

Mathematics Policy

1. Rationale

- *Learning Mathematics*

Mathematics is the study of the relationships, connections and patterns that surround us, and is thus intrinsic to our concept of the world.

- *Every child is mathematical*

Every child has an innate, intuitive and instinctive sense of Mathematics.

- *Mathematics is both a human and social phenomenon*

Mathematics learning is dependent on social and cultural experiences as well as on children's educational experiences in school.

- *Mathematics is a tool that helps us to make sense of our world*

Mathematics is used to think about, see and organise our everyday lives and the world.

- *Mathematics is beautiful and worthy of pursuit in its own right*

Through playful, creative and engaging learning opportunities, children can experience the beauty and power of Mathematics.

- *Mathematics is everywhere and for everyone*

Mathematics is a human activity that develops in response to everyday problems and interactions.

2. Relationship to Characteristic Spirit of the School

The Primary Maths Curriculum is premised on a vision of children as unique, competent and caring individuals. It aims to provide a strong foundation for every child to thrive and flourish. It supports children in realising their full potential as individuals and as members of communities and society during childhood and into the future.

3. Principles & Competencies of Primary Curriculum Framework

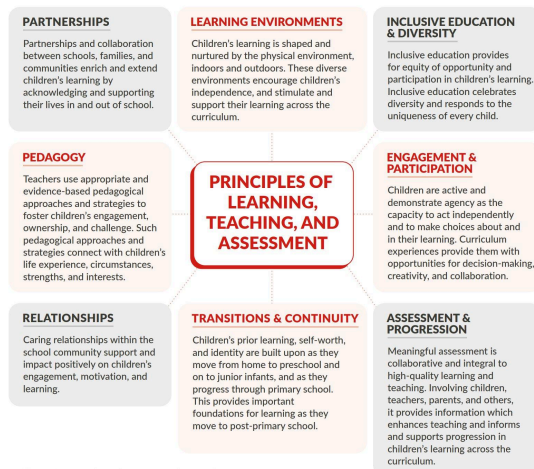
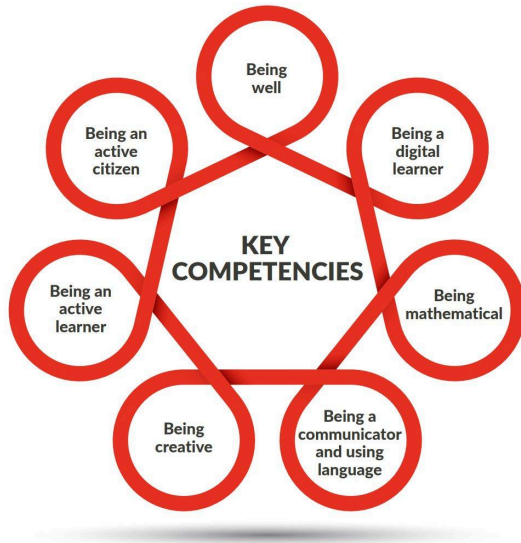


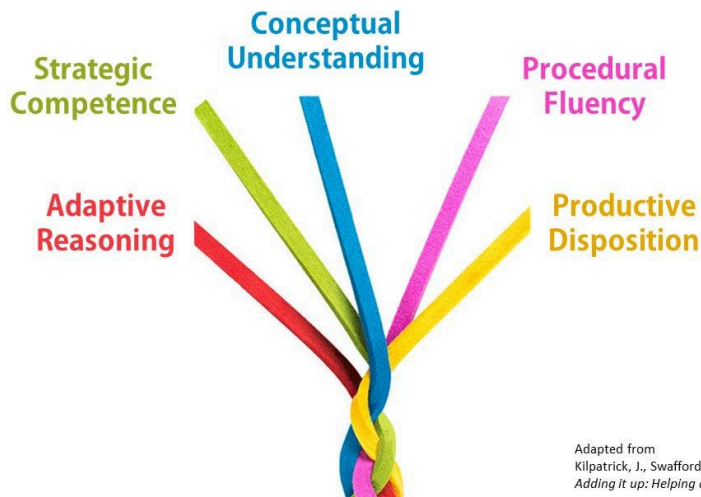
Figure 1: Principles of learning, teaching, and assessment



4. Aims

The over-arching aim of the Primary Mathematics Curriculum is the development of mathematical proficiency. Mathematical proficiency encompasses *conceptual understanding, procedural fluency, adaptive reasoning, strategic competence* and *productive disposition*. Importantly, all five aspects are interwoven and interdependent.

Intertwined Strands of Mathematical Proficiency



Adapted from
Kilpatrick, J., Swafford, J., & Findell, B. (Eds.) (2001).
Adding it up: Helping children learn mathematics.

