CURRICULUM, PEDAGOGY AND BEYOND

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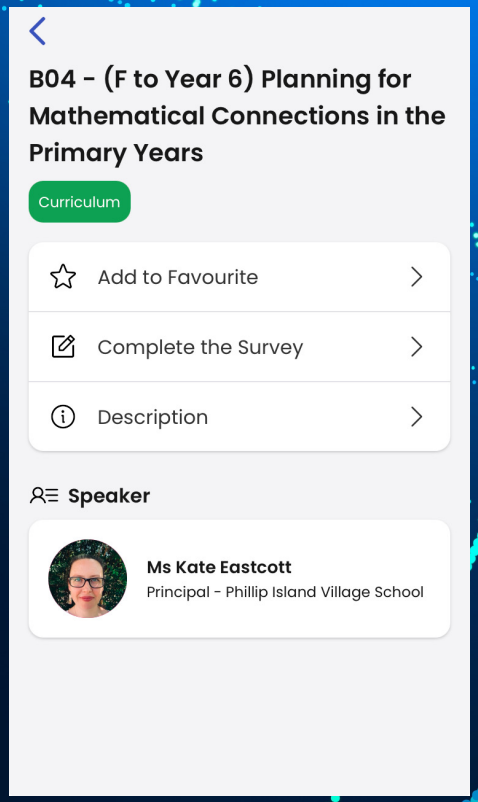

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Planning for Mathematical Connections in the Primary Years

Outline

- Introduction
- Scenario 1
- The Solution?
- Di Siemon's Planning Matrix
- The Challenge Continues…
- The Outcome
- Scenario 2
- Planning Overviews
- Summary

Introduction

- Power of Planning
- The Journey
- Sharing the Experience

Scenario 1

- School Scenario
  - State school
  - Around 500 students
  - 24 classes
- Planning practice
  - Department templates
  - Instructional Model (PMSS)
  - Suggested resources
  - Targeted Teaching of Big Ideas
  - Rotational weekly planning
- The Challenge
  - Staff pedagogical and content knowledge
  - Siloed approach to planning
  - Create consistency across school (planning, language, activities, sequences, assessment practices)
  - Develop teacher self-efficacy

The Solution?

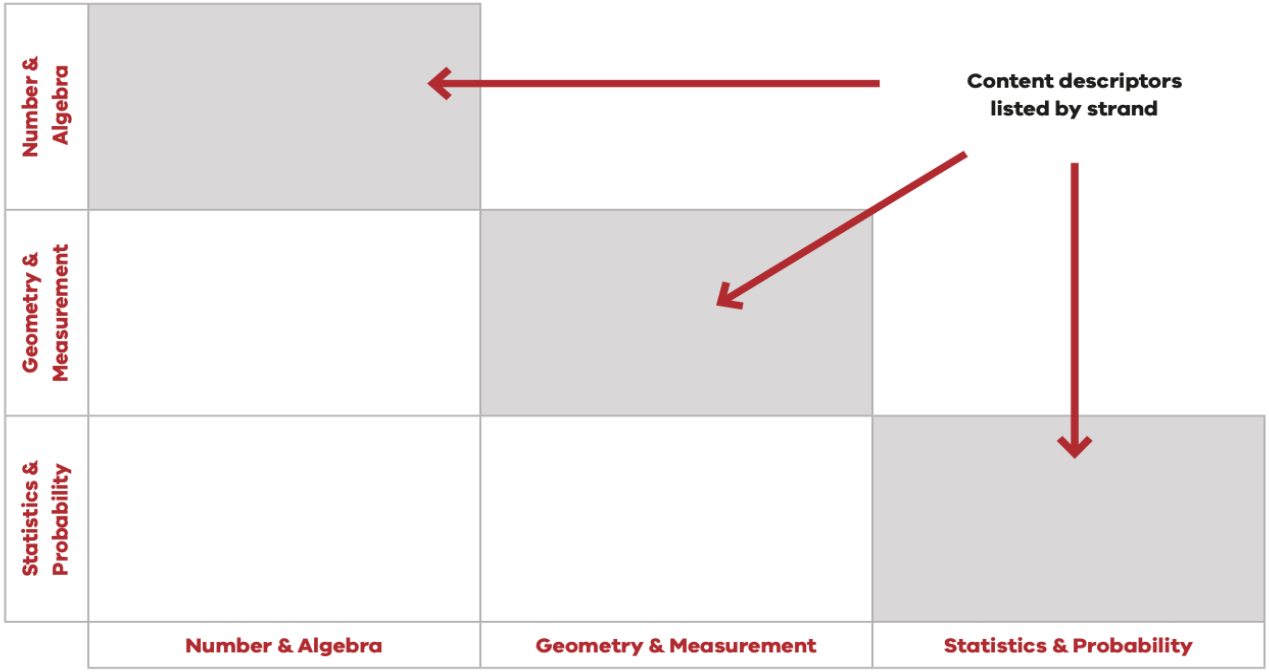
- Community of Practice with Professor Di Siemon
  - Big Ideas in Number
  - Planning Matrix
- Transitioning to VC2.0
  - Cross- and Inter- connections
  - Big Ideas focus

