score is 10 or more less than CAT score (P2-P7). Also through teacher judgement before children are formally assessed (P1-P2). These children are then highlighted within the 2 weekly short term planners so they are easily identified (P3-P7).

Support provided through withdrawal groups funded by Neighbourhood Renewal. 'Rocket Maths' targets underachievers specifically in Year 4 during after school hours.

Under-achieving children's progress is carefully monitored and clear records are kept. Each under-achieving child is expected to improve their PTiM score.

Identifying and Supporting Low-achieving Learners:

Mathletics can be used to reinforce skills and concepts- adjusted to suit the level of the child.

Rocket Maths concepts are used to support children with low achievement.

Supporting Newcomer Children:

Newcomer children receive targeted in class support and withdrawal groups aimed at developing language skills in relation to mathematics.

Identifying and Supporting High-achieving Learners:

High achieving learners (Gifted and Talented) are identified through analysis of standardised scores - where their PTiM score is in Stanine 8 or 9 (i.e. 119 and above).

Other high achieving children are supported through carefully differentiation, ensuring that they are appropriately challenged

HIGH QUALITY TEACHING AND LEARNING:

The following ESaGS indicators will be reflected in our provision for Mathematics and Numeracy:

- A broad and relevant curriculum is provided for the pupils.
- An emphasis on literacy and numeracy exists across the curriculum.
- Teachers are committed and enthusiastic, enjoying a positive relationship with their pupils and with other school-based staff and dedicated to improving learning.
- Teachers use adaptable, flexible teaching strategies that respond to the diversity within the classroom.
- Assessment and other data is used to effectively inform teaching and learning across the school and in the classroom and to promote improvement.
- Rigorous self-evaluation is carried out by teachers and the whole school, using objective data and leading to sustained self-improvement.
- Teachers reflect on their own work and the outcomes of individual pupils.
- Education outcomes reflect positively on the school and compare well, when benchmarked measurement is undertaken, against the performance of similar schools.

Specifically:

Breadth and balance of our mathematics and numeracy curriculum across all areas of mathematics:

Staff have agreed long term planning documents, based on the statutory requirements of the NI Curriculum at Foundation Stage, Key Stage One and Key Stage Two.

These detail the content taught, and are designed to ensure that all areas of mathematics and numeracy are addressed every half term. In addition all key mathematical concepts are re-visited regularly throughout the school year.

2 weekly short-term planning is designed to ensure that the learning is suitably differentiated to meet the needs of all abilities. Teachers plan to focus on Number for 3 days per week, leaving 2 days for the other areas – Measures, Shape and Space, Handling Data. Problem solving and Talking and Listening are embedded within second week of short term planners – see example.

Learning and teaching approaches:

Lessons begin with a clear introduction which sets the context for the learning, allows the children to review relevant previous learning and provide reference to real life application if appropriate.

Teachers build effectively on the children's previous knowledge and experience

Teachers share appropriately challenging learning intentions with children

Learning activities are focussed clearly on the identified learning intention

Learning activities are suitably differentiated to meet the needs of all of the children

Teachers and Classroom Assistants provide support where necessary, encouraging children to think for themselves

Children are encouraged and expected to settle to their learning activity quickly and to maintain focus throughout the activity

Opportunities for children to apply mathematical knowledge and understanding across the curriculum and in real-life situations:

Children are given opportunities to talk about their learning and to explain their mathematical thinking, using appropriate mathematical language

Children are encouraged and expected to show good levels of independence and self-management, appropriate to their age and ability

Children are given regular and frequent opportunities to work cooperatively together in groups to tackle open-ended problem solving tasks

Children are given opportunities to apply their knowledge, understanding and skills in a wide range of contexts, within mathematics, across the curriculum and in real-life situations

Teachers use open-ended questions, problem-solving tasks and investigative activities to develop the children's capacity to reason logically, to think flexibly and to make and justify decisions

Assessment for Learning methods and formative assessments used by teachers to inform their plans for learning and teaching:

Teachers share appropriately challenging learning intentions with children

Teachers evaluate accurately the quality and extent of children's learning, and provide feedback which clearly shows how learning can be improved

Teachers use open-ended questions to extend children's thinking and to evaluate their understanding

Children reflect on what they have been learning (rather than on what they have "done")

The quality of learning and teaching is regularly monitored and evaluated by the coordinator, through classroom observations and through scrutiny of the children's work from P1-P7. Samples are kept from each term in pupil files.

CCEA tasks are carried out once per term in P3-P7 and are levelled at whole staff meetings.

