Corpus Christi Primary School, Moyross

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Maths

Introduction and Rationale

This document was drafted as a result of a collaborative process involving staff members. This plan informs our practice and gives clear guidelines to the teachers while ensuring continuity and consistency throughout the school in the delivery of the maths curriculum. It informs teachers, parents and the Board of Management alike.

Rationale

- To update the Maths School Plan as we are a DEIS Band 1 school and the staff are implementing the DEIS Maths Action Planning Documents.
- To continue implementing Ready Set Go Maths[1] in Junior and Senior Infants, and Maths Recovery[2] with selected children in First Class.
- To promote our school's philosophy regarding maths.
- To increase the standard of maths in our school.
- To enhance the self-esteem of staff and pupils.
- To share effective teaching approaches.
- To ensure resources are researched and shared.
- To emphasise that revision and assessment form an essential part of our maths teaching.
- To provide the school with a guide for coping with change/future action.
- To ensure that each teacher meets the learning needs of each pupil.
- To ensure continuity is maintained without overlap.
- There is uniformity of attitude and approach on mathematical issues.

[1] Appendix 1: Ready Set Go Maths
[2] Appendix 2: Maths Recovery

Vision Statement

In our school we are committed to the holistic development of all pupils in order to assist them to contribute and play a fulfilling role in their own community. We see the development of their mathematical skills as being vital to this process as it:

- Aids them in achieving their true potential in maths.
- Gives all pupils an opportunity to succeed regardless of ability.
- Fosters in them a love of maths.
- Provides the child with the necessary skills to live a full life as a child and later as an adult.
- Emphasises the practical aspects of maths using problem-solving and social maths.
- Highlights that maths is fun and can be enjoyed by all members of the school community.

Aims

- To develop a positive attitude towards mathematics.
- To ensure that all children enjoy the subject and study it with confidence and a sense of achievement.
- To develop problem-solving abilities and the facility for the application of mathematics to everyday life.
- To enable the child to use mathematical language effectively and accurately.[3]
- To enable the child to acquire an understanding of mathematical concepts and processes to his/her level of development and ability.
- To enable the child to acquire proficiency in fundamental mathematical skills and in recalling basic number facts.

Broad Objectives

When due account is taken of intrinsic abilities and varying circumstances, the mathematics curriculum should enable the child to

Skills development

• apply mathematical concepts and processes, and plan and implement solutions to problems, in a variety of contexts
• communicate and express mathematical ideas, processes and results in oral and written form
• make mathematical connections within mathematics itself, throughout other subjects, and in applications of mathematics in practical everyday contexts
• reason, investigate and hypothesise with patterns and relationships in mathematics
• implement suitable standard and non-standard procedures with a variety

[3] Appendix 3: Mathematical Vocabulary

of tools and manipulatives
• recall and understand mathematical terminology, facts, definitions, and formulae

Number
• understand, develop and apply place value in the denary system (including decimals)
• understand and use the properties of number
• understand the nature of the four number operations and apply them appropriately
• approximate, estimate, calculate mentally and recall basic number facts
• understand the links between fractions, percentages and decimals and state equivalent forms
• use acquired concepts, skills and processes in problem-solving

Algebra
• explore, perceive, use and appreciate patterns and relationships in numbers
• identify positive and negative integers on the number line
• understand the concept of a variable, and substitute values for variables in simple formulae, expressions, and equations
• translate verbal problems into algebraic expressions
• acquire an understanding of properties and rules concerning algebraic expressions
• solve simple linear equations
• use acquired concepts, skills and processes in problem-solving

Shape and space
• develop a sense of spatial awareness
• investigate, recognise, classify and describe the properties of lines, angles, and two-dimensional and three-dimensional shapes
• deduce informally relationships and rules about shape
• combine, tessellate and partition two-dimensional shapes and combine and partition three-dimensional shapes
• draw, construct and manipulate two-dimensional and three-dimensional Shapes
• identify symmetry in shapes and identify shape and symmetry in the environment
• describe direction and location using body-centred (left/right, forward/back) and simple co-ordinate geometry
• use acquired concepts, skills and processes in problem-solving
Measures
• know, select and use appropriate instruments of measurement
• estimate, measure and calculate length, area, weight, capacity and average speed using non-standard and appropriate metric units of measurement
• estimate, measure and calculate angles, time, money and scale using nonstandard and appropriate units of measurement