The comprehension of mathematical concepts, operations and relations

The ability to use a variety of mathematical procedures in an effective and efficient way

The tendency to see Mathematics as practical, useful and worthwhile

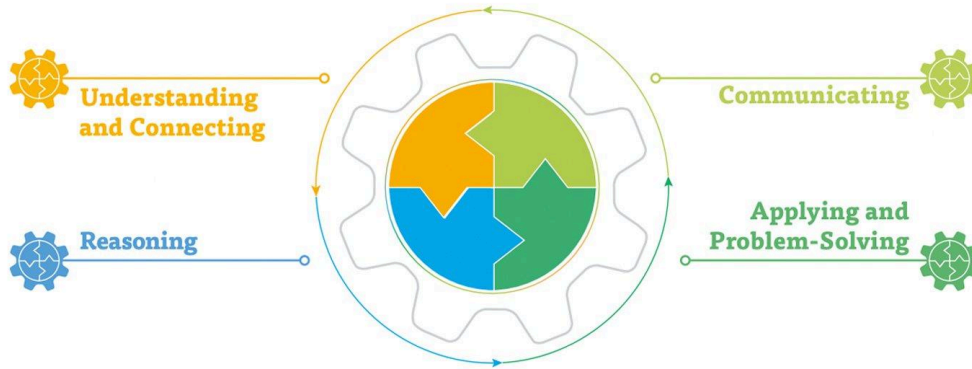
The capacity to use logic to understand, explain and justify one's thinking

The skill to devise, represent and solve mathematical problems

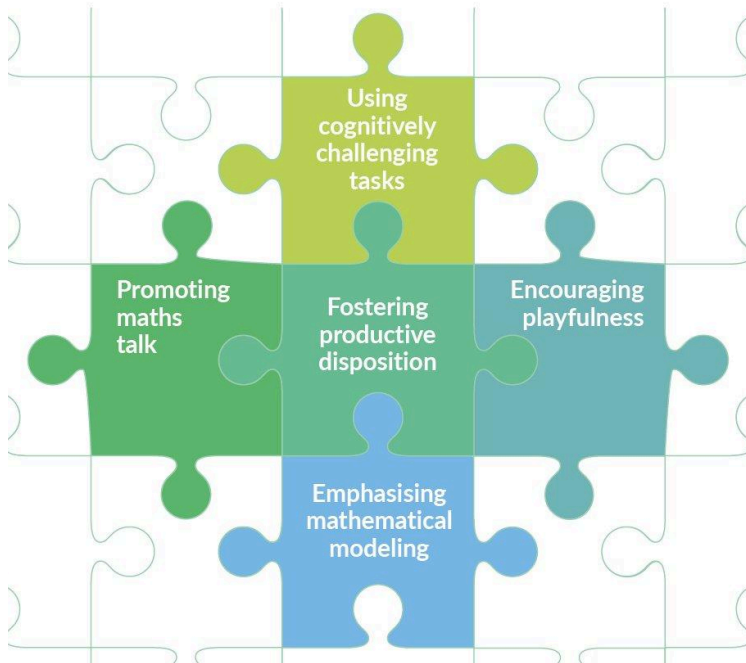
5. Approaches and Methodologies

'How' children learn is as important as 'what' children learn.

Elements describe the main categories of processes (how children learn) that children engage in as they learn Mathematics. These processes include: connecting, communicating, reasoning, justifying, representing, problem-solving, generalising and argumentation, and are categorised into four elements: understanding and connecting; communicating; reasoning and applying; and problem-solving. These are central to the development of children's mathematical proficiency.



The **5 pedagogical practices** are acknowledged as essential to the provision of quality mathematical learning experiences. They are dynamic and naturally link with each other.



Teachers can help foster children's **productive disposition** by:

- demonstrating enthusiasm for Mathematics themselves
- providing rich and meaningful contexts for learning
- celebrating effort and success
- valuing the process as well as the product of learning
- normalising struggle and mistakes as part of the learning process
- giving children opportunities to interact and work collaboratively with their peers
- facilitating children to find patterns and make connections
- encouraging children to take risks and persevere
- engaging children in meaningful self-assessment and reflection.

Teachers can help encourage **playfulness** with Mathematics by:

- being playful in their own dispositions and interactions with children
- tapping into children's interests and curiosities
- integrating mathematical learning with playful activities throughout the day
- signalling when children encounter Mathematics in spontaneous play and exploration
- introducing and reinforcing mathematical language as it arises through play
- encouraging multiple means of expression and representation
- providing opportunities for children to explore and experiment with mathematical ideas
- allowing a safe space for spontaneity, creativity and imaginative play with Mathematics
- providing access to a wide range of resources, visual supports and technologies.