The following key principles for learning and teaching in different areas of mathematics have been agreed by all staff:

Approaches to learning and teaching of mental mathematics:

- Interconnections between developing a bank of known number facts, an increasing range of calculations and an increasing range of mental calculation strategies
- Time allocation for mental mathematics: 10 mins, before main part of lesson
- Use of games
- Use of ICT
- Assessment of mental mathematics – use of core competences
- Progression for mental mathematics within and across year groups – agreed planning

Approaches to learning and teaching in Number:

- Understanding the number system – counting, sequencing, place value, fractions, decimals, percentages
- Calculations – four operations and their relationships
- Strategies to encourage understanding of operations, not just ability to compute answers – link to processes (below)
- Application of calculation skills in mathematical problem solving, across the curriculum and in real- life situations, especially in selection of operation(s) required link to processes (below)
- Application of financial capability skills

Approaches to learning and teaching in Measures:

- Progression: direct comparison of two objects, more than two objects, measuring using non-standard units, recognising need for standard units, measuring using standard units
- Strategies used to enable children to develop accuracy in estimation before measuring
- Use of practical activities
- Opportunities for children to select the appropriate measuring tools and units of measurement

Approaches to learning and teaching in Shape and Space:

- Importance of practical experiences to investigate properties of shapes
- Emphasis on naming shapes by reference to their particular properties
- Exploration of position and movement in real life contexts
- Systematic development of language from informal to formal mathematical definitions
- Importance of experiencing irregular shapes as well as regular shapes

Approaches to learning and teaching in Handling Data:

- Emphasis placed on the application of data handling skills to investigate and make decisions: Identify a question, decide on information required, decide how to gather information, record and analyse information to answer original question, decide how best to display information
- Systematic development of understanding of probability: from informal language to describe likelihood of events occurring, through formal language of increasing accuracy to numerical quantification of likelihood.
- Use of ICT packages to speed up process of constructing graphs and charts

Approaches to learning and teaching in Processes:

- Agreed definition of Processes (from SDD)
- Agreed Progression of Processes skills development within and across year groups
- Opportunities for children to develop Processes skills e.g. through choosing materials and mathematics required, using a range of problem –solving strategies
- Opportunities for children to plan their own work and work systematically
- Use of open ended questions to encourage children to explain their thinking
- Opportunities for children to work collaboratively and to compare ideas and methods with others

Analysis of data, and how that analysis is used to improve the quality of children’s learning and hence improvements in their achievements:

GL Assessment Progress in Mathematics standardised assessments are completed by every child at the end of each school year from P2 to P7. The data arising from these assessments is used to track achievement and to set targets setting at both individual pupil and at year group level

Pupil Level:

- Identify underachieving children, target to increase PTiM standardised score so that they are no longer underachieving
- Individual pupils: identify lowest PTiM Content and Process Categories, and target to increase their score in these categories. These are incorporated into pupil’s targets and shared with pupils and parents
- Record children’s standardised score and their % correct in each of the Content and Process categories year on year so that comparison with previous performance can be made and rate of progress tracked.

Year group Level:

- Identify the PTiM Content and Process Categories in which the year group average is worst when comparing with standardising sample average, and target to improve performance in these categories
- Identify questions with negative difference between year group average and standardising sample average, review these questions in pupil booklets and identify possible reasons for below average achievement
- Record year group mean standardised score, and performance relative to standardising sample in each of the Content and Progress categories year on year, so that comparison with previous performance can be made and rate of progress tracked

Whole School Targets (Statutory Assessment):

- Predict individual target levels for P4 and P7 children, using previous PTiM standardised scores to aid process
- Use these predictions to generate whole school targets for Level 2 and above, Level 3 (KS1) and Level 4 and above, Level 5 (KS2) in Communication and Using Mathematics

EFFECTIVE LEADERSHIP:

The following ESaGS indicators will be reflected in our provision for Mathematics and Numeracy:

- An effective school development plan is in place, providing clear and realistic targets for improvement based on a sound vision for the school.
- Governors understand their responsibilities and provide clear strategic direction as well as support and challenge to the Principal in carrying forward the process of improvement.
- School leaders demonstrate a commitment to providing professional development opportunities for staff, particularly teachers, and promote a readiness to share and learn from best practice.
- Teachers are given the opportunity to share in the leadership of the school.
- The resources at the disposal of the school are managed properly and effectively, with appropriate arrangements in place for financial management, attendance management, and working relationships.
- School leaders monitor and evaluate effectively school outcomes, policies, practices and procedures and the School Development Plan itself

Specifically:

