

NUMERACY POLICY

The mathematics curriculum

Mathematics encompasses a body of knowledge, skills and procedures that can be used in a rich variety of ways: to describe, illustrate and interpret; to predict; and to explain patterns and relationships in Number, Algebra, Shape and space, Measures and Data. Mathematics helps to convey and clarify meaning. Its language provides a powerful and concise means by which information may be organised, manipulated, and communicated. These characteristics make mathematics an essential tool for the child and adult. The application of mathematics in a variety of contexts gives people the ability to explain, predict and record aspects of their physical environments and social interactions. It thus enriches their understanding of the world in which they live. Indeed the application of increasingly sophisticated mathematics in a growing range of economic, technical, scientific, social and other contexts has had a profound influence on the development of contemporary society. Mathematics education should seek, therefore, to enable the child to think and communicate quantitatively and spatially, solve problems, recognise situations where mathematics can be applied, and use appropriate technology to support such applications. If the child is to become an informed and confident member of society he/she must be enabled to deal effectively with the varied transactions of everyday life and make sense of the mass of information and data available through the media. It should be recognised that mathematics is an intellectual pursuit in its own right, a source of fascination, challenge, and enjoyment. The exploration of patterns and relationships, the satisfaction of solving problems, the appreciation of designs and shapes and an awareness of the historical and cultural influences that have shaped modern mathematics can contribute to the child's enthusiasm for the subject. This curriculum seeks to provide the child with a mathematical education that is developmentally appropriate as well as socially relevant. **The mathematics programme in each school should be sufficiently flexible to accommodate children of differing levels of ability and should reflect their needs.** These will include the need for interesting and meaningful mathematical experiences, the need to apply mathematics in other areas of learning, the need to continue studying mathematics at post-primary level, and the need to become mathematically literate members of society. Integration with all the other subjects will add another valuable perspective to the mathematics curriculum.

From:

Primary School Curriculum – Mathematics, Page 2 and 3

Rationale

This policy has been developed in order to allow the students of Enable Ireland Sandymount School to understand how mathematics is used in daily life and be actively taught mathematical language so that students can further develop life skills. It embeds the directions and recommendations of the *National Strategy for Literacy and Numeracy for Learning and Life (2011-2020)*. It was also established by the teaching staff of Enable Ireland Sandymount School that students enjoy mathematics when given the skills to assimilate such knowledge, and, for this process to fully succeed the methodology used should have into account the strengths, level of development and ability of the school's students.

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...”

It involves the development of:

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

Aims

To enable the students to develop a positive attitude towards mathematics and an appreciation of its practical aspects.

To enable students to:

- Use mathematical language effectively and accurately
- Acquire an understanding of mathematical concepts and processes
- Develop a facility for the application of mathematics to everyday life relative to their level of development and ability

Goals

- Students should experience a broad mathematical education and be supported to make progress according to their strengths, level of development, ability and understanding of mathematics
- Ensure that students develop a positive attitude towards mathematics
- Students should learn to work independently (as much as possible) (or assisted by staff)/ cooperatively and in group situations
- Students should be aware of the uses of mathematics in the world/ environment around them
- Students should acquire proficiency in fundamental mathematical skills
- Students should acquire proficiency in recalling basic numeracy facts.
- Students should be able to use basic numeracy facts in different situations.
- Mathematical skills and knowledge should be reinforced with a lot of drill and practice in order to ensure students gain confidence
- Through an examination of mathematical patterns, students should develop an ability to identify relationships, think logically and develop an appreciation of the creative aspects of mathematics
- Students should be confident in their use of mathematical language
- Students should become confident in the appropriate use of ICT to enhance their mathematics
- Students should experience success at their mathematical work.

We measure numeracy in the following ways:

- Has the student a sense of the size/ value of a number and where it fits into the number system?
- Can the student read numbers from a range of media e.g. door on house, car plates etc.?
- Does the student know basic number facts and recall them quickly?



- Can the student carry out basic calculations either mentally, with pencil and paper or with a calculator?
- Can the student make sense of number problems?
- Does the student know when an answer is reasonable and give results to an appropriate degree of accuracy?
- Is the student able to understand and use correct mathematical terms?
- Can the student use units of measurement of length, angle, capacity and time?
- Can the students estimate measurements?
- Can the student use relevant formula to solve problems?
- Can the student collect data?
- Can the student interpret data?
- Can the student predict data?
- Can the student identify, name, locate colours, 2D and 3D shapes?
- Can the student continue with a pattern?
- Can the student understand probability and risk?

Organisation At whole School level

- Teachers have a central storage area for Mathematical equipment.
- Teachers work together to develop a range of 'Maths for Living' activities
- Some classes go shopping in order to give the students opportunities to experience practical maths.
- Mathematical vocabulary is agreed upon and developed
- Teachers offer opportunities to students to gather and analyse data

Organisation At class level

- Teachers decide on individual and group lessons according to the ability of the students in class.
- Students are encouraged to make progress at their own pace.
- Teachers use a wide range of concrete materials and ICT programmes
- Some classes have introduced Numicon – a multisensory approach to the teaching of mathematics.

