



Drumsallen Primary School

**Mathematics / Numeracy
Policy**

January 2016

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 DrumsallenPS 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 Drumsallen 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

Our staff have agreed the following indicators are most relevant to Numeracy development in our school:

Child – Centred Provision:

- Decisions on planning, resources, curriculum and pastoral care reflect at all times the needs and opportunities 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.

High Quality Teaching and Learning:

- 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.

Effective Leadership:

- An effective school development plan is in place, providing clear and realistic targets for improvement based on a sound vision for the school.
- 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.
- 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.

A School Connected to its Local Community

- 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.
- Good relationships and clear channels of communication are in place between the school and the education agencies that support it.

Better Numeracy in Primary Schools

This document provided examples of effective practice, in a specific Numeracy context, as observed by ETI Inspectors within primary schools across Northern Ireland over recent years. Our staff agreed that, when taken together, these provided a detailed description of high quality provision for Numeracy. As such they were used to guide staff discussion in the production of this Policy. Individual examples taken from Better Numeracy, which the school uses to guide practice, are referred to in the individual sections of our Policy.

AIMS

Relevant “Better Numeracy” characteristics:

Ethos:

- The children and staff have a positive attitude towards numeracy.
- There is a numeracy-rich environment; mathematical thinking and problem-solving are promoted through the creative use of the wider environment; interactive displays capture the children’s interest and enhance their enjoyment and understanding of numeracy.
- There are very good working relationships between the teachers and the children; the teachers nurture the children’s confidence whilst encouraging them to respond positively to learning challenges.
- Risk-taking is promoted as an opportunity to learn.

These are the Aims which the staff have agreed are realistic and appropriate for our pupils. They represent the benefits which our pupils can expect to gain as a result of learning mathematics in Drumsallen. They form a set of basic principles upon which the teaching of mathematics in our school is based.

- To ensure that every pupil fulfils their full potential as a learner of mathematics
- To foster a positive attitude to mathematics as an interesting and attractive part of the curriculum
- To develop the ability to think clearly and logically, with confidence, flexibility and independence of thought
- To develop a deeper understanding of mathematics through a process of enquiry and investigation
- To develop an understanding of the connectivity of patterns and relationships within mathematics
- To develop the ability to apply knowledge, skills and ideas in real life contexts outside the classroom, and become aware of the uses of mathematics in the wider world

- To develop the ability to use mathematics as a means of communicating ideas
- To develop an ability and inclination to work both alone and cooperatively to solve mathematical problems
- To develop personal qualities such as perseverance, independent thinking, cooperation and self confidence through a sense of achievement and success
- To develop an appreciation of the creative aspects of mathematics and an awareness of its aesthetic appeal

These basic principles are designed to contribute towards the achievement of the overall aim of the Northern Ireland Curriculum: “To empower young people to develop their potential and to make informed and responsible decisions throughout their lives as individuals, as contributors to society and as contributors to the economy and the environment.”

LEARNING AND TEACHING

The content of the mathematics curriculum taught at Drumsallen is guided by our statutory requirement to deliver the statutory curriculum for mathematics as laid out in the Northern Ireland Curriculum (CCEA 2007). It sets out the minimum requirements that must be taught at each Key Stage, grouped into 5 areas: Processes, Number, Measures, Shape & Space and Handling Data. The staff are using this content to produce a School Scheme of Work for Mathematics.

Although the content of this Scheme of Work is largely already specified by the Revised Lines of Development for Mathematics (CCEA), the staff of Drumsallen has agreed a set of principles which will inform and guide the nature of the learning experiences of our children, designed to achieve the Aims detailed above.

