Saltwater P-9 College

Explicit teaching in numeracy aligned with VTLM 2.0

School context

Demographics and Structure: 2200 students and 210 staff across two campuses, with ongoing building projects and a transition of Years 7-9 to the Coaching Parade Campus.

Individualised Learning Support: Established systems facilitate individualised learning despite logistical challenges.

Leadership Structure: Assistant Principals oversee year-level cohorts of 200-250 students and lead key improvement strategies focused on literacy and numeracy.

Coaching Model: Leading Teachers trained in Student Centred Coaching collaborate with the Director of Teaching and Learning to ensure alignment with AIP goals.

Numeracy Leadership: David Vivoda leads primary numeracy, Joe Doyle leads secondary numeracy, with support from our critical friends Carmel O'Beirne and Margherita Breed.

Session overview – Key q's

1. What are some highly effective explicit teaching practices in Numeracy?

2. How does an explicit instructional model align with the VTLM 2.0?

3. What strategic actions can support whole school implementation?

Explicit teaching in numeracy

Turn & talk

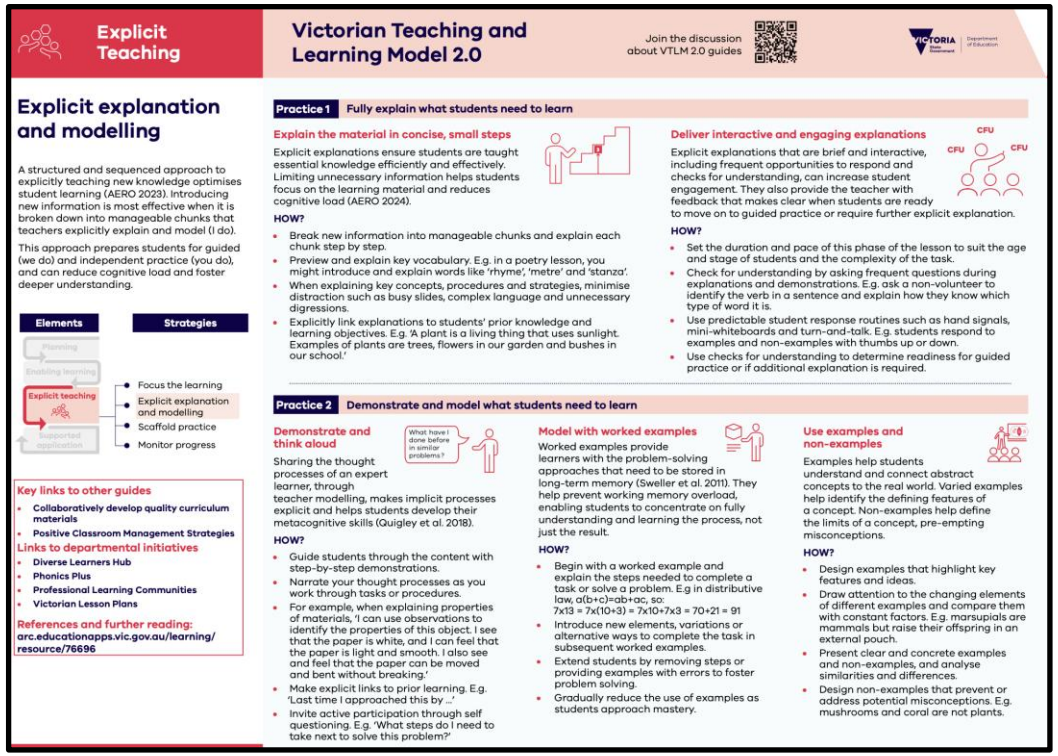
You walk into a classroom at a school where students are being explicitly taught a new skill.

‘In an ideal world’ what would you hope you see and hear the students and teacher doing?

Explicit teaching power plays

Some key practices to prioritise:

- Explain and model through worked examples
- Scaffold practice
- Check for understanding to monitor progress



Explicit Teaching

Victorian Teaching and Learning Model 2.0

Join the discussion about VTLM 2.0 guides

Explicit explanation and modelling

A structured and sequenced approach to explicitly teaching new knowledge optimises student learning (AERO 2023). Introducing new information is most effective when it is broken down into manageable chunks that teachers explicitly explain and model (I do).

This approach prepares students for guided (we do) and independent practice (you do), and can reduce cognitive load and foster deeper understanding.