ICT

Interactive Plasma Screens in every classroom are used by Teachers to develop mathematical concepts.

- The Numicon software is installed on some classroom Plasma Screens to enhance the Maths lessons
- Students have access to a wide range of web based software.
- Calculators are introduced to senior students.

Individual Teachers' Planning and Reporting

Teachers should refer to the numeracy school policy and the curriculum documents for Primary Numeracy/ Maths curriculum. Junior Certificate levels 1 & 2 and school leavers programmes will provide information and guidance to individual teachers for their long and short-term planning.



Teachers plan using the strands and strand units from the numeracy/ maths curriculum.

The Cuntas Míósúil serves to review, assess and develop individual preparation for current and following years.

Staff Development

The school will actively deliver access to current courses, research, reference books, resource materials, software and websites dealing with Numeracy and Maths development.

Parental Involvement

Parental involvement is considered an integral part to effectively implementing and developing a Numeracy/ Maths policy and curriculum, therefore collaboration with parents in setting numeracy goals in IEPs and parent teacher meetings are welcomed, as they are considered an important part of our pupils' skills development.

Roles and Responsibilities

Parents will be aware of the content of the school policy through involvement in homework and individual goals.

The assistant principal will oversee the implementation and support staff.

Staff will follow the school policy and implement the specific approaches and programmes accordingly and it is fundamental that all staff and parents are aware of the contents of this policy.

Assistive technology

In many cases, the use of assistive technology by our students is their only means of communication and interaction with many of the schools' activities, therefore all numeracy activities might need to be adapted in order for our students to be able to access them and give them every chance of succeeding. Numeracy activities will need to be made switch/ eye gaze accessible and might need to have text to speech enable. Note it's not necessary to have high tech assistive technology present all the time, many activities can be done using hand under hand, eye pointing, yes and no answers, etc.

Linkage and Integration

The Mathematics curriculum requires an emphasis on integration across subjects and linkage between strands. Through this integration, students can see and relate to mathematics as relevant and connected to their own lives. Mathematics can be used in a number of other subjects e.g. PE, SESE Science, SESE Geography, Art, SPHE, etc.

Example of cross-curricular work in mathematics (integration)

S.E.S.E Geography	Measuring the desk/room for mapping exercises, measuring and recording rainfall and temperature, examining distances from one place to another in planning a journey
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S.E.S.E Science	Language of capacity: pour, fill, full, empty, liquid, solid, I think. I guess. Properties of different materials, weighing and measuring materials.
S.P.H.E.	Cookery: amounts of ingredients in packets, value for money, meaning of 10% extra free, 25% off, interpreting packaging information
P.E.	Language of length, width and time during Athletics activities, Measuring jumps and distances travelled by ball, wheelchair etc.

Content

Teachers decide on individual and group lessons according to the ability of the students in class. Teachers work from the Guidelines for Teachers of Students with General Learning Disabilities. (Mild, Moderate and Severe and Profound) The content for most classes would be as follows:

Classifying

The students will be enabled to:

- select, from an assortment of objects, one similar to a given object
- classify objects on the basis of colour, shape, size, function, texture
- classify socially related objects

Matching

The students will be enabled to:

- match pairs of identical concrete objects with a one to one correspondence
- match related objects, for example, knife to fork, toothpaste to toothbrush
- match non-equivalent sets of concrete in one to one correspondence

Comparing

The students will be enabled to:

- compare objects according to length, width, height, size, weight

Ordering

The students will be enabled to:

- order objects according to length, size, weight, height

Number Counting

The students will be enabled to:

- develop an awareness of number in stories
- listen to, respond to, participate in number rhymes stories, games, songs
- talk about numbers of personal significance
- use number to count concrete objects



- develop awareness of numerals
- respond to the language of number, for example, first, last
- count the number of objects in a set
- recognize numerals
- match symbols to sets
- identify which set has more less objects
- trace over, copy numerals
- counting forwards and backwards
- counting from a 'starting number' to a 'finishing number'

Comparing and Ordering

The students will be enabled to:

- order numerals
- estimate the number of objects of sets
- identify the empty set, recognize zero
- combine sets of objects
- partition sets of objects
- demonstrate understanding of one as opposed to 'a lot'
- demonstrate understanding of some and more
- demonstrate understanding of one-to-one correspondence
- rote counting to a given number
- show awareness of numerals
- show awareness of number in the environment
- show awareness of number in stories, rhymes and games
- talk about numbers of personal significance with understanding
- count accurately the number of items in a set, counting each object only once
- identify set which has more/less objects
- estimate the number of items in a set

Addition

The students will be enabled to:

- solve simple oral problems
- use the symbols + and = to construct word sentences involving addition
- use mental strategies (counting on)
- recognise number patterns
- count in twos, fives, tens
- show understanding of the mathematical signs needed for a task
- solve simple problems using manipulatives

Subtraction

The students will be enabled to:

- explore, identify, record place value
- solve simple oral problems
- use the symbols – and = to construct word sentences involving subtraction



- use mental strategies (counting backwards)
- count backwards in twos, fives, tens
- show understanding of the mathematical signs needed for a task
- solve simple problems using manipulatives