Teachers can help emphasise **mathematical modeling** by:

- providing opportunities for sense-making
- allowing freedom and autonomy for children to develop and express their own models and solution pathways
- using model-eliciting activities, questions, prompts and feedback to provoke situations for modeling
- encouraging individuality, choice and independence
- facilitating children to build, test and apply mathematical models
- challenging children to test and refine their models through collaboration
- celebrating diversity and creativity in working with mathematical models
- supporting children to generalise their models for a range of different contexts and purposes.

Teachers can help promote the use of **cognitively challenging tasks** by:

- selecting, designing or modifying tasks to appropriately stretch and deepen children's understanding
- providing opportunities for deep and sustained engagement with mathematical content and processes through the use of tasks
- allowing children to grapple with ideas and problems freely and to explore problems with multiple correct solution pathways
- encouraging different ways of solving problems
- assisting children to make connections with prior and new learning

- encouraging children to express and communicate their ideas frequently and openly
- holding high expectations for what children are capable of understanding, doing and communicating
- providing opportunities for children to collectively share and evaluate their experiences from working with tasks
- celebrating individual and collaborative effort and success in grappling with challenging tasks.

Teachers can help promote the use of **maths talk** by:

- providing a safe environment for children to share and exchange thinking and ideas
- encouraging active listening, respect and value for all contributions
- identifying and selecting appropriate situations and problems to promote maths talk
- re-casting everyday experiences using mathematical words and phrases
- prompting maths talk through strategic, skilful, open and thoughtful questioning
- providing suggestions for parents on how to promote and stimulate maths talk at home
- allowing waiting time and time for sustained interactions, collective sharing and reflection
- re-voicing children's mathematical ideas.

<https://www.pdst.ie/primary/stem/lets-talk/math>

DEIS Maths Plan at St. Fiacc's

Our DEIS plan of action is to introduce Number Talks as a daily mental Maths activity.

A Number Talk is a short, ongoing daily routine that provides students with meaningful ongoing practice with computation.

Short: They should only take 5 to 15 minutes; they are not intended to replace current curriculum or take up the majority of the time spent on mathematics.

Daily: they are most effective when done everyday, although aiming for two-three times a week should also yield effective results.

Typically, the children are presented with a calculation, which they are then asked to solve mentally. Individual children then share their strategy, which the teacher records on the board.

What does a Number Talk look like?

Sherry Parrish recommends the following structure

The teacher presents a number sentence to the class; the students are given thinking time to mentally solve it.

- The students start with one fist to their chest; they make a "thumbs-up" on their chest to show that they have found an answer. They then use the remaining time to try to think of another way/strategy which they then indicate by putting up a thumb and a finger, and so on.
- The teacher asks a number of children to volunteer their answers and all given answers are recorded on the board.
- The teacher asks a child to "defend their answer"/"explain their strategy".
- All strategies are recorded on board by teacher, using visuals where possible.

- The children agree on the "real" answer.

Here are the links to our number talks specific to year groups:

[Click here to access the Number Talks folder for Junior Infants](#)

[Click here to access the Number Talks folder for Senior Infants](#)

[Click here to access the Number Talks folder for First Class](#)