• recognise and appreciate measures in everyday use
• use acquired concepts, skills and processes in problem-solving

Data
• collect, classify, organise and represent data using concrete materials and diagrammatic, graphical and pictorial representation
• read, interpret and analyse tables, diagrams, bar charts, pictograms, line graphs and pie charts
• appreciate, recognise and express the outcomes of simple random processes
• estimate and calculate using examples of chance
• use acquired concepts, skills and processes in problem-solving.

Content Of Plan

Curriculum: The areas of content in the maths curriculum are referred to as strands. Each strand consists of a network of strands and interdependent units.

Junior and Senior Infants	
Strand	**Strand Unit**
Early Mathematical Activities	• Classifying • Matching • Comparing • Ordering
Number	• Counting • Comparing and ordering • Analysis of number *Combining* *Partitioning* *Numeration*
Algebra	• Extending patterns
Shape and Space	• Spatial awareness • 3-D shapes • 2-D shapes
Measures	• Length • Weight • Capacity • Time • Money
Data	• Recognising and interpreting data

First and Second Class	
Strand	**Strand Unit**
Number	• Counting and numeration • Comparing and ordering • Place value • Operations • Addition • Subtraction • Fractions
Algebra	• Extending and using patterns
Shape and Space	• Spatial awareness • 2-D shapes • 3-D shapes • Symmetry • Angles
Measures	• Length • Area • Weight • Capacity • Time • Money
Data	• Representing and interpreting data

Third and Fourth Class	
Strand	**Strand Unit**
Number	• Place value • Operations *Addition and subtraction* *Multiplication* *Division* • Fractions • Decimals
Algebra	• Number patterns and sequences • Number sentences
Shape and Space	• 2-D shapes • 3-D shapes • Symmetry • Lines and angles
Measures	• Length • Area • Weight • Capacity • Time • Money
Data	• Representing and interpreting data • Chance

Fifth and Sixth Class	
Strand	**Strand Unit**
Number	• Place value • Operations • Fractions • Decimals and percentages • Number theory
Algebra	• Directed numbers • Rules and properties • Variables • Equations
Shape and Space	• 2-D shapes • 3-D shapes • Symmetry • Lines and angles
Measures	• Length • Area • Weight • Capacity • Time • Money
Data	• Representing and interpreting data • Chance

Approaches and Methodologies

- In the infant classes where the Ready Set Go Programme is being implemented the children are grouped according to their mathematical ability once assessment has taken place.
- In first class selected children will receive the opportunity to develop their mathematical skills through their participation in the Maths Recovery Programme with their class teacher and SET where the SET is Maths Recovery trained.
- In the classes from first to sixth all children are tested using the Sigma-T. The results are analysed by class teachers and SETs to determine specific areas of

weakness and decide what action to take and to identify the children whose scores indicate they need additional support. It is agreed between the class teacher and the SETs the form this additional support will be and how it is implemented in order to best address the needs of the pupils and improve learning outcomes.

- Teachers in our school should consider when planning that the mathematical strands are not isolated but should be taught as interrelated units in which understanding in one area is dependant on, and supportive of, ideas and concepts in other areas.
- In accordance with the Deis Plan the following methodologies are taught and emphasised each month.

2023/24	**Maths Methodologies**
September	Concrete Materials Magnetic Boards
October	Pair work/Group work Peer tutoring Collaborative learning
November	Modelled skills, strategies and language Discussion /Talk Maths table
December	Active learning Learning through play/games/quiz Songs and rhymes (junior classes) Calculators(senior classes)
January February	Maths trails Use of environment
March	Estimation Graphing
April	Integration Reporting results
May	Station teaching Problem solving Oral approach to mental maths
June	Maths charts Counting Revision Questions

- The methodologies are taught and used throughout the year however it is expected that the named methodologies are taught and highlighted during the given timeframe. This is not a full and exhaustive list.
- The children's knowledge of one area of mathematics should be used as a basis to explore another. This use of linkage will ensure that the teacher

always begins with what the child knows in mathematics and moves to what (s)he does not know.