These principles are listed below, grouped under each of the five areas of mathematics:

Processes

The NI Curriculum specifies a progression of Processes skills for children to acquire as they develop their mathematical ability. In order to facilitate this, the teaching staff in Drumsallen will ensure that:

- Activities which allow the children to develop and enhance processes skills will be a regular feature of classroom life, particularly at the end of topics.
- Opportunities will be provided for pupils to work collaboratively so that through discussion they can develop their use of mathematical language and organise their thinking
- Children will be asked to show an increasing level of independence in their planning and recording of work as they progress through the school. Progressing from using a given format to producing their own.
- Children will be asked to show an increasing level of independence in their selection of mathematics and materials as they progress through the school
- Opportunities will be provided for children to become familiar with and apply a range of problem-solving strategies
- Opportunities will be provided for children to search for patterns and use relationships in investigative work, leading to an appreciation of generalisations
- Opportunities will be provided for children to use an increasing range of mathematical language to facilitate their ability to communicate their mathematical ideas

Number

The NI Curriculum specifies a progression of Number-based skills for children to acquire as they develop their mathematical ability. In order to facilitate this, the teaching staff in Drumsallen will ensure that:

- Children will engage in practical sorting and pre-number activities, leading to counting activities
- Children will be encouraged to use mental calculations where appropriate
- Children will have the opportunity to discuss and develop a range of calculation strategies
- Teaching will encourage flexibility of thinking and utilisation of connections within mathematics
- Children's computational skills will be developed and consolidated using a balance between practice, and application in meaningful contexts, including Financial Capability
- Opportunities will be provided for children to develop their estimation skills, and will be encouraged to estimate answers before completing calculations
- Teaching will place a strong emphasis on ensuring children gain a sound understanding of the Place Value basis of the number system

Measures

The NI Curriculum specifies a progression of skills in Measures for children to acquire as they develop their mathematical ability. In order to facilitate this, the teaching staff in Drumsallen will ensure that:

- Children will use a range of measuring equipment in meaningful contexts, and be encouraged to make choices regarding the most suitable equipment, initially through play based activities.
- Children will follow a progression beginning with direct comparison, through measuring with non-standard units, to measuring with standard units with increasing accuracy
- Children will be given opportunities to develop estimation skills in all measures
- Teaching will place strong emphasis on ensuring that children understand that all measurement is approximate, and that they can make sensible decisions on the accuracy necessary in different situations

Shape and Space

The NI Curriculum specifies a progression of skills in Shape and Space for children to acquire as they develop their mathematical ability. In order to facilitate this, the teaching staff in Drumsallen will ensure that:

- Children will be given opportunities to recognise and talk about 2d and 3d shapes found in their surrounding environment.
- Teaching will place emphasis on observing and understanding the properties of 2-d and 3-d shapes
- Opportunities will be provided for the practical construction and investigation of shapes
- Children will be given opportunities to explore position and movement in real-life contexts, utilising ICT where appropriate.

Handling Data

The NI Curriculum specifies a progression of skills in Handling Data for children to acquire as they develop their mathematical ability. In order to facilitate this, the teaching staff in Drumsallen will ensure that:

- The children will engage in a variety of sorting activities in the Foundation Stage.
- Teaching will be designed to ensure that children understand that the collection, representation and interpretation of data is a means through which real- life decisions can be made
- Handling data skills are used as a means of solving problems, through a four-point process : Pose a question; Collect data; Organise, display & interpret data; Answer original question
- Children will be given opportunities to make decisions regarding the what information is collected, how it is collected, how information is processed and how it is displayed
- Children will be given opportunities to apply data handling skills in a range of contexts, across subject areas
- Children will be given opportunities to develop an increasing range of ICT based handling data skills

TEACHING APPROACHES

Relevant “Better Numeracy” characteristics:

Learning and Teaching:

- The teachers have realistically high expectations of what the children can achieve; the children are challenged to extend their learning and appropriate support is provided when children are experiencing difficulties.
- Practical approaches are used effectively to develop mathematical concepts and to lay the foundation for more abstract work.
- The use of open-ended questions, problem-solving tasks and investigative activities develops the children’s capacity to reason logically, think flexibly, and make and justify decisions.
- The children are given appropriate time and encouragement to communicate and explain their mathematical thinking, to articulate the processes they use, to ask questions and to talk about their learning.
- The children work well together in groups and co-operate effectively during practical sessions.
- The children engage actively in their learning and are confident in working independently and in applying their knowledge, understanding and skills in unfamiliar contexts.
- The children talk confidently about their thinking and learning in mathematics.

