Mathematics

Introductory Statement and Rationale

The rational for our Maths policy is to enable the child to think and communicate quantitatively and spatially, solve problems, recognize situations where mathematics can be applied and use appropriate technology to support such applications.

Vision and Aims

- Vision: This plan will focus on meeting the needs of our children in the area of Maths. Parental involvement will be encouraged as much as possible to support their child's learning in Maths.

- Aims: We endorse the aims of the Primary Curriculum for Maths

Curriculum Planning

The structure of the maths curriculum as laid down by the Department of Education and Skills divides the curriculum into five strands:

- Number
- Algebra
- Shape and Space
- Measures
- Data

These strands are interlinked. Dalkey School Project Ns (DSPNS), through delivery of the programme, will teach strands in a balanced way giving due emphasis to each area.

Methodology

The curriculum documents emphasise the use of constructivist methods in the teaching of mathematics. The Dalkey School Project NS considers that the child should be active in his/her own learning and encourages the child to develop his/her understanding of concepts through teacher guided experimentation and discussion, using concrete materials, both everyday objects and specific mathematical

equipment. Closely associated with this in the accurate use of language.

Approaches and Methodologies

The following approaches and methodologies will be used throughout the year.

- The use of manipulatives
- Talk & discussion
- Active learning/guided discovery
- Using the environment/community as a learning resource

Language

We feel it is very important to have a common approach to the terms used and the correct use of symbol names.

Our school has agreed the following:

Vocabulary: see Appendix 1

Terminology: see Appendix 2

Tables: addition and subtraction tables will be learned from 1st class; multiplication tables from 3rd class; division from 4th class. Children will be expected to learn number facts up to 10 in tables e.g. 4x10=40

Skills

The skills identified in the curriculum documents will be taught in all classes. These are as follows:

- Applying and problem solving
- Communicating and expressing
- Integrating and connecting
- Reasoning
- Implementing
- Understanding and recalling

Problem Solving

Infants: We focus on problem solving in one maths class per week. When we identify a good website we put it on the server. We encourage use of correct mathematical language.

1st/2nd: In 1st and 2nd class, we do problem solving activities each week. We encourage students to develop a range of strategies for solving problems, such as using diagrams, looking for patterns, or making organised lists. These problems will involve all strands and are mostly based on familiar experiences coming from the students' lives. We put useful websites, that will help the children to solve problems, on the server.

3rd/4th: Problem solving is an integral part of all classes. Children are encouraged to develop problem solving strategies such as using diagrams, looking for patterns or making organised lists. Many problems children encounter are based on familiar experiences coming from the children's own lives.

5th/6th: Within the 5th & 6th Class Programme problem solving occurs within each topic. The children are encouraged to (a) Read the problem: (b) pick out and highlight the relevant information and (c) Decide on how to solve it.

This is then recorded in their copies with the emphasis on the method rather than just the answer. Discussion forms a big part of the lesson as there are many approaches that can be taken.

Assessment and Record Keeping

Assessment is used by teachers to inform their planning, selection and management of learning activities so that they can make the best possible provision for meeting the varied mathematical needs of the children in our school. Assessment is an ongoing part of every class. It is conducted through teacher observations, questioning, the correction of written work and class discussion, as well as through class based testing. In the light of this assessment, each class programme is being continuously monitored and revised.

In addition more formal testing takes place in all classes, using Sigma-T tests appropriate to the children's age profile. In this way the maths programme is monitored thoroughout the school and can be adjusted where necessary.

Teachers select from the following range of assessment approaches

- Teacher observation of knowledge, skills development and participation in activities.

- Teacher designed tests and tasks

- Work samples and projects.

- Children will be encouraged to assess their own work on a continuous basis.

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Standardised testing

The following procedure is used for norm referenced standardised tests

- Children are formally assessed by means of the Sigma -T tests. All children from 1st class up will be tested every October.

- The results of each child's test and their test papers will be kept in the Learning Support files, in class groups. Class teachers have a record of class results.

- Sigma-T results may be discussed at the parent/teacher meetings.

Children with Different Needs:

The school acknowledges the necessity of flexibility within the curriculum and makes every effort to make the curriculum relevant to all levels of ability in order to cater for the variety of needs within the school. This is done both within the class and within learning support/resource teaching. Various forms of differentiation are used:

A: Grouping (Whole class teaching, mixed ability group, pairs, peer tutoring, small group work, individual work)

B: Learning objectives

C: Outcome

D: Teaching style

E: Pace

F: Task

H: Support

Equality of Participation and Access

All children are provided with equal access to all aspects of the Maths curriculum. Boys and girls are provided with equal opportunities to engage in Mathematical activities.