Di Siemon's Planning Matrix

Benefits

- Encouraged teachers to think about the connections between content descriptors
- Promoted discussion and collaboration about tasks that targeted multiple areas of mathematics
- Prompted reflection on choice of tasks, delivery of curriculum and sequence of concepts

Figure 4. A curriculum planning matrix



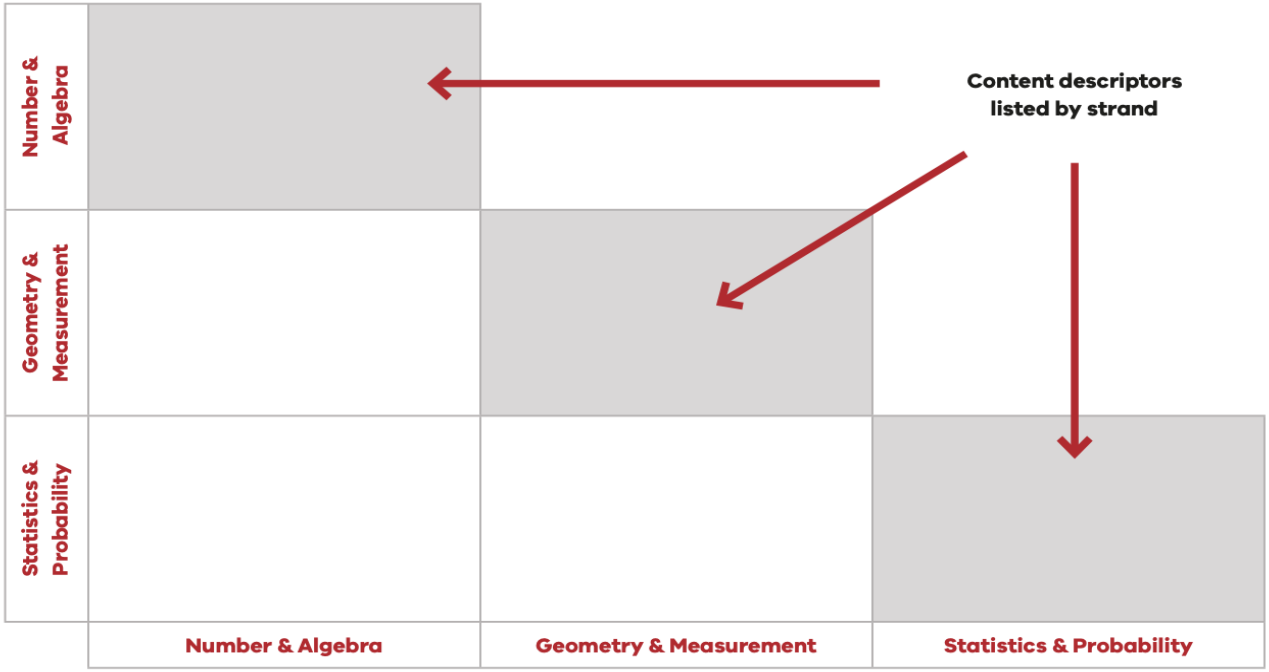
https://www.education.vic.gov.au/Documents/school/teachers/teachingresources/discipline/maths/MTT_stem_agenda.pdf

Di Siemon's Planning Matrix

Challenges

- Staff confusion
- Starting point?
- Lack of self-efficacy
- Lack of content knowledge

Figure 4. A curriculum planning matrix



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Scenario 1 cont.