Although each teacher is an individual, with their own personal style of teaching, the staff have agreed that the following points will be a feature of all teaching in Mathematics in Drumsallen. These are designed to ensure that every pupil is given the opportunity to experience success and to achieve as high a standard as possible.

- Teachers will always strive to :
 - build children’s confidence and self esteem
 - develop children’s independence
 - allow all children to experience regular success

- make mathematics a relevant and satisfying part of their school experience

- Teaching will ensure that children make appropriate progress in their acquisition of the Skills, Understanding, Concepts, Facts and Competences as laid out in the NI Curriculum for Mathematics and Numeracy, through providing suitably differentiated learning activities to ensure that individual needs are properly addressed
- Teachers will use a range of teaching strategies:
 - Exposition by the teacher
 - Practice and consolidation
 - Practical work
 - Discussion
 - Problem-solving
 - Investigative work

The choice of strategy will vary according to the age, ability, maturity and interests of the children

- Teachers recognise the vital importance of discussion to gain understanding, and to this end a sensible level of work-focussed conversation will be a feature of most lessons
- Teachers will ensure that the activities which the pupils experience in mathematics will enable them to develop the statutory Thinking Skills and Personal Capabilities set out in the NI Curriculum:
 - Thinking, Problem-Solving and Decision Making
 - Managing Information
 - Being Creative
 - Self-Management
 - Working with Others
- Teachers will ensure that the activities which the pupils experience in mathematics will also enable them to develop the statutory Cross Curricular Skills set out in the NI Curriculum:
 - Communication
 - Using Mathematics
 - Using ICT

CONTINUITY and PROGRESSION

Relevant “Better Numeracy” characteristics:

Learning and Teaching:

- The teachers build effectively on the children’s previous knowledge and experience.
- The children’s mathematical knowledge and skills are developed systematically across the school.

Planning:

- There is a comprehensive whole-school programme which clearly outlines the progression for each area of the mathematics curriculum and which provides appropriate guidance for the class teachers to create their medium- and short-term planning.
- The planning for each class focuses on the knowledge, skills, understanding and language to be promoted and identifies clearly how the teacher differentiates to meet the range of needs within the class.
- The teachers take account of the children’s previous learning and use this information to inform their planning.
- The teachers evaluate regularly the quality and extent of the children’s learning and use the outcomes to inform their future planning.

Continuity and Progression refer to the intentions of the school that each child has the opportunity to develop mathematical skills and understanding over time in the most effective manner possible. We believe this is best achieved when:

- Children’s learning experiences follow a well planned progression, at a pace suitable for each child
- There is coherence and compatibility of approach used by all teachers the child encounters as they progress through the school

In order to achieve these conditions, staff have agreed that:

- The curriculum the children follow is defined by the School Scheme of Work, which is based upon the progression in each of the 5 areas of mathematics contained within the NI Curriculum
- The School Scheme of Work is planned collaboratively to ensure there are no gaps or unnecessary overlaps in that progression as the children move through the school
- The School Scheme of Work details agreed teaching approaches and methodologies in all areas of maths
- Yearly overviews of the content to be taught in each class are produced, which allow content from each area of mathematics to be taught within each half term
- All new ideas and concepts which the children encounter will be introduced from a starting point within the child's knowledge and understanding
- Assessment is designed to allow the teacher to accurately gauge the child's present level of understanding so as to allow appropriate further work to be planned
- Activities in mathematics will be differentiated so that children are always working at a pace and level of challenge which matches their ability
- Planning will be monitored by the Numeracy Coordinator at regular staff meetings and on a half termly basis to evaluate the levels of continuity and progression achieved

MONITORING and EVALUATING CHILDREN'S WORK

Relevant "Better Numeracy" characteristics:

Assesment:

- The children are aware of the intended learning outcomes and use them to evaluate the extent of their learning.
- There is good formative marking of the children's oral and written work; children are given clear oral or written advice on what they need to do to improve.
- The strengths and difficulties which individual children experience are diagnosed regularly and this profile is used to inform the children's subsequent learning programmes.
- The progress of each child is very carefully tracked and monitored.
- The assessment outcomes are used to good effect by individual teachers to evaluate the effectiveness of their own practice.
- The outcomes from monitoring and evaluation and the analysis of data are used effectively to inform target-setting at individual, group and class level.