Organisational Planning

Timetable

The following time is allocated for Mathematics in this school per week:

- Infant classes: 2 hours, 15 minutes

- First class to 6th class: 3 hours

Timetables must record this time allocation for Maths. There is discretionary time available each week that teachers can occasionally use to support the mathematics curriculum.

- Infants: 1 hour
- First-sixth class: 2 hours

Homework

Homework should be in line with the approaches as set out in the curriculum for Maths. Refer to Homework policy.

Resources and ICT

We will endeavour to have resources available in classes as Primary School Curriculum Teacher Guidelines for Maths, page 72, 73.

ICT resources and equipment are available in each class. Use of laptops is timetabled for each class weekly.

Individual Teachers' Planning and Reporting

Teachers should base their yearly/quarterly and short term plans on the approaches set out in this whole school plan for Maths. Work covered will be outlined in the Cuntas Míosúil, which will be submitted to the principal.

Staff Development

Teachers are made aware of any opportunities for further professional development through participation in courses available in Education Centres or other venues. Skills and expertise within the school are shared and developed through band/team meetings and inputs at staff meetings. Resources and plans may be saved on the school server.

Parental Involvement

Parents/guardians are encouraged to support the school's programme for Maths. The Maths policy is available on the school website. Class information meetings for parents are held in September. Individual parent/teacher meetings are held in November.

Success Criteria

The success of this plan will be measured using the following criteria

- Continuity of content and methodology will be evident in teachers' preparation and monthly reports.
- On going assessment, formal and informal, will show that pupils are acquiring an understanding of mathematical and a proficiency in Maths skills appropriate to their age and ability.

Implementation

Roles and Responsibilities: Class teachers are responsible for the implementation of the Maths programme for their own classes.

Review

Review of Maths Policy will take place every 2-3years.

Ratification and Communication

This plan was ratified by the Board of Management on _____

Chairperson _____   Principal _____

Appendix 1: Mathematical Language

Strand: Early Mathematical Activities

Same, different, small, big, tall/small, happy/sad, small/smaller, fat/thin, wide/narrow

Big, small, medium, the same as/equals, size, shape

Colours – red, yellow, green, blue, white, black, brown

Strand: Number

More than/less than, same as/equals, join together/add/ plus, most/least/the same

Zero/nil/empty/nothing, none, nought. How many, count, altogether

Before/after. Sequence of numbers 1-10. Count on, how many steps, go back, go forward

First, second, third, last

Counting, estimate, amount, numbers before/after/between

Add, subtract, addition, subtraction, total, less than/greater than

Odd, even numbers, pairs, doubles

Number line, 100 square, row, column, forward, back, patterns

Tens, units, swapping. Place value. Round up/round down to nearest 10

Fractions, half, about a half, less/more than a half, quarter, equal parts, half is same as two quarters

Hundreds, thousands, greatest, least (value), digits, sequence, rounding, >, <,=

Magic squares. Take away, difference, renaming. Brackets

Tables, multiply, count in twos etc, product, multiplication grid, sentence, grouping

Short / long multiplication ×

Division, divide, share, remainder, groups, exchange tens, ask for, ÷

Reverse multiplication, repeated subtraction, short / box division

Fractions, eighths, tenths, fifths etc to twelfths

Equivalent fraction, denominator, compare, order and sequence, set

Decimals as fractions & vv. Tenths / hundredths

Position , figure, zero, sum, quotient, remainder, share, equal, parts, whole, part,

Proper fraction, improper fraction, mixed number, decimal point, metric, metre, parts, sharing, dividing, reduce,

Multiples, factors, divisors, prime, composite, rectangular, square, percentage, amount, percentages, decimal fractions, profit, increase, margin, loss, reduction, discount, VAT

Factor, product, square root, exponent.

Fractions -numerator, denominator, mixed number, lowest common denominator, simplify, ratio, proportion.

 Decimals, rounding decimal places, estimation

Averages average, below average, above average, totals

Strand: Algebra

Patterns. Before, after

To the right/left of, full/half/quarter turn

Shape patterns, sequence, comes next, multiples, odd one out

Number sentence, frame, number story

Directed numbers, positive, negative, zero, temperature, thermometer, par, birdie, eagle, albatross, bogey, double bogey, mathematical sentence, equals, variable, true, false, minus, plus, overdrawn, variable, equation, symbol, terms

Strand: Shape and space

Above, below, beside, behind, in front of, on top of, under, on, near, far away, right, left

Straight, curved, long, short, corner, angle, square, circle, rectangle, triangle

Cube, cuboids, cylinder, sphere, corner, edge, face, flat, round

To the right/left of, between.