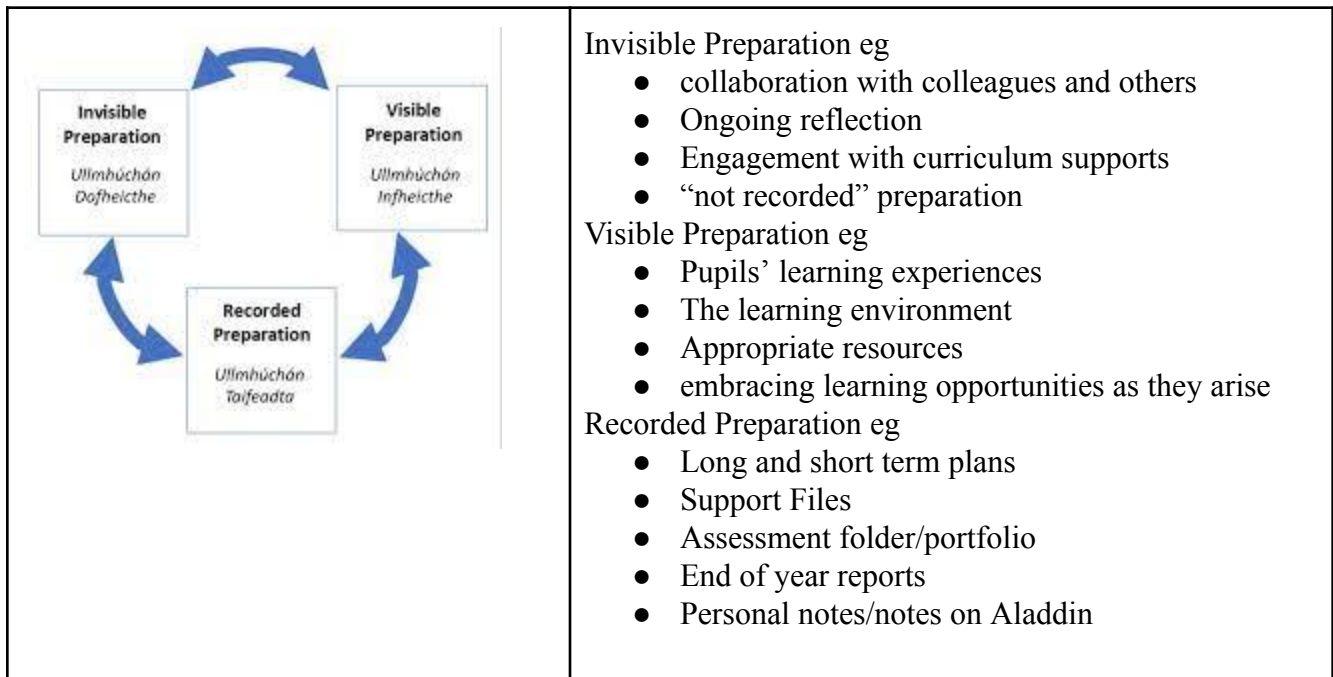
[Click here to access the Number Talks folder for Second Class](#)

[Click here to access the Number Talks folder for Third to Sixth Classes](#)

[DEIS Plan Numeracy](#)

[DEIS Numeracy Continuum](#)

6. Arrangements for Individual Teachers, Planning and Reporting



7. Timetabling

The time allocation for maths each week is 3 hrs in the infant classes and 4 hours for 1st - 6th.

8. Assessment

Assessment is an integral part of learning and teaching. It involves teachers and children working together to use information to inform and support learning and teaching. These decisions are informed and shaped by:

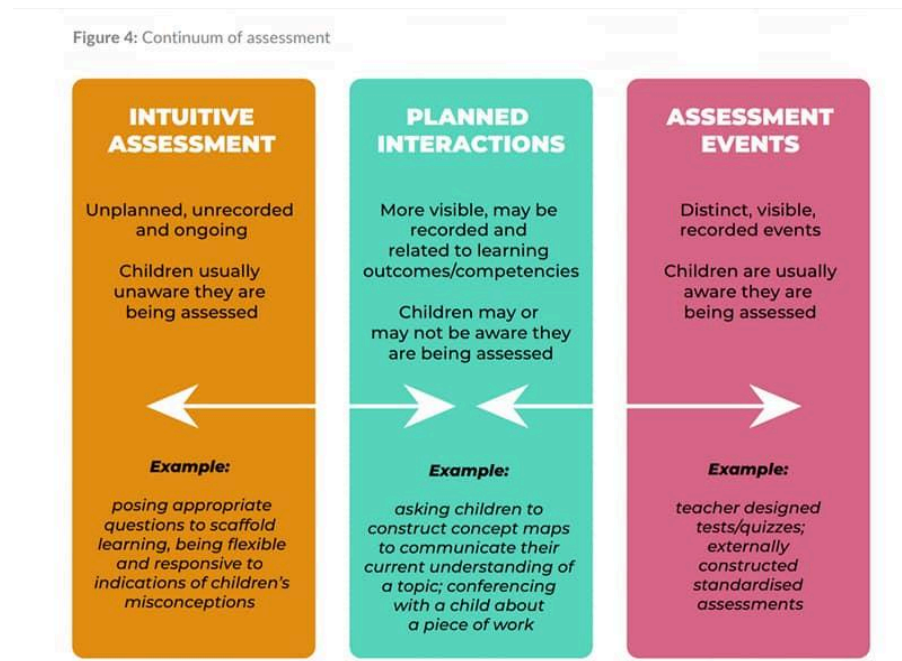
- **knowledge of the child** and their prior learning (relationship with child, parent, previous teacher; Reports/Support files; observations)
- **knowledge of the curriculum** www.pmc.oide.ie www.curriculumonline.ie CPD; supports
- **knowledge of pedagogy.** (appropriate & engaging learning experiences; reflective practice; taking account of children's interests and prior learning)

Children as mathematical learners:

Providing children with regular time to talk about their learning, reflect and determine their next steps contributes to their identity and confidence as mathematical learners.