Learning and Teaching:

- The teachers build effectively on the children's previous knowledge and experience.
- The teachers have realistically high expectations of what the children can achieve; the children are challenged to extend their learning and appropriate support is provided when children are experiencing difficulties;
- The teachers use the learning intentions to focus the children's attention on and consolidate learning.
- The children's mathematical knowledge and skills are developed systematically across the school.
- The children make good year-on-year progress.

This section details the various assessment methods and practices used in Drumsallen through which we ensure that children are making appropriate progress and that the activities they take part in are suitably matched to their ability and level of development.

Assessment is an integral and continuous part of the teaching and learning process at Drumsallen and much of it is done informally as part of each teacher's day to day work. Teachers continually assess children's performance and progress, and the effectiveness of their teaching approaches and strategies. Teacher's planning is based upon the identification of Learning Intentions for the children; assessment is therefore based upon deciding the extent to which Learning Intentions have been achieved. Information is gathered in a variety of ways:

- Discussion between child and teacher
- Observation whilst children are participating in activities
- Marking written work produced by the children as a result of a mathematical activity

Feedback is given to pupils, giving clear guidance as to how their learning can be improved. More formal methods are used to determine the levels of achievement of children at various times during the school year:

- Weekly and end of topic class tests or investigations are used to assess achievement of the group of sub- skills which are contained within that topic. These are used throughout the school apart from Foundation Stage (P1 and P2) where this particular type of assessment is not appropriate.
- Mental Maths Core Competences. The staff have agreed a set of learning outcomes for mental calculations for each Primary which it is intended that as many children as possible should achieve. The achievement of these will be assessed on an ongoing basis.
- Assessment for Learning. Teachers ensure that all pupils are actively involved in their own learning through an Assessment for Learning approach:
 - Learning Intentions are shared and discussed with pupils to ensure that they clearly understand the actual learning which should take place.

- Success Criteria (Points to Remember) are discussed and agreed, so that pupils are aware of the standards by which their work will be assessed, and will be able to evaluate the quality of their own work against the agreed Success Criteria
- Feedback, both oral and written, is given to pupils which details how they can improve their learning by reference to the agreed Success Criteria
- Assessment outcomes are used by the teacher to inform future planning
- Pupils are given regular opportunities to
 - assess their own and their peers work
 - evaluate the quality and extent of their own learning
 - set their own goals for improvement, and evaluate their achievement of these goals
- Standardised Testing. Progress in Maths (GL Assessment) standardised tests are used once a year, towards the end of the year. They allow the school to measure each child's attainment in all areas of mathematics, and compare this with an "average" for children of that age. The results are used to monitor individual's progress year on year, to rank order a class and to identify those children who have Special Needs in mathematics. Individual results are also aggregated, to allow the school to identify strengths and areas for improvement in the provision for mathematics across the whole school, across individual Key Stages and within particular groups and classes
- Statutory End of Key Stage Assessment. The NI Curriculum requires that each child is assessed, and assigned a Level of Attainment for each of the 5 areas of mathematics. This is to be carried out at the end of Key Stage One (i.e. towards the end of the P.4 year) and at the end of Key Stage Two (i.e. towards the end of the P.7 year). The KS 1 Level for a child will normally be within the range of Level 1 to Level 3, with most children achieving Level 2. The KS 2 Level for a child will normally be within the range Level 1 to Level 5, with most children achieving Level 4. Although Levels are assessed for each area of mathematics, parents will normally be informed of one overall Level for mathematics, calculated by averaging the Levels achieved in each of the 5 areas. Assessment is carried out by the teacher, and may be externally

moderated by CCEA. The teacher uses a set of Assessment Tasks to help arrive at an assessment for each child.