- Teachers should use all possible opportunities to integrate mathematical skills and concepts with other areas of the curriculum.
- When working on other areas of the curriculum pupils should collect real data and use it to represent their findings e.g. in the subjects such as geography, history and science to find the answer to a question such as "How many children in our school have parents who attended this school?"
- Teachers should balance their teaching of mathematics so that all strands are given equal importance and an over-emphasis on number is avoided.
- The exploration of new mathematical concepts and skills should always precede any form of written activity in mathematics.
- Use should be made of a variety of equipment when exploring mathematical concepts and skills. Mathematics should be very "hands-on".
- It is vitally important that concrete materials be used with the children in the teaching of all strands. Concrete materials for all strands are available in the maths boxes in all classrooms. These are some ways in which they could be used:
    1. Teaching of fractions: all children get an A-4 piece of paper and scissors and starting with the unit strip go on to cut into the different families halves to quarters to eighths; thirds to sixths to twelfths. Sets of fraction walls are available in all classes form $3^{rd} – 6^{th}$.
    2. Counting Sticks should be used in all areas of the number strand to support improvement in all those areas. C/F the handout in the curriculum folder from the ppds.ie website on ideas for using the counting stick.[4]
    3. A set of 3-D Shapes, scales, money etc is available for familiarisation and use in all classrooms.

- The teacher should lead the children to discovering new concepts for themselves rather than providing rules/rote learning without understanding.
- The development of estimation skills is an integral part of the process of learning and should be used in all areas of mathematics, e.g. in measures, shape and space and not just in number
- The procedure when estimating should be as per teacher guidelines pg.32 i.e. estimate first, write down your estimate, solve the problem and compare your estimate with the actual result.
- When estimating teachers should use teach children to use the following strategies: c/f T.G. pg. 32 –34:
    front-end strategy,
    clustering strategy,

[4] Appendix 4: Ideas for using the counting stick:

rounding strategy
special numbers strategy

- Teachers should adhere to the number limits set by the curriculum for their particular class limit, particularly in first and second classes where the emphasis is on the development of the concept of place value e.g. more work within the hundred square without going past 100. (c/f T.G. pg.70) The exception to this is in the area of oral counting of numbers. The children should become familiar with the forward and backward number sequences of numbers in the hundreds and thousands before progressing to any computation with these numbers.
- When teaching subtraction with renaming transition boards should be used in order to guide the children in learning this new concept.
- When teaching fractions concrete materials and fraction walls should be used.
- As an initiative as part of the School Excellence Fund children in 5th and 6th class should use 'The Power of One'[5] method when covering the topic of fractions. This is a joint effort between Corpus Christi P.S., Thomond Primary and Thomond Community College as part of the children's transition into secondary school.
- When adding or subtracting big numbers, first change both mixed numbers into improper fractions and then find the LCD and add or subtract as the above point.
- Assessment should be an integral part of the teaching and learning process. The results of these assessments should furnish the teacher's teaching.
- The teachers should provide much opportunity to enable the children to discover that mathematics is practical and relevant to their own lives.
- Teachers should have a display area within their classroom relating to mathematics e.g. a mathematics section of their library, a mathematics display board.
- Teachers should use the immediate environment in so much as possible when planning lessons e.g. devising a mathematical trail during the Summer term.
- Calculators are to be used with children from 4th to 6th class. Teachers should use them in particular lessons for the active teaching of the use and functions of the calculator rather than giving calculators to the children for use in the daily maths lessons. Teachers should plan student exercises in which estimation and checking strategies are taught explicitly. Such exercises can also be used to monitor the effectiveness of the child's use of the calculator. Indeed, the calculator itself may be used in the process of checking a result if different approaches are undertaken in solving the same problem.
- Teaching of Tables: tables are to be actively taught in all classes every day for 10 minutes.