Elements | **Strategies**

Planning
Enabling learning
Explicit teaching
Supported application

- Focus the learning
- Explicit explanation and modelling
- Scaffold practice
- Monitor progress

Key links to other guides

- Collaboratively develop quality curriculum materials
- Positive Classroom Management Strategies

Links to departmental initiatives

- Diverse Learners Hub
- Phonics Plus
- Professional Learning Communities
- Victorian Lesson Plans

References and further reading:
arc.educationapps.vic.gov.au/learning/resource/76696

Practice 1 Fully explain what students need to learn

Explain the material in concise, small steps

Explicit explanations ensure students are taught essential knowledge efficiently and effectively. Limiting unnecessary information helps students focus on the learning material and reduces cognitive load (AERO 2024).

HOW?

- Break new information into manageable chunks and explain each chunk step by step.
- Preview and explain key vocabulary. E.g. in a poetry lesson, you might introduce and explain words like 'rhyme', 'metre' and 'stanza'.
- When explaining key concepts, procedures and strategies, minimise distraction such as busy slides, complex language and unnecessary digressions.
- Explicitly link explanations to students' prior knowledge and learning objectives. E.g. 'A plant is a living thing that uses sunlight. Examples of plants are trees, flowers in our garden and bushes in our school.'

Deliver interactive and engaging explanations

CFU CFU CFU

Explicit explanations that are brief and interactive, including frequent opportunities to respond and checks for understanding, can increase student engagement. They also provide the teacher with feedback that makes clear when students are ready to move on to guided practice or require further explicit explanation.

HOW?

- Set the duration and pace of this phase of the lesson to suit the age and stage of students and the complexity of the task.
- Check for understanding by asking frequent questions during explanations and demonstrations. E.g. ask a non-volunteer to identify the verb in a sentence and explain how they know which type of word it is.
- Use predictable student response routines such as hand signals, mini-whiteboards and turn-and-talk. E.g. students respond to examples and non-examples with thumbs up or down.
- Use checks for understanding to determine readiness for guided practice or if additional explanation is required.

Practice 2 Demonstrate and model what students need to learn

Demonstrate and think aloud

What have I done before in similar problems?

Sharing the thought processes of an expert learner, through teacher modelling, makes implicit processes explicit and helps students develop their metacognitive skills (Quigley et al. 2018).

HOW?

- Guide students through the content with step-by-step demonstrations.
- Narrate your thought processes as you work through tasks or procedures.
- For example, when explaining properties of materials, 'I can use observations to identify the properties of this object. I see that the paper is white, and I can feel that the paper is light and smooth. I also see and feel that the paper can be moved and bent without breaking.'
- Make explicit links to prior learning. E.g. 'Last time I approached this by ...'
- Invite active participation through self questioning. E.g. 'What steps do I need to take next to solve this problem?'

Model with worked examples

Worked examples provide learners with the problem-solving approaches that need to be stored in long-term memory (Sweller et al. 2011). They help prevent working memory overload, enabling students to concentrate on fully understanding and learning the process, not just the result.

HOW?

- Begin with a worked example and explain the steps needed to complete a task or solve a problem. E.g in distributive law, $a(b+c)=ab+ac$, so:
  $7x13 = 7x(10+3) = 7x10+7x3 = 70+21 = 91$
- Introduce new elements, variations or alternative ways to complete the task in subsequent worked examples.
- Extend students by removing steps or providing examples with errors to foster problem solving.
- Gradually reduce the use of examples as students approach mastery.

Use examples and non-examples

Examples help students understand and connect abstract concepts to the real world. Varied examples help identify the defining features of a concept. Non-examples help define the limits of a concept, pre-empting misconceptions.

HOW?

- Design examples that highlight key features and ideas.
- Draw attention to the changing elements of different examples and compare them with constant factors. E.g. marsupials are mammals but raise their offspring in an external pouch.
- Present clear and concrete examples and non-examples, and analyse similarities and differences.
- Design non-examples that prevent or address potential misconceptions. E.g. mushrooms and coral are not plants.