Multiplication

- develop an understanding of multiplication as 'repeated addition'
- explore, understand and apply the zero, commutative, distributive and association properties of multiplication
- develop and recall multiplication facts within 10
- multiply a one-digit number by one-digit
- solve and complete practical task involving multiplication

Division

- develop and understanding of division as sharing and as repeated subtraction, without and with remainders
- develop and recall division facts within 10
- divide a two-digit number by a one-digit number without and with remainders
- solve and complete practical task involving division

Fractions

- identify 'one half' and 'one quarter' of a given set
- compare and order one half and one quarter.
- Add and subtract fractions (one half and one quarter)

Pattern and Sequence

Observing and using Pattern and Sequence

The students will be enabled to:

- become aware of patterns in daily routine
- correctly sequence two or three events
- demonstrate an understanding of first, next, last
- follow the correct sequence in carrying out an activity
- correctly sequence pictures that depict familiar activities
- use familiar 2-D and 3-D objects to copy, continue patterns in colour, shape, size
- copy, continue, extend patterns
- observe, talk about patterns

2-D and 3-D Shape

The students will be enabled to:

- observe, manipulate 3-D and 2-D objects to develop an awareness of various shapes, properties
- attend to, participate in the matching of 2-D and 3-D shapes



- attend to, respond to the language related to movement, positioning, shape of object in familiar situations
- combine 3-D shapes
- sort 3-D shapes • create 2-D shapes
- combine 2-D shapes to make a picture
- sort, describe, compare, name 2-D shapes: square, circle, triangle, rectangle
- construct 3-D shapes from 2-D shapes
- trace and copy 2-D shapes
- identify halves of 2-D shapes
- make constructions with 2-D and 3-D shapes using scrap and commercial materials

Length

The students will be enabled to:

- develop an awareness of concept of length through exploration, discussion, the use of appropriate vocabulary
- identify which of two objects is long or short
- compare, order objects according to length or height
- estimate and measure length in non- standard units
- estimate and measure length in standard units

Weight

The students will be enabled to:

- develop an awareness of the concept of weight through exploration, discussion, the use of appropriate vocabulary
- identify which of two objects is heavy or light
- compare, order objects according to weight
- estimate, measure weight in non-standard units of measurement
- estimate, measure weight in standard units of measurement

Capacity

The students will be enabled to:

- develop an awareness of the concept of capacity through exploration, discussion, the use of appropriate vocabulary
- identify which of two objects is full or empty
- compare, order objects according to capacity
- estimate, measure capacity in non-standard units
- select, use appropriate standard units to measure capacity

Time

The students will be enabled to:

- develop an awareness of time related to self
- develop an awareness of specific times in school
- show awareness of day, night



- recognize the daily pattern of familiar events
- sequence pictures of daily events
- recognize the present time as today
- identify things that happened in the recent past
- understand that events will happen in the future
- use the language of time to discuss events
- name, sign the days of the week
- read time from clocks in one-hour intervals, in half hour intervals
- read the day, date, month using a calendar
- recite days, months in sequence
- tell the time using the analogue clock or digital clock

Money

The students will be enabled to:

- understand that money is necessary to pay for goods – understand the concept of ‘exchange’
- sort and match coins
- demonstrate understanding that some coins are worth more than others
- recognize coins and notes
- use the correct vocabulary
- calculate simple bills
- use money for social purposes with and without help

Data Collecting and Processing Data

The students will be enabled to:

- sort by putting objects that are the same together
- make a set of objects with a given property
- sort, classify sets of objects by one criterion
- compare two objects, indicating similarities and differences
- sort, classify, with aid, sets of objects by two criteria
- sort, without aid, a collection of objects in at least two different ways and indicate reasons for sorting
- choose criteria from sorting sets of objects and apply consistently
- use calculator

Recognizing and interpreting data

The students will be enabled to:

- record data
- represent and interpret a set of data using real objects, models, pictures, for example, star charts

Assessment

Assessment will include Teacher Observation, Teacher Questioning, Classroom Discussions, Student Feedback and Teacher designed tests. Where appropriate, some standardised and Diagnostic tests



may be used e.g. Vernon Maths, Quest Maths etc. The checklists for assessing student's mathematical development can be found in the Assessment Press in the school library.

Methodologies

- Direct teaching
- Group work
- Individual work
- Hand over hand
- Use of environment
- Oral tests of recall skills
- Problem solving exercises Demonstrations
- Estimation
- Mathematical trails
- Early mathematical activities
- Using technology
- Looking at other student's work
- Use of age appropriate concrete materials
- Through practical tasks

Resources

- www.nala.ie/resources
- Numicon – Guidelines 1 and 2
- Numicon resources
- Numicon Software for the Interactive Whiteboard
- Ready, Set, Go Guidelines
- Large range of manipulatives and concrete materials
- Selection of school text books and teacher manuals stored in school library
- Calculators – large and small
- CAT guidelines
- Number Shark Software

Review and Ratification

This policy was reviewed and ratified by the Board of Management.

Signed:



Sé Goulding, Chairperson of Board of Management



Jennifer Doyle, Principal

Date: 24 July 2023