Opportunities for assessing mathematical learning:

Children's mathematical learning can be assessed along a continuum from 'intuitive' to 'planned interactions' to 'assessment events' as shown in Figure 10. The three types of assessment are complementary, and necessary, to gain a comprehensive picture of a child's progress and achievement.



*Portfolios: Portfolios can be assembled, digitally or otherwise, to compile evidence of children's mathematical learning and provide a source of self-reflection, feedback and

assessment. Artefacts could include pictures, recordings and work samples, among others. All pupils keep digital portfolios at St Fiacc's NS.

9. Meeting with individual needs.

Children scoring below the 12th percentile on a Maths SAT are withdrawn for small group support from 2nd - 6th. Support for all is provided through inclass targeted Maths Support from infants to 5th. Children scoring above the 95th percentile are offered a Maths Enrichment programme from 2nd - 6th. St Fiacc's has 1 trained Maths Recovery teacher.

10. Content of plan

Strands and Strand Units

Strands outline the main categories of mathematical learning (what children learn) across five domains or content areas of primary mathematics: algebra; data and chance; measures; number; and shape and space. Each strand has a set of strand units.

Algebra	Data & Chance	Measures	Number	Shape & Space
Patterns, rules and relationships	Data	Measuring	Uses of number	Spatial awareness and location
Expressions and equations	Chance	Time	Numeration and counting	Shape
		Money	Place value and base ten	Transformation
			Sets and operations	
			Fractions	

Learning Outcomes & Mathematical Concepts

Learning Outcomes are used to describe the expected mathematical learning and development for all learners at the end of a two-year stage, when due account is taken of individual abilities and varying circumstances. The 'stem' *'Through appropriately playful and engaging learning experiences'* is used to introduce Learning Outcomes across all stages.

Mathematical concepts are considered key ideas that underpin each Learning Outcome. These key ideas may provide useful entry and reference points in relation to planning, teaching and assessment and may serve to remind teachers of key mathematical knowledge at each stage.

[Algebra](#)

[Data-and-chance](#)

[Measures](#)

[Number](#)

[Shape and Space](#)

Progression Continua

The progression continua outline a sample learning trajectory of Mathematics at primary level. They suggest a series of learning experiences, which children might engage with as they develop and deepen their mathematical knowledge, skills and dispositions.

[Algebra_Patterns,-rules-and-relationships.pdf](#)

[Algebra_Expressions-and-equations.pdf](#)

[DataandChance_Data.pdf](#)

[DataandChance_Chance.pdf](#)

[Measures_Measuring.pdf](#)

[Measures_Time.pdf](#)

[Measures_Money.pdf](#)

[Number_Uses-of-Number.pdf](#)

[Number_Numeration-and-counting.pdf](#)

[Number_Place-value-and-base-ten.pdf](#)

[Number_Sets-and-operations.pdf](#)

[Number_Fractions.pdf](#)

[ShapeandSpace_Spatial-awareness-and-location.pdf](#)

[ShapeandSpace_Shape.pdf](#)

[ShapeandSpace_Transformation.pdf](#)

11. Language

The language of Maths at St Fiacc's can be viewed here: [LanguageofMaths](#)

12. School policies on the teaching of various mathematical areas

- Essential that tables are learned from 1st to 6th.
- Formal multiplication tables to be commenced in 3rd class
- Consolidate multiplication and introduce division in 3rd class
- Constant repetition of tables in 4th, 5th and 6th class
- Emphasis on hearing the tables frequently in every class using agreed language approaches.

13. Resources

The schedule of maths resources is outlined in the Maths inventory [MathsSchedule](#) The equipment is located on listed classrooms

14. Homework

Maths is given as homework, as reinforcement, and follows on from class work. The time frame and problems concerning homework are explicitly explained in our homework policy. Maths homework from 1st – 6th consists of 2-4 questions.

15. Success criteria

- Achievement of the aims as set out in section 4.
- Achievement of targets as specified in the DEIS Maths Plan.
- A successful implementation of the Primary Maths Curriculum
- Utilisation of all the approaches set out in section 5.
- That all pupils will succeed at maths in accordance with their abilities

16. Roles and Responsibilities

All members of staff will implement the plan and issues involving its implementation will be discussed at Whole Staff, Senior Management and Maths Committee level. Mr Bolton, as Maths Co-ordinator has overall responsibility for monitoring of the Maths plan

17. Time frame for review

The plan will be initially reviewed annually to embed and every three years thereafter.