- Planning Matrix & the Maths Team
  - Difficulty understanding how to use matrix
  - Lack of confidence making connections
- Planning overviews for clarity
  - Built from the matrix
  - Provided more clarity
  - Allow for a ‘plan backwards’ approach
- Planning cycle

School Planning Cycle

Yearly Planning

CPS 2024 Numeracy Overview

Term 1	Term 2	Term 3	Term 4
Establishing Maths Classroom Culture	Big Idea for Year Level - conceptual understanding & procedural fluency	Big Idea for Year Level - conceptual understanding & procedural fluency	Big Idea for Year Level - conceptual understanding & procedural fluency
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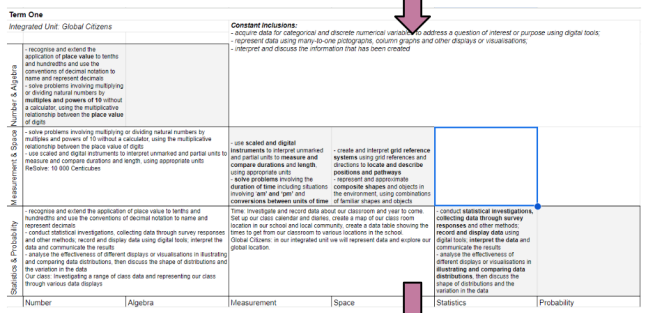

Year 4 (filled in after using Di's mate

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9		Farmer's Garden		
10		Games Fortnight - chance		
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Maths Team

Year Level Teams

Year Level Teams

Yearly Planning Goals:

- Curriculum familiarisation
- Low variance curriculum across Year Levels
- Emphasises inter curriculum connections (ACARA, OECD)
- Spiral Curriculum (regularly revisiting Big Ideas/'Problem' Areas)
- Promotes modelling and problem solving (ACARA, OECD)
- Team Level ownership - data informed
- Aligned to Whole School Assessment Schedule - consistency
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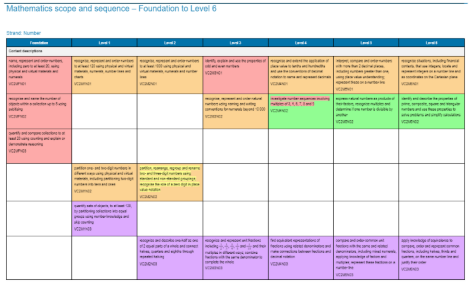

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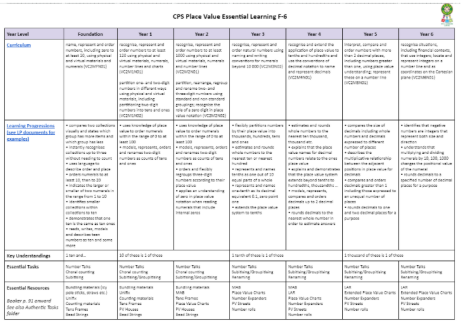

Maths Team

Numeracy Overviews

CPS 2024 Numeracy Overview

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Planning Matrix

Term Two

Integrated Unit: Our Neighbours — *Assessment: Week 5 Time Snapshot*

Number & Algebra	**compare and order common unit fractions with the same and related denominators, including mixed numerals, applying knowledge of factors and multiples; represent these fractions on a number**	**interpret, compare and order numbers with more than 2 decimal places, including numbers greater than one, using place value understanding; represent these on a number line**	*interpereting data tables consistently included			*Team Assessment: F & D*
Measurement & Space	*Place Value Jigsaw *decistrips *ordering decimals (Sullivan) *decimal place value inquiry (*https://www.inquirymaths.com/home/number-prompts/place-value-inquiry*) *Thinking in Powers of 10 (Jo Boaler) *tangram puzzle *Cuisenaire Fractions (blue book)*how long does it take? https://newzealandcurriculum.tahurangi.education.govt.nz/how-long-does-it-take/5637162622.p) *Authentic Problems - Reaction Time reSolve) https://resolve.edu.au/v84-sequences/authentic-problems-reaction-time?lesson=3691 * Area & Perimeter (ReSolve) https://resolve.edu.au/v84-sequences/area-and-perimeter *Design a room with angles (Teach Starter) *Cube nets (Maths 300) *Treasure Island (Blue		solve practical problems involving the perimeter and area of regular and irregular shapes using appropriate metric units describe and perform translations, reflections and rotations of shapes, using dynamic geometry software where appropriate; recognise what changes and what remains the same, and identify any symmetries			
Statistics & Probability	*Modelling Motion (ReSolve) https://resolve.edu.au/v84-sequences/modelling-motion-years-5-and-6 * Dear data (YouCubed) https://www.youcubed.org/tasks/dear-data/ *Qualifying chance as a fraction				plan and conduct statistical investigations by posing questions or identifying a problem and collecting relevant data; choose appropriate displays and interpret the data; communicate findings within the context of the investigation	conduct repeated chance experiments, including those with and without equally likely outcomes, and observe and record the results; use frequency to compare outcomes and estimate their likelihoods list the possible outcomes of chance experiments involving equally likely outcomes and compare to those that are not equally likely
	Number	Algebra	Measurement	Space	Statistics	Probability