Board of Governors play a key role in ensuring that the quality of leadership and management, the level of children's achievements and the quality of provision for mathematics and numeracy is of a consistently high quality. They have oversight of the School Development Planning Processes and scrutinise the resulting action plan to ensure they have a clear focus on improving the quality of learning and teaching and subsequently on improving the standards achieved by the children. They meet regularly with the coordinator to evaluate the implementation of the action plan and the outcomes of the monitoring and evaluation carried out by the coordinator

The Principal, Senior Leadership Team and Numeracy Team work together to ensure consistently high standards of learning and teaching across the school

Monitoring and Evaluation strategies (including effective use of data) for Mathematics and Numeracy provision

The focus of the monitoring and evaluation strategies carried out by the Numeracy Team which meet once per month, led by the Numeracy Coordinator, is to provide robust and objective evidence so that judgements can be made on the extent to which the Success Criteria of the current action plan have been achieved, by the end of each school year. Since these Success Criteria are designed to reflect planned improvement in the quality of learning and teaching and the standards achieved by the children, it follows that the monitoring and evaluation strategies are similarly focussed on the quality of learning and teaching and the standards achieved by the children. To this end the strategies include:

- Scrutiny of the Teachers' planning
- Classroom Observations
- Team teaching
- Scrutiny of the children's work (samples from books and levelled tasks)
- Discussions with groups of children
- Questionnaires for children, teaching staff, parents
- Analysis of data from standardised assessments

Prior to monitoring being carried out, criteria are agreed with staff and monitoring templates are produced. These are used to provide detailed feedback to the relevant teachers.

Role of Numeracy Co-ordinator

Job specification:

To lead the development of Numeracy throughout the school, in conjunction with the Principal and Senior Management Team, reporting to the Principal and/or Board of Governors.

Responsibilities:

The Numeracy Co-Ordinator will:

- demonstrate expertise, enthusiasm and vision
- promote self-evaluation in order to enhance the monitoring, evaluation and review processes
- monitor, evaluate and record progress on the numeracy action plan
- ensure a regular review and update of the policy with all staff
- encourage staff to use a range of learning and teaching strategies to best meet the needs of pupils
- assist teachers avail of numeracy courses to enhance their understanding and teaching of Numeracy
- organise school-based INSET as required
- provide guidance in the effective use of comparative performance data, including benchmarking
- encourage management to offer support for identification, dissemination and implementation of good practice in the learning and teaching of Numeracy
- undertake on-going monitoring and evaluation at individual, class and whole school level
- report to Principal and Governors regarding the school's numeracy development, with specific reference to the current Numeracy Action Plan

A SCHOOL CONNECTED TO ITS LOCAL COMMUNITY:

The following ESaGS indicators will be reflected in our provision for Mathematics and Numeracy:

- Good relationships that facilitate engagement and communication between the school and its parents and the wider community that it serves
- The school and its teachers are held in respect by parents and the local community who in turn actively support the work of the school
- The school uses its involvement in particular programmes(e.g. Extended Schools) effectively in meeting the needs of the community and nearby schools
- Good relationships and clear lines of communication are in place between the schools and the education agencies that support it
- The school works closely with other relevant statutory and voluntary agencies whose work impacts on education, especially Health, Social Services and the Library Service and, where appropriate, local Neighbourhood Renewal groups

Links with parents:

- Reporting to parents: parent interviews twice per year Oct , Feb
- Helping parents support their children's learning: Open mornings parents involved with learning activities, Nurture Units, Numeracy parents' meetings – how to help with children's learning
- Mathematics logins shared with home
- Use of school website - pictures of children working at activities:
2Simple App - observations
www.tullygallyps.co.uk

Links with other schools:

- Meetings with post primary schools to ensure cross phase consistency and to manage transition for children: Brownlow College , Lismore High School: to ensure smooth transition – match curriculum, find out ability groups etc.
- Visits to other schools who are 'Outstanding' to share ideas

Links with the Community:

- Neighbourhood Renewal projects, Extended Schools projects:
 - Visits to local businesses: Tesco Community Link / from local tradespeople, where mathematics is used in their work : Police, Firemen, Nurses
- Links with external education support agencies (Educational Psychology Service, SELB Special Needs service, IDS, SELB CASS etc):

CONSISTENCY WITH OTHER SCHOOL POLICIES

The content of the Numeracy Policy is checked to ensure consistency with other school policies for:

Learning and Teaching, Assessment, Homework, Special Educational Needs, ICT, Equal Opportunities, Health and Safety

MONITORING and EVALUATION of POLICY

The Numeracy Policy is:

- Agreed with the Board of Governors
- Shared with parents
- Available to the general public via the school website
- Regularly reviewed and updated in consultation with school stakeholders: staff, children, parents and governors