[5] Appendix 5: PDFs of The Power of One

Talk and Discussion:

- Discussion should be a vital part of the learning process in mathematics. This discussion should be child with child, child with teacher and child with parent/carer at home.
- Specific maths language for each Strand Unit is to be taught and displayed in the classroom.
- A set of colour coded language posters for each of the four operations: addition, subtraction, multiplication and division are to be displayed in each classroom from 1st class up all year long to facilitate work in the area of word problems.[6]
- Teacher should model the explanation of the process by which they engaged in mathematical activities. This will scaffold the children so that they themselves will be enabled to explain aloud to their classmates how they arrived at a certain answer. For example when telling the answer for 5 + 4 the teacher should say aloud "Am I counting forwards or backwards here?" etc. When solving e.g. 708 + 124 there are a variety of strategies a child may use e.g. start first with the units, add the hundreds first etc. This process of using oral explanations will highlight to the children that there are many approaches that can be used to get the answer and that all are equally correct and valued.
- As well as regularly orally explaining the process they used to get their answers (mentioned above), the children will also sometimes explain in writing their thought processes. Eg. Use of the empty number line.
- 'Maths Eyes'. Every second month a photo will be displayed in the junior and senior parts of the school. Children will be encouraged to form their own observations and questions using maths language and skills they have learned.

Active Learning and Guided Discovery

- Concrete materials should be used to teach all strands of the mathematics curriculum. Resources are available in the maths boxes in each classroom.
- Maths Games: All classes have a selection of games e.g. loop cards. Most of these games are for the development and understanding of number.

Collaborative and Co-operative Learning

- Teachers should use a variety of organisational styles when planning for the teaching of mathematics i.e. pair work, group work and whole class work.
- When working within a group the teacher should teach the skills needed to work within a group e.g. turn-taking, listening to others, appreciating and respecting the views of others.

[6] Appendix 6: PDFs of posters for language of the four operations

Problem-solving

- A daily "Maths Problem" is to be explored in classes using following procedure;
    1. **R**ead
    2. **U**nderline – Using the colour code of the operation needed.
    3. **D**raw
    4. **E**stimate

    Word problems are to be personalised for the children to make them more relevant.

- The IZAK 9 problem solving resource is available for use from 1st class to 6th class. The activities are graded for each class. Oral explanation of how the tasks were solved and how answers were arrived at will form an integral part of using this resource. [7]

Use of the environment

Teachers are encouraged to use the formulated maths trails to use the immediate outside environment of the school. Maths work is to be displayed in the classrooms and on the notice-boards of the corridors.

Mental Maths

Mental maths is to be done each day in all classes from 1st to 6th class

Skills through Content

The following skills are actively developed in maths and other curricular areas:

- Applying and problem-solving
- Communicating and expressing
- Integrating and connecting
- Reasoning
- Implementing mathematics to everyday life
- Understanding and recalling

Presentation of work:

- Work is presented in a variety of ways. It is written neatly in a maths copy. Older classes must rule a margin, draw a "middle margin" where appropriate and number the work in the copy in order to facilitate good organisation and presentation.
- Work is also presented in a temporary format on whiteboards.

Assessment and Record Keeping

Ready Set Go Maths:

[7] Appendix 7: IZAK 9 Action Plan, Tasks, curriculum links and password

- Junior Infants: A First Significant Goal and some children will complete a Second Significant Goal.
- Senior Infants: A Second Significant Goal and some children will complete a Third Significant Goal.

Maths Recovery:

- In first class teacher observation and classroom-based tests are used to screen some children for Maths Recovery intervention and to evaluate their progress on the Maths Recovery Programme in classes where the teacher or SET is Maths Recovery trained.

Sigma-T Standardised Test:

- The Sigma-T is administered to all children from first to sixth classes, in the month of May. Class teachers must administer and correct the test.