Example - Explicit teaching in action

Turn and talk

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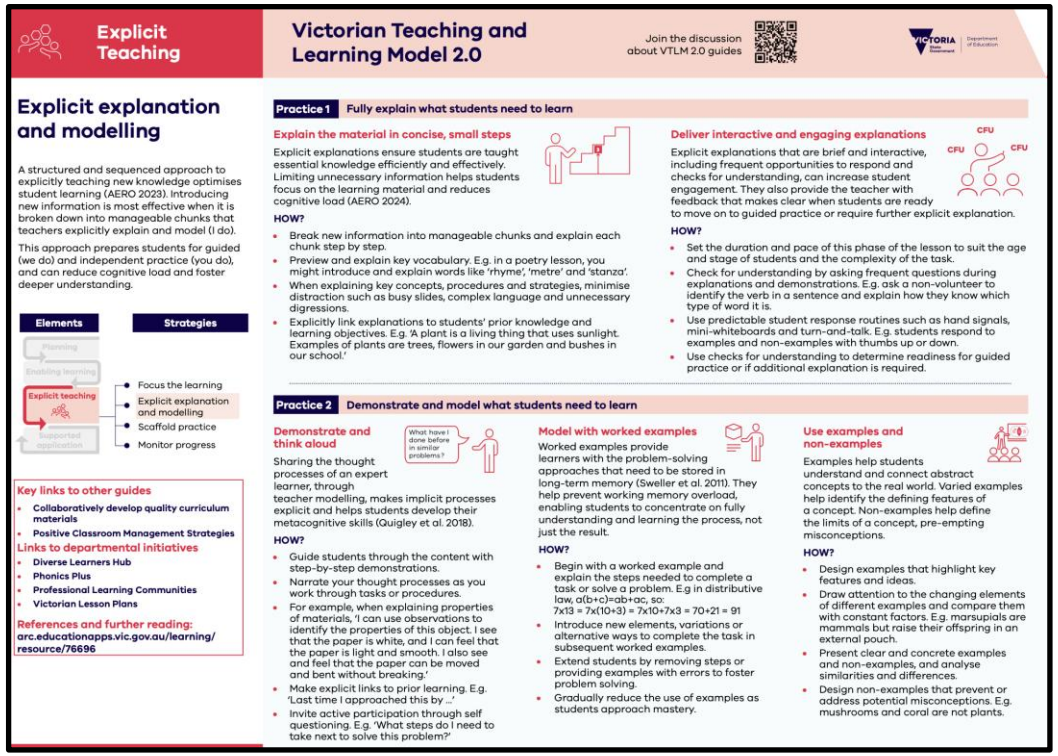

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Explicit Instructional Model

Alignment to VTLM 2.0

Elements of learning

Attention, focus and regulation

Refers to learning requiring students' attention and involving active engagement in a supportive and responsive learning-focused environment.

Knowledge and memory

Refers to students processing new information in their working memory, where they connect it with existing knowledge in long-term memory, building mental models that integrate and organise knowledge.

Retention and recall

Refers to working memory being able to hold a small amount of information at once (cognitive load). If overloaded, new knowledge won't be effectively stored in long-term memory.

Mastery and application

Refers to consistent practice and retrieval, allowing students to develop and demonstrate mastery by retaining knowledge and understanding how to apply it effectively.

Elements of teaching

Planning

Refers to the collaborative development of whole school teaching and learning programs that break down and sequence the knowledge to be taught and assessed. It also refers to the planning required to implement the curriculum into the classroom and to the school-wide enactment of a multi-tiered system of supports.

Enabling learning

Refers to the positive relationships, cultural responsiveness, classroom expectations and management techniques that teachers establish and use to foster student self-regulation and self-efficacy, and to create a learning-focused environment where the development and application of knowledge drives curiosity and creativity.

Explicit teaching

Refers to the evidence-based practices that manage the cognitive load of students, including activating prior knowledge, clearly stating learning objectives, providing explicit explanations of new knowledge, scaffolding learning and modelling practice, and using formative assessment and feedback to monitor progress towards mastery.

Supported application

Refers to the practices that maximise the consolidation and application of learning, including revisiting and reviewing knowledge, varying and spacing practice, organising knowledge and extending and challenging students as they move to mastery of new factual, conceptual and procedural knowledge.