Symmetrical shapes, lines of symmetry

2-D shapes, semi-circle, oval. Straight/curved edges, side

3-D shapes - cone. Will/will not roll, will/will not stack

Hexagon, octagon, parallelogram, rhombus. Regular, irregular. Tessellating. Pattern

Dimensions, faces, edges, vertices, square/pentagonal/hexagonal pyramid, tetrahedron, octahedron, nets, triangular prism. Lines and Angles – parallel, horizontal, perpendicular, vertical, diagonal, length

Right angle, acute, obtuse. Longest/shortest, greater than/smaller than

Symmetry - fold, halves

Shapes - thickness, faces, edges, prisms, pyramids, cone, nets, dimensions, perimeter, regular, irregular, polygons, quadrilaterals, trapezium, kite, parallelogram, pentagon, Radius, diameter, circumference, tessellations, dimensions, vertices, pyramid, tetrahedron, octahedron, prism

Angles – degrees, reflex, straight angle, clockwise, anti-clockwise, compass, cardinal points, dimensions, length, width, height, depth, rotation, direction, sloping

Co-ordinates - geoboard, vertex, vertices, plot, co-ordinate points, x-axis, y-axis, grid, reference points

Strand: Measures

Long, short, tall, shorter than/longer than, wide/ wider/ widest,

narrow/narrower/narrowest,   the same length/width/height

 Big/small, heavy/ light, , heavier/lighter, the same weight, balance

Full/empty, holds more/less/same amount, holds the most/the least, pour, fill, enough, level

Today, yesterday, tomorrow, morning, afternoon, evening, night, days of the week, seasons, o'clock, long/short hand

Buy, coins, shinier, old, round, spend, how much, price, cheap/expensive, same value as

Height/width/length, span, cubit, pace, metre, centimetre

Area, surface

Heaviest/lightest. Kilogramme

Least/greatest capacity, litre, half litre, quarter litre

Half past quarter to/past, digital time. Calendar – days, dates, months, seasons, days before/after, weeks before/after

1c, 2c, 5c, 10c, 20c, 50c, €1 coins

Kilometre, measure, perimeter, estimate, convert

Size, estimate, compare, greater/less than, square centimetres/metres

Gramme, weigh, weight

Millilitre, difference, less than/more than

Concept of time, measuring time, minute, hour, day, week, month, year, always, never, early, later. Timetables, digital/analogue, am/pm. Rename minutes as hours/minutes

Cost/spend, change/buy, coins/notes/euro/cent. Position. How much. Smallest number of coins

Length, width, breadth, height, true/ false, distance, units of measurements, m, cm, mm, km, perimeter, diameter, circumference, dimension, scale

Area, m2,   cm2, surface, square metre, square cm, ares, hectares, scale

Weights, mass, kg, g

Capacity, liquids, ml, cl, volume

Time and speed – hours, minutes, seconds, time zones, longitude, GMT, International Date Line, timetables, arrival and departure times, average speed, distance, stopwatch

Coins, amounts, cheapest, expensive, deposit, balance, withdraw, sales, reductions, discount, cost price, selling price, percentage increase/decrease, VAT, profit, loss, currency, exchange rate

Strand: Data

Travel, transport, choice, favourite, fastest, slowest, most/least popular

Graphs, block graph, pictograms. Diary

Bar charts, bar line, pie charts. Record, survey, represent data. Compare

Chance – possible/impossible, certain, random. Predict/prediction/likelihood,

same/different. Guess.

Data, information, graph, pictogram, bar chart, bar line graph, trend graph, pie chart, average, survey

Average, total, amount, , frequency, popular, probability, possibility, definite, improbable, impossible, likely, unlikely, combination, outcome, fair, tally, toss, graphs, pictograms, bar charts, bar-line, graphs, multiple bar charts, pie charts, average

Terminology

Place Value:	Hundreds, tens and units
O:	Zero
+ Sign :	and/plus
= Sign:	equals/the same as
- Sign:	subtract/take away/minus/not 4 from 6
x Sign:	e.g. 2 x 4: two fours/two multiplied by four/ 2 times 4
- Division sign:	e.g. How many sets of 2 are in 4/2 into 4 goes?/4 divided by 2
Addition/Subtraction:	Renaming /Regrouping