- Teachers are required to make themselves familiar with the instructions for the test before administering it. The correction stencils must be used by all teachers when scoring the tests to ensure accuracy.

- Each class teacher inputs the individual child's scores on the different strands and skills on the Aladdin system in order to get a full picture of a child's performance. Teachers use the results of the test to inform their planning. These results are also used to facilitate whole school planning in the area of mathematics and to aid the development of maths action plans.

The results of all assessments are put into the "class folder" which moves with the children from class level to class level. This formal process was initiated in 2007/2008 and has replaced the informal reporting of this information to the next class teacher. This will enable teachers to view a child's progress in mathematics over an extended period of time.
The results of these tests are discussed at staff meetings, zone meetings and during planning hours in order to bring about change and improvements in maths.

Other Teacher-Designed Tests:
Teacher designed tests are given in classes to evaluate the children's progress in mathematics.
When designing tests for a pencil and paper type test teachers should consider the following:

- Identify the purpose of your test and design it accordingly.
- Try to formulate questions that relate to the children's interests.
- Start with easy questions and progress to more difficult ones.
- Include at least two types of problems in the tests.
- Include a subject when writing problems.

Teacher Observation:
Teachers observe the children at work to assess their progress and to inform their planning.
Checklists are used to record children's progress.

Work Samples, Portfolios and projects:
The infant classes keep samples of maths work in maths folders, each child having his/her folder. The children from 1st to 6th record their maths work in maths copies, on worksheets, on individual whiteboards and in specific ipad apps.

Diagnostics Tests:
These tests are administered by SETs and results are recorded in the class assessment folder, the child's IEP or IPLP.

Communicating Results of Assessments to Parents:
There are parent-teacher meetings held in November of each school year. The progress of the pupils is discussed at these meetings. A written report is sent to parents at the end of the school year. There is an online record booklet on the Aladdin system for each child from junior infants since June 2014. This is accessible to each class teacher. The parent is informed about the child's actual Sten score, which is further explained using the explanation table below:

STen Range:	**Descriptor:**
8-10	Well above average
7	High average
5-6	average
4	Low average
1-3	Well below average

Communicating Results of Assessments to Other Teachers and Professionals:

The results of maths assessments are shared in line with the school's policy on record-keeping.

Children with Different Needs

Children with learning difficulties:
The curriculum is modified to meet the needs of each child. Appropriate materials and resources are used to enable the child to access the curriculum and progress from where (s)he is at.
Children that score low on the Sigma-T standardised maths test receive additional support. This support may be either in-class support through station teaching, team teaching or through withdrawal. Class teachers and SETs all work together to enable the child to make best progress in maths.

There are resources in classrooms which are used to meet the needs of the child in making progress in maths. There are also a range of IT resources available for this purpose. The adaptations/modifications made to deliver the maths curriculum to children with additional needs are recorded on the IPLP/IEP as appropriate for each child and in the teacher's plans.

Children with exceptional ability:
Teachers provide additional work/activities (obair breise) for the children who are of well above average and high average STEN scores.

Equality of Participipation and Access

- All children in our school irrespective of gender, background or ability have access to services, facilities and amenities in our school.
- HSCL teacher: organises courses for parents in literacy, numeracy and homework help. These courses provide parents with the necessary tools and skills to assist their children with homework and their child's overall development.
- Maths Recovery strategies are used by many class teachers and SETs when working with children who have difficulties in numeracy. Maths Recovery will be delivered to a number of children in 1st class to enable the children to best reach key learning outcomes at this critical time of development where there are trained teachers. A number of teachers have received training in Mata sa Rang and maths recovery strategies and these strategies are being used in classrooms especially in station teaching.
- In the Ready Set Go Maths Programme there is a target group identified (children who are experiencing difficulties in maths) in order to provide them with greater support to enable them to access the maths curriculum more fully.