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wisdom begins with wonder

Maths

Explicit Instructional Model

Learning Intention & Success Criteria

*Identify the skill that students are learning
*Monitor and evaluate throughout the lesson

Daily Review

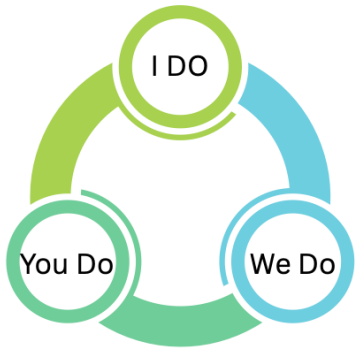
*Retrieval practice through a 'Do Now' activity

Warm-up

*Activate prior knowledge and mentally prepare students for the focus of the lesson

Gradual Release

*Explicit instruction (I do)
*Guided practice (We do)
*Independent practice (You do)



Reflection

*Consolidate learning
*Identify progress of LI/SC and next steps

Whole school implementation

Strategic actions

Implementation power plays

Deconstruct the practice for teachers

- Identify specific teacher and learner behaviours

Create a professional learning plan

- Utilise different mechanisms (whole school, small group and 1:1)
- Demonstrate something specific and have a focus for deliberate practice

Trial, refine and scale

- Trial with early adapters
- Refine approach and scale

Embrace ‘critical friends’

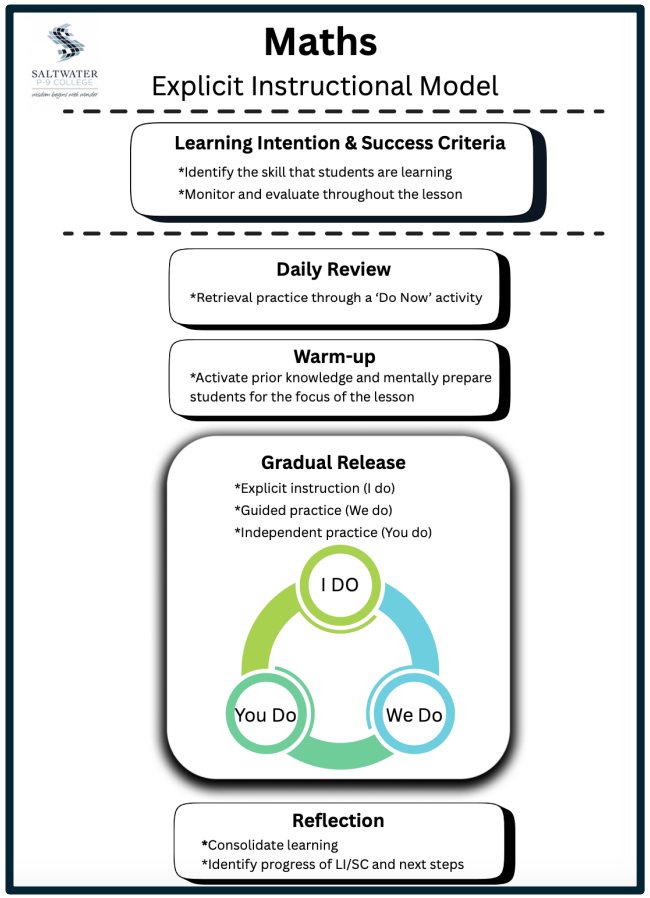
- Utilise others to critique and fill in the ‘blank spots’
- Key Improvement Strategy (KIS) Meetings

Deconstructing the practice

Critical Friend

Observation Template

Instructional Playbook



Explicit Teaching (I Do)

Teachers are:

- connecting new learning to prior knowledge
- using visual/concrete representations to support students' conceptual understandings (e.g. concreate materials, diagrams, number lines, colour coding etc.)
- demonstrating/modelling step-by-step worked examples
- using think-aloud strategy to help students understand the reasoning behind each step
- minimising cognitive load through concise instructions, breaking tasks into small steps, and emphasising key points
- unpacking mathematical vocabulary
- checking for understanding through 'hinge questions' before moving on

Guided Practice (We Do)

Students are:

- solving problems with teacher support, which gradually increase in complexity
- having the opportunity to work in pairs/small groups to scaffold their understanding
- showcasing reasoning for their responses (e.g. demonstrating steps, explanations, visual representations etc.)

Teachers are:

- scaffolding through worked examples (e.g. fading, alternation/problem pairs)
- using other general scaffolds to support understanding (e.g. prompting, guided questioning, sentence stems etc.)
- gradually reducing the level of scaffolding
- providing immediate feedback to address errors of misconceptions
- checking for understanding through 'hinge questions' before moving on

Independent Practice (You Do)

Students are:

- independently practising skills by solving problems that increase in complexity
- showcasing reasoning when solving problems (e.g. demonstrating steps, written explanations, visual representations etc.)
- checking and verifying their solutions
- accessing differentiated support through enabling prompts or extensions

Teachers are:

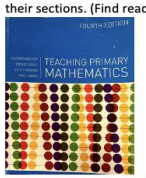
- monitoring student progress by roaming and conferencing student work
- providing immediate feedback to address errors and misconceptions
- conferencing with individuals/small groups to provide targeted support