- Optional Computer Based Assessment. Each pupil from P.4 to P.7 undergoes computer based assessment (NINA) during the Autumn Term. The results of these assessments are shared with parents at a Parent Interview immediately after the assessment process is completed. The results are also used to inform future planning for the individual pupil, and within each class, Key Stage and across the whole school.

RECORD KEEPING

A record of achievement is kept and passed on as the child moves to the next class.

TARGET SETTING

Relevant “Better Numeracy” characteristics:

Assessment:

- The strengths and difficulties which individual children experience are diagnosed regularly and this profile is used to inform the children’s subsequent learning programmes.
- The progress of each child is very carefully tracked and monitored.
- The outcomes from monitoring and evaluation and the analysis of data are used effectively to inform target-setting at individual, group and class level.

We use the results of Statutory Assessment as a vehicle for setting performance targets for mathematics. Each September the relevant teachers undertake a process to set targets for :

KS1

- % of children achieving Level 2 and above
- % of children achieving Level 3

KS2

- % of children achieving Level 4 and above
- % of children achieving Level 5

These targets are arrived at through consideration of each child’s performance to date, their PiM standardised scores for mathematics in previous years and their Level of Attainment at KS 1 (applicable for KS2 Assessment only)

These Targets are then compared with the actual %s achieved in KS1 and KS2 Assessment in May.

Identifying and Addressing Underachievement

Relevant “Better Numeracy” Characteristics:

Leadership and Management

- The school uses the teachers’ knowledge and experience, as well as a wide range of standardised tests, to identify early those children requiring additional help in mathematics, and provides appropriate and effective intervention to support them.

As stated above we consider it to be absolutely essential that each and every pupil fulfils their full potential as a learner of mathematics. To this end we aim to identify any pupils who are under-achieving, and to ensure that an appropriate remediation process is set in place, based on specific identified areas for improvement.

Pupils in Primary 2 who are experiencing difficulties with basic numeracy skills are offered Numeracy Catch-Up support activities.

Every pupil’s current PiM (Progress Test in Maths) standardised score is compared with their most recent NRIT (Non-reading Intelligence Test) standardised score. If a pupil’s PiM score is 10 or more points below their NRIT score, this is an indication that the pupil is under-achieving in mathematics.

When individual pupils are identified in this way, extra support is provided in class to ensure that the pupil achieves in line with their potential.

CALCULATORS

In Drumsallen we believe that the availability of calculators should never be a reason for children not learning basic number facts, nor being able to calculate mentally and using written methods.

Our Mental Maths progression sets great value and importance on children knowing appropriate number facts off by heart, and being able to use a variety of strategies to calculate in their heads.

We also believe that it is vital that children are able to perform pencil and paper calculations efficiently and effectively, which is reflected in our Scheme of Work for Mathematics.

However we also recognise that calculators are widely used in everyday life and will strive to ensure that the children are able to use a calculator efficiently and effectively. To this end, children in Drumsallen will, at a level matched to their mathematical progress :

- Explore the use of calculators through play and number games
- Check the calculator result, by estimating before calculating and /or by performing an inverse operation
- Interpret a calculator display, e.g. in the context of money, or where decimal numbers are involved
- Use calculators in real-life problem solving activities, where the data used will not be so amenable to written or mental calculations. In these situations the emphasis is on selecting the appropriate calculation more than the actual working out of the calculation
- Use calculators in investigative work; eg trying lots of examples to find patterns, using trial and improvement methods to find an answer. Here the calculator supports rather than replaces mathematical thinking.

MENTAL MATHS

Relevant “Better Numeracy” characteristics:

Learning and Teaching:

- The teachers make effective use of routines and incidental opportunities to promote mental mathematics.
- The children are given appropriate time and encouragement to communicate and explain their mathematical thinking, to articulate the processes they use, to ask questions and to talk about their learning.
- The children can draw effectively on a range of mental mathematics strategies; they are flexible in their mathematical thinking.