Curriculum 2.0 Level 5 | Term 1 | **Term 2** | Term 3 | Term 4 | +

Numeracy Overviews

Year __

Week	Term 1	Term 2	Term 3	Term 4
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				

Numeracy Overviews

CPS 2024 Numeracy Overview

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Year 2

Week	Term 1	Term 2	Term 3	Term 4
1	Classroom Culture	Place Value - Make and Name	Place Value - Make, Name, Expand and Rename	Place Value - Make, Name, Expand and Rename
2	Classroom Culture - p22 Mindset Maths	Place Value - Make, Name, Expand and Rename	Place Value - Make, Name, Expand and Rename	Place Value - Make, Name, Expand and Rename
3	Graphing Class Data	Algebra - Resolve Equivalence or Maths Hub	Additive - Rows of Oranges	Division - Bunches of Balloons
4	Location and Shape School Orientation	Place Value Problem Solving Composing and Decomposing Numbers (4)	Explicit Teaching Arrays	Fractions
5	Calendars	Algebra - numberbust, fluency facts to 20 (include money)	Resolve - What's For Lunch?	Connections - Thinking on a Numberline (6)
6	Time	Time	Fair Feast	Connections - Thinking on a Numberline (6)
7	Skip counting - next year Place Value	Place Value Problem Solving Resolve Lolly Shop	Algebra - numberbust, fluency facts to 20 (include money)	Algebra - numberbust, fluency facts to 20 (include money)
8	Skip counting - next year Place Value	Place Value Problem Solving Resolve Lolly Shop	Length	Multiplication - How Many Robots
9	Place Value Problem Solving What's 100? Skip count time, money and large collections	Connections - Thinking on a Numberline (6)	Potato Olympics	
10		Connections - Thinking on a Numberline (6)	Using Data to Visualise and Wonder About Our World (9)	
11		Shape - Reasoning with 2D Shapes or Maths Hub		

Place Value Snapshots - Max's Numbers and then a Renaming Task in Term 3 to show 2 different aspects of Place Value

Numeracy Overviews

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Year 4

Week	Term 1 - Australia's Neighbours	Term 2 - Indigenous Australia	Term 3 - Simple Machines	Term 4 - Habitats
1	Establishing Classroom Culture	Seeing Patterns in Numbers	Additive Strategies (PV)	The King & 10 000 Centicubes
2		Multiplicative (concept/procedure)	Olympic Maths	Decimal PV
3	Whole Number Place Value - Transition to V2.0 - PS: volume, shape, time	Chance Week - PV	Olympic Maths	Money Unit
4		Time/Measurement	Multiplicative PS -Trays of Arrays - Division as Multiplication	
5				CAMP WEEK
6		Multiplicative (PS)/ Integrated Unit: time, shape, grid mapping		Multiplicative PS - Plocoroo or Boaler
7	Statistical Investigation Australia's Neighbours - Data, statistics, location, shape			Exploring Fraction Equivalence
8			Fractions & Decimals U&F	Triangle Inequality
9				Trapezium Pieces
10		Review: PV & Multiplication games		Fly That Flag
11				X-mas Maths (see term planner)

Scenario 2

- School Scenario
  - Independent school
  - Around 50 students
  - flexible learning groups
  - Play-based / VEYLDF
  - Project-based / VC1.0
- Planning practice
  - Staff autonomy
  - Overviews lost in transition
  - Maths workbook
  - Unit planning
- The Challenge
  - Staff pedagogical and content knowledge inconsistent
  - Embedding of numeracy into inquiry
  - Develop consistency across school
  - Develop teacher self-efficacy
  - Provide leadership & direction in Numeracy