Professional learning plan

Rapid Action Plan

Demonstrations

Evidence / Monitoring

Week	Focus	Year level Concept Focus	Pre-learning/Preparation	Activities	Follow-up Action/Evidence & Monitoring
1	I DO Think aloud and initial modelling (vocabulary)	Year 6 Fractions, Decimals, Percentage	***HITS- Worked Examples reading** *Provide staff with copy of the observation template and amended exemplar planning doc. Blank template 	1. Overview: of PL plan and discuss expectations/norms 2. Discussion about what team members are unsure of (then determine if it is a need of focus)-Team to engage in survey to initiate the course. 3. Transition: to weekly focus and discuss content from pre-learning (E.g ideas from reading) 4. Demonstrate: Explicit Teaching (I Do)- 5. Review: demonstration against focus practices from Explicit model observation 6. Clarify: follow-up action for participants, including any evidence required	*Teachers **conduct** explicit lesson which was planned and reflect on self evaluation. – Year 6 Week 3 *Teachers to complete a PMI to reflect on their experiences of the lesson
2	I DO Think aloud and initial modelling (vocabulary)	Year 6 Fractions, Decimals, Percentage	**Educational Empowerment Foundation** **Complete professional reading** 	1. Overview: of PL plan and discuss expectations/norms 2. Discussion about what team members are unsure of (then determine if it is a need of focus) 3. Demonstrate: Explicit Teaching (I Do)- David and James 4. Review: demonstration against focus practices from Explicit model observation 5. Clarify: follow-up action for participants, including any evidence required	1. Feedback from how the explicit teaching lessons went with a focus on the explicit 'I do' phase. **Team to share why specific vocabulary they used, how they linked to prior knowledge and the real world.** 2. Team to share strategies they used to engage students through a 'think aloud'.
3	I DO/ WE DO Shared modelled examples and or students exploring (Materials)	Year 6 Fractions, Decimals, Percentage	**Professional Reading** 1.Feedback from how the explicit teaching lessons went with a focus on the explicit 'I do' phase. **Team to share why specific vocabulary they used, how they linked to prior knowledge and the real world.** 2.Each member to read their assigned pages to then work with their partner during the meeting to create a display to explain their sections. (Find reading attached)  • Pages-146-186 (Jig-Saw style reading) Booker- make, name, record- Have staff used a grid where they explain their understanding of make, name, record	1. Recap: focus from previous week, including evidence collected 2. Transition: to new focus and discuss content from pre-learning (E.g ideas from reading) 3. Demonstrate: Explicit Teaching (I Do- material You Do))- David or James  4. Review: demonstration against focus practices from Explicit model 5. Clarify: follow-up action for participants, including any evidence required	*Teachers focus on implementation of practices with the use of materials *Teachers complete self-evaluation (using observation document) of their implementation of the 'Explicit Teaching' phase, including: - Ticking elements they think they are implementing well - Identifying elements they still want to improve on *Teachers to reflect on modelled strategies they used within the class (materials as a core focus). TBC Example to use