At Drumsallen we recognise the vital importance of a child’s ability to calculate mentally. We believe that an ability and inclination to calculate mentally leads to greater proficiency and understanding in all areas of Mathematics, and is a crucial skill in the application of mathematics in the world outside the classroom.

We will strive to ensure that, as their understanding of number develops:

- Children build up a bank of number facts which they know off by heart, to include addition, subtraction, multiplication and division facts
- Children are able to use these known facts to perform an increasing range of calculations in their heads, using a variety of methods
- Children build up a good understanding of the Number System, based on Place Value of Base 10

In order to facilitate this, teachers will:

- Ensure children are taught a minimum of 10 minutes mental maths at least 3 times a week
- Implement a structured progression of mental maths, based on specific intended learning outcomes

- Regularly assess children's achievement of these learning outcomes
- Use a variety of teaching activities, including mathematical games and ICT, in whole class, group and individual work

ICT

(For more detail on the role of ICT in enhancing Teaching and Learning in general, please see ICT Policy)

Relevant “Better Numeracy” Characteristics:

ICT:

- The children’s experiences in the use of ICT to support mathematics and numeracy are carefully planned, appropriately supported and evaluated.
- Interactive whiteboards (IWBs), websites and learning platforms are used by children and teachers to explore, express, evaluate, exchange and exhibit understanding and learning.
- Mathematics-based computer programs are used effectively to:
 - engage the interest of the children
 - draw out connections between different aspects of mathematics
 - consolidate further the children’s understanding of important concepts
 - extend their skill at problem-solving

In the NI Curriculum, ICT is not a separate learning area. Rather its role can be considered as a tool by which teaching and learning can be enhanced. This is very applicable in Mathematics, eg.

- Number Facts
- Graphical Representation
- Concept of angle
- Co-ordinates
- Ordering measures
- Organising and interpreting data

In Drumsallen, the staff will use a variety of ICT activities as part of the range of mathematical experiences which the children participate in. We believe that effective and appropriate use of ICT in mathematics can:

- facilitate a differentiated pace and level of learning that takes account of individual pupil abilities, including those who are more able
- help provide appropriate support and scope for greater independence for children at all abilities
- facilitate access to sources of information from across the world

- foster the development of information skills that teach pupils to be discriminating in their use of information and to be able to shape and present it in ways appropriate to the context
- increase motivation to learn
- provide a stimulating and non-threatening learning environment
- engage children more deeply in their learning

In Drumsallen, ICT activities will include:

- Whole class or group activities, often led by the teacher. These may involve the use of an Interactive Whiteboard and will be a direct teaching aid, used to demonstrate ideas and promote discussion and clear mathematical thinking
- Individual or small group activities. These will usually involve the children working independently at a computer, usually to complement current work on a particular topic

Resources will include software available through the C2K Managed Service and also via the Internet. (See: Use of Internet Policy)

SPECIAL NEEDS

(See: Special Needs Policy)

LEADERSHIP AND MANAGEMENT OF NUMERACY

Relevant “Better Numeracy” Characteristics:

Leadership and Management:

- Numeracy is prioritised within the School Development Plan (SDP) and supported by an appropriate Action Plan (AP).
- The Numeracy AP has a clear focus on learning and teaching and the improvement of the children’s standards and achievements.
- The numeracy co-ordinator/leader is a role-model for good practice, has a clear vision for the development of mathematics and provides excellent leadership, focused on ensuring that high quality learning experiences are provided for all children.
- The teachers have a sound mathematical knowledge; there is a shared understanding of pedagogy and stages of conceptual development.
- There is structured, effective monitoring and evaluation of the quality of numeracy provision and learning across the school; this includes scrutiny of the planning and children’s written work, observation of lessons and effective analysis of data.
- The analysis of data is used effectively to identify priorities for whole-school development.
- Staff development needs are identified and there is effective dissemination of best practice within numeracy.