Organisation

Timetable:

- A minimum of 3 hours 25 minutes in Junior and Senior infants and 4 hours 10 minutes from 1st to 6th class is to be allocated for mathematics each week.
- Our school is continuing to roll out changes with regard to additional support and timetabling by having an increasing number of teachers providing in-class support through station teaching. Currently one SET is working with each class to maximise contact time, relationship building and knowledge of the needs of the children.

Homework:

- Maths homework should consolidate work already done in class. New learning- material should not be sent home as homework.
- Teachers should discuss types of homework assigned, i.e. there should be a balance between practical and written.
- Maths homework is to be assigned on a regular basis.
- Maths homework should be differentiated taking into account the range of abilities within the class.
- Mathematics homework should reflect an active learning approach.
- The learning of tables should be assigned on a regular basis.

Resources and ICT

There is a maths inventory update provided to all teachers listing the maths resources stored in the maths boxes in each room.[8]

It is the responsibility of each teacher to ensure that (s)he has the resources necessary to deliver the maths curriculum.
There are supplementary maths books given out to each teacher at the beginning of the school year.
Additional material to support the delivery of the maths curriculum is to be found on the PDST website and other relevant websites. (see appendix)[9]

I-pads and chromebooks are available in the school. Maths apps can be used to enable the children to practise maths skills for example during maths stations.

Individual Teacher's Planning and Reporting

This plan and the Curriculum documents for Mathematics will provide information and guidance to individual teachers for their long and short-term planning. Procedures outlined in this plan will be followed consistently.

In order to avoid the over reliance on text books children are engaged in active learning. This process is supported and enabled by teachers engaging with methodologies and strategies that are not text focussed but child centred.[10]

A record of what has been taught can be found in each teacher's Monthly Report.

Staff Development

- The Board of Management is aware of the importance of on-going staff development and provides support when requested.
- Limerick Education Centre: the timetable of courses is available in the staffroom.

[8] Appendix 8 Maths Materials Inventories
[9] Appendix 9 List of relevant websites
[10] Appendix 10 Methodologies and strategies in use

- Strategies in Maths Recovery suitable for whole class teaching training, is offered to the school annually. Teachers are encouraged and supported to attend.
- Opportunity is given at staff meetings for teachers to report back on courses attended.
- Four teachers are trained Maths Recovery teachers. If the opportunity arises and it is feasible the B.O.M will sanction the training of teachers.
- Croke Park hours are used for additional training in areas identified by staff eg problem solving.

Parental Involvement and Home School Links

- Parents are encouraged to support the school's programme. Individual Parent/Teacher meetings are held in February each year. Teachers and parents are afforded the opportunity to discuss each individual child's progress in Maths and other subjects.
- Parents and teachers also have opportunities to make individual arrangements to discuss matters of relevance at other times throughout the school year. Suggestions as to how parents can assist their child's progress, are made by teachers.
- HSCL teacher: organises courses for parents in literacy, numeracy and science. These courses provide parents with the necessary tools and skills to assist their children with homework and their child's overall development

Success Criteria

The plan will be assessed by using –

- The assessment tools in the Revised Curriculum documents.
- Feedback from pupils, parents, teachers and the wider community.
- Department of Education Inspector's suggestions and/or reports.
- Feedback, if it arises, from second-level schools in our area.
- Future developments in mathematical thinking.

Implementation

(a) Roles and Responsibilities:

This plan was coordinated by the post holder for maths team of Corpus Christi Primary School.

(b) Timeframe:

This plan was updated in September 2023. The final draft will be distributed to staff in October 2023 and presented to the board of management for ratification at the following meeting.

Review

(a) Roles and Responsibilities:
A review of the maths school plan will be led by Maria Doherty and will involve the maths team.

(b) Timeframe:

The plan will be monitored by the maths team and all members of staff under the guidance of the principal. The next formal review will take place in September 2024.

- **Ratification and Communication:**
  This plan has been reviewed in October 2023 where updates and revisions were made as necessary. All staff were involved in the review of this policy. Parents' representatives on the Parents' Association and the Board of Management will be involved in its continued development and review. All staff will be involved in monitoring this Whole School Plan. A further review will take place during the school year of 2024/2025.