Planning Overviews

Assessment F/S

PIVS 2025 Numeracy Overview

Phillip Island Village School

Cycle	1	2	3	4	5	6	7	8
Theme	*Connection*	*The Past*	*The Future*	*The World*	*Nature*	*Places*	*People*	*Community*
Presos	Establishing Maths Classroom Culture	(Number Sense) Place Value - conceptual understanding & procedural fluency	Big Idea for Group - conceptual understanding & procedural fluency	Big Idea for Group - problem solving & reasoning	Big Idea for Group - conceptual understanding & procedural fluency	Big Idea for Group - problem solving & reasoning	Big Idea for Group - conceptual understanding & procedural fluency	PIVS Village: Application and point of need learning E.g., measurement, shape, data, location, time, operations, budgeting…
	Number Sense/ Place Value - revision & fluency		Algebra (operations) - conceptual understanding & procedural fluency	Big Idea Above - conceptual understanding & procedural fluency	Algebra (operations) - conceptual understanding & procedural fluency	Big Idea Above - problem solving & reasoning (Horizon Problems)	Algebra (operations) - conceptual understanding & procedural fluency	
Provo-cations / Missions	Inquiry- based connections: Our Group - data, location, shape Time - calendars, reading time, duration of time, timetables, diaries	Inquiry- based connections: (Number Sense) Place Value - problem solving & reasoning Time - timelines	Inquiry- based connections: Measurement Shape Statistics Probability	Inquiry- based connections: Measurement Shape Statistics	Inquiry- based connections: Measurement Shape Statistics Probability	Inquiry- based connections: Measurement Shape Statistics	Inquiry- based connections: Measurement Shape Statistics Probability	
Provo-cations / Mentor Projects	Connections: problem solving & reasoning (Number, Algebra, Space, Measurement, Statistics, Probability) *planned term by term*							
	Cross-curriculum connections							

Planning Overviews

Assessment F/S

PIVS 2025 Numeracy Overview 3/4

Phillip Island Village School

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Theme	*Connection*	*The Past*	*The Future*	*The World*	*Nature*	*Places*	*People*	*Community*
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	Number Sense/ Place Value - revision & fluency		Algebra (operations) - conceptual understanding & procedural fluency	equiPartitioning - conceptual understanding & procedural fluency	Algebra (operations) - conceptual understanding & procedural fluency	equiPartitioning - problem solving & reasoning (Horizon Problems)	Algebra (operations) - conceptual understanding & procedural fluency	
Missions	Inquiry- based connections: Our Group - data, location, shape Time - calendars, reading time, duration of time, timetables, diaries	Inquiry- based connections: (Number Sense) Place Value - problem solving & reasoning Time - timelines	Inquiry- based connections: Measurement Shape Statistics Probability	Inquiry- based connections: Measurement Shape Statistics	Inquiry- based connections: Measurement Shape Statistics Probability	Inquiry- based connections: Measurement Shape Statistics	Inquiry- based connections: Measurement Shape Statistics Probability	
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School Planning Cycle

Yearly Planning

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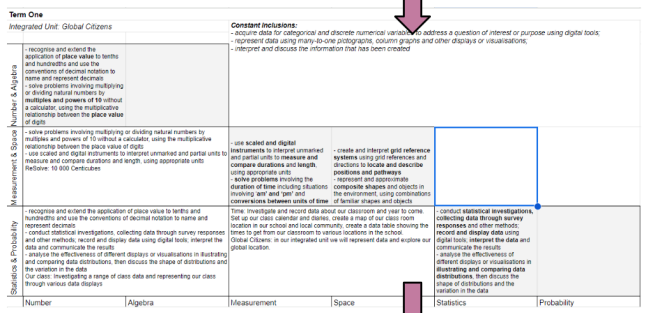

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Year Level Teams

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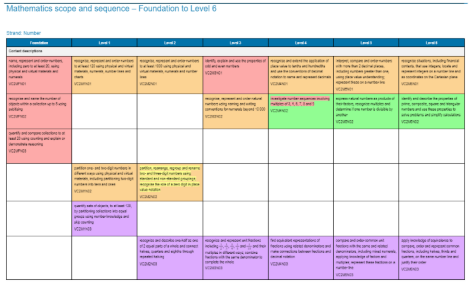

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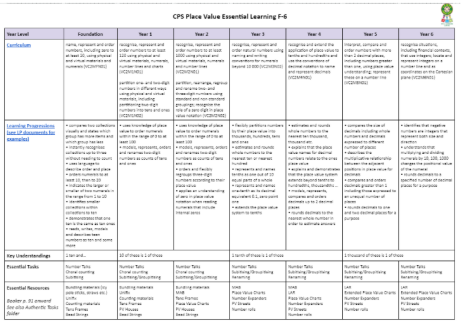

Maths Team

Summary

Mathematics Curriculum 2.0 lends itself to making mathematical connections

Professor Di Siemon's planning matrix helps find the connections in the mathematics curriculum

Good quality resources & collaborative planning develop teacher content knowledge and self-efficacy

Annual overviews guide term and sequence planners

Be intentional with overviews

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