In Drumsallen Mrs Kelly fulfils the role of Numeracy Co-ordinator, who has responsibility for the management of numeracy development within the school. Specifically these responsibilities include:

- In collaboration with the rest of the teaching staff, identifying priorities for development within numeracy
- Contributing to the production of the School Development Plan, if it is to include Numeracy Development
- Producing Action Plans to address these issues
- Monitoring and Evaluating the implementation of these Action Plans and the achievement of their Success Criteria

- In conjunction with relevant teachers producing annual targets for standards achieved in Statutory Assessment
- Monitoring and Evaluating pupil achievement, and producing whole school performance data from these results
- Updating the School Programme of Study, and School Numeracy Policy, to keep in line with curriculum changes
- In conjunction with the whole staff, participating in a programme of self- evaluation of the quality and effectiveness of numeracy provision
- Organising and leading school based INSET and School Development Days
- Liaising with SELB CASS service (when available) to ensure staff receive suitable and sufficient support and training

ROLE OF PARENTS

We believe that parents have a vital role to play in ensuring their children make appropriate progress and realise their potential in mathematics. We actively seek strong partnerships with parents and will work to ensure that parents feel involved in their child's education.

In Drumsallen parents will :

- Be able to discuss their child's progress in mathematics, or any areas of concern, at any time during the year by appointment with the class teacher
- Be invited to meet more formally with the class teacher once per year at Parent: Teacher Interview, which will include discussion of the results of NINA assessment
- Receive one written report on their child's strengths, weaknesses and progress per year, usually in June
- Be encouraged to participate with their children in mathematical homework activities

HOMEWORK

(For more detail on the role, purposes and requirements of homework in Drumsallen Primary, please refer to the Homework Policy)

The nature of homework given will vary according to the age and level of progress of children, but will always be designed to complement current class work, to :-

- Inform parents of the type of work their child is currently involved with
- To allow the child to practice and improve skills introduced in class
- To give the child the opportunity to improve their ability to work independently and organise themselves
- To give the teacher information on the extent to which children have achieved the current intended learning outcome(s)

In order to achieve these objectives we would request parents, as far as is possible to:-

- Provide a suitable quiet area for homework activities
- Discuss with their child what they are expected to do before they start
- Ensure their child starts homework early enough so they can complete it by a reasonable time

EVALUATION OF MATHEMATICS TEACHING

Relevant “Better Numeracy” Characteristics:

Planning:

- The teachers take account of the previous learning and uses this information to inform their planning.
- The teachers evaluate regularly the quality and extent of the children’s learning and use the outcomes to inform their future planning.

Assessment:

- The assessment outcomes are used to good effect by individual teachers to evaluate the effectiveness of their own practice.

Leadership and Management:

- There is structured, effective monitoring and evaluation of the quality of numeracy provision and learning across the school; this includes scrutiny of the planning and children’s written work, observation of lessons and effective analysis of data.
- The analysis of data is used effectively to identify priorities for whole-school development.

In Drumsallen PS we are committed to a process of continuous improvement, based around the four characteristics of a successful school as set out in “Every School a Good School- a Policy for School Improvement” (DE 2009) :

- Child Centred Provision
- High Quality Teaching and Learning
- Effective Leadership
- School Connected to its Local Community

We believe that constant self-evaluation of our provision for Numeracy is the most effective way of ensuring we provide high quality teaching and learning experiences for our children, and that all our children realise their full potential in Numeracy.

Self evaluation takes place on two levels:

- Each class teacher monitors and evaluates their own teaching on an ongoing basis. This involves judging whether children are achieving intended learning outcomes, and the information generated is used to gauge the effectiveness of the teaching approaches used and to inform planning for further teaching.

- The Numeracy Coordinators lead the monitoring and evaluating of the whole school's provision of numeracy through:
 - Monitoring implementation of Numeracy Action Plans
 - Evaluating the achievement of Success Criteria contained within Action Plans
 - Coordinating self evaluation of Numeracy
 - Monitoring the results of Statutory Assessment at KS1 and KS2 using benchmarked performance data
 - Detailed analysis of pupil performance data from standardised assessment and statutory assessment outcomes

In Drumsallen, self evaluation is an ongoing process which is a component of our Cycle of Development. The information gained through self evaluation feeds back into the cycle to enable us to plan for future improvement and determine training and development needs.

Cross Curricular Skills: Using Mathematics across the Curriculum

Using Mathematics is the skill of applying mathematical concepts, processes and understanding appropriately in a variety of contexts. Ideally these should be relevant to real life situations that require a mathematical dimension. Children are likely to acquire and consolidate their mathematical knowledge, concepts and skills within the Area of Learning for Mathematics and Numeracy. However they should be given opportunities to transfer their understanding, as appropriate, to other areas of the curriculum. Children can demonstrate their mathematical knowledge, understanding and skills in a variety of ways to communicate, manage information, think critically, solve problems and make decisions. Some of these include:

Literacy

- Sequencing events in daily routines
- Accessing information from tables
- Reading material involving times, dates, shapes, positional prepositions (behind, underneath etc), comparative language (taller, heavier etc)
- Talking and Listening skills resulting from mathematical discussions

The World Around Us

- Comparative language
- Estimating and Measuring skills
- Handling Data (eg displaying the results of an experiment in graphical form)
- Carrying out surveys
- Sorting materials according to properties
- Accessing information from tables, charts and graphs
- Positional language
- Directions
- Points of Compass
- Coordinates
- Scale in maps and plans
- Estimating and Measuring skills
- Timelines and sequences
- Accessing information from tables, charts and graphs
- Accessing information from computer databases
- Carrying out surveys and interpreting and displaying results

Physical Education

- Directions and movement
- Positional language
- Shape and symmetry
- Timing events
- Measuring events (eg furthest long jump)

History

- Timelines and sequences
- Accessing information from tables, charts and graphs
- Measuring (eg for a WW 2 Recipe)
- Accessing information from computer databases

The Arts

- Shape and symmetry
- Repeating patterns
- Language to describe 2D and 3D shapes
- Tessellating designs
- Proportion

REVIEW PROCEDURES

This Policy is designed to reflect current practice within the school environment. Although the overall aims for Numeracy teaching and learning are likely to remain fairly constant, the practices evolve over time as the school progresses in its development of Numeracy provision.

Accordingly this Policy is under a process of constant review and will be updated regularly to ensure it continues reflect current practice and to achieve its designated purposes.



APPENDIX 1: CURRENT TARGETS FOR NUMERACY

School Year

2015/2016

KS 1

Number of children being assessed

Predicted Levels:

4

	No. of Children	%
Level 1	0	0
Level 2	2	50
Level 3	2	50

KS 2

Number of children being assessed

Predicted Levels:

9

	No. of Children	%
Level 1	0	0
Level 2	0	0
Level 3	1	11
Level 4	5	55
Level 5	3	44



APPENDIX 2: RESULTS RECORDING PROCESS

School Year

2014/2015

KS 1

Number of children being assessed

6

Achieved Levels:

	No. of Children	%
Level 1	0	0
Level 2	6	100
Level 3	0	0

KS 2

Number of children being assessed

5

Achieved Levels:

	No. of Children	%
Level 1	0	0
Level 2	0	0
Level 3	0	0
Level 4	4	80
Level 5	1	20



APPENDIX 3: NUMERACY TARGETS AND RESULTS

School Year

2014/2015

KS 1

	Target	Result
Level 2 and Above	100%	100%
Level 3		

KS2

	Target	Result
Level 4 and Above	100%	100%
Level 5	20%	20%



APPENDIX 4: BENCHMARKED PERFORMANCE DATA

School Year

2014/2015

KS 1

Number of children being assessed

	Level 2 and Above	Level 3
Top Quartile		
Upper Middle Quartile		
Lower Middle Quartile		
Bottom Quartile		

KS 2

Number of children being assessed

	Level 4 and Above	Level 5
Top Quartile		
Upper Middle Quartile		
Lower Middle Quartile		
Bottom Quartile		

**APPENDIX 5: RESOURCES
(COMMERCIAL SCHEMES, PRACTICAL EQUIPMENT, ICT AND WEB-
BASED RESOURCES)**

APPENDIX 6: ACTION PLANS