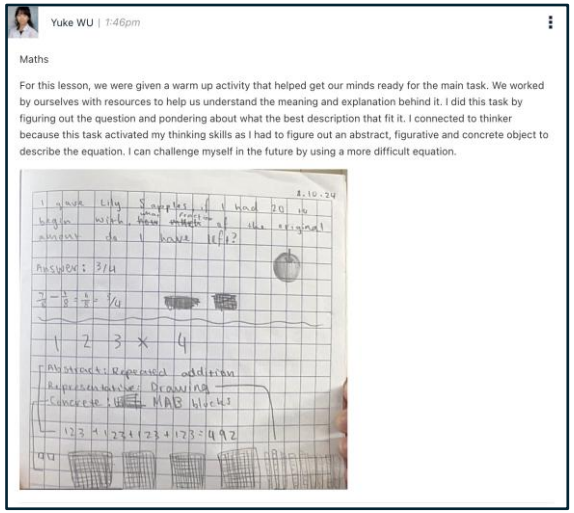
Professional learning plan

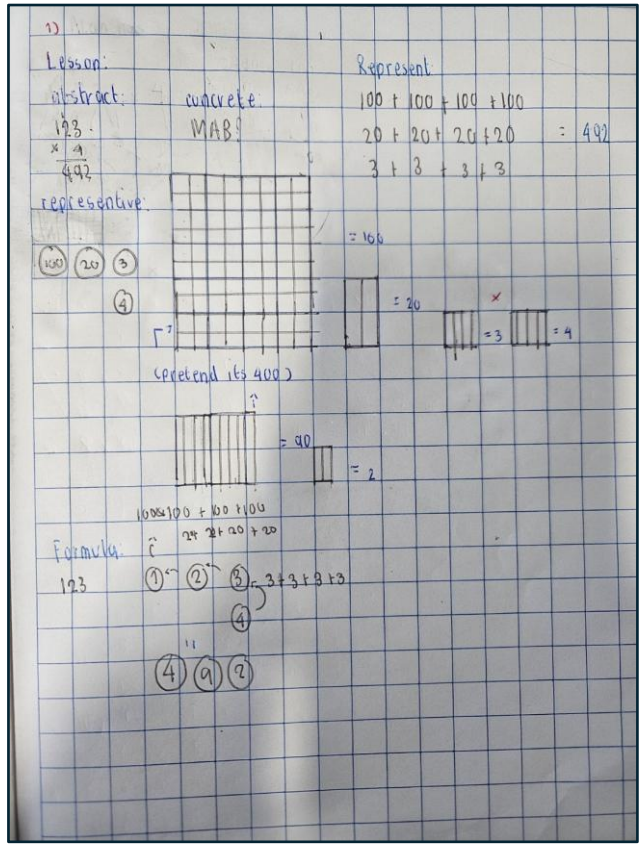
Rapid Action Plan

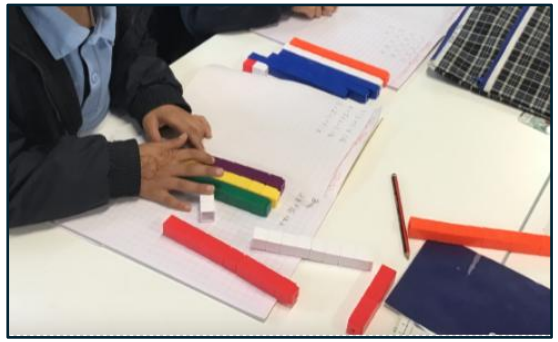
Demonstrations

Evidence / Monitoring

Explicit Teaching (I Do, We Do) (10-15 mins) Explicit teaching that is teacher directed and working with students.	Deliberate sequence of practice: 1. Connect the learning (I do) 2. Explicit teacher modelling (I do) 3. Connect to the vocabulary (I do/We do) 4. Share modelled examples and clarify questions (We do) 5. Link to the learning (We do) Teacher makes connections with the content linking to: • The real world • Previous learning Teacher explicitly teaches students by: • Connect to models (resources and materials) • Demonstrate thinking aloud (reasoning) • Probe questions to deepen learning and check for understanding • Work with student/s to model to the class (scaffolded) • Encourage students to ask clarifying questions Linking mini lesson to the independent task: • Use a check for understanding strategy (clarifying questions) • Explain the independent task Revisit structure of an explicit lesson (independent task/reflection)	This is a new concept started today. Explicit Teacher modelled how to measure (I do) using Unifix cubes. She initially measured and included spaces between the cubes Used Unifix to incorrectly model measuring and then asked the students to tell her if she measured correctly. She asked students to turn and talk and then to tell her if her measuring was good. The teacher then stuck the four Unifix together and then asked the students is this now the correct way to measure the book. And then asked the students if this was now correct. Teacher then asked if a student could come and finish the measurement. A student was selected and to come and complete the measurement.  Again, the teacher asked, "is this correct?" Students gave their reasoning to the class. Teacher then did another measurement and deliberately added an extra one. And then posed the same question to the students, "Is this correct now, did I measure correctly?" Teacher asked students, "So when I am measuring what do I need to remember?" Students where then instructed to measure their maths book using the Unifix cubes Students were all asked to get a pencil from their table and	Students' responses, "Not correctly measured because the Unifix cubes had spaces and we can't have spaces."  Students were watching and answering questions related to the spaces. Eg "Have I measured correctly?" Students discussed with each other the example measurement. After teacher put the four cubes together students were asked if this was correct. They then replied, "No because you haven't gone to the end of the book, so you need to add more. Students responded by saying that she needed to take off one as it went over the book's length. Students replied to the teacher clarification a question about what they need to remember by saying the following 2 things 1. No spaces 2. Need to go from one end to the other end. Students all measured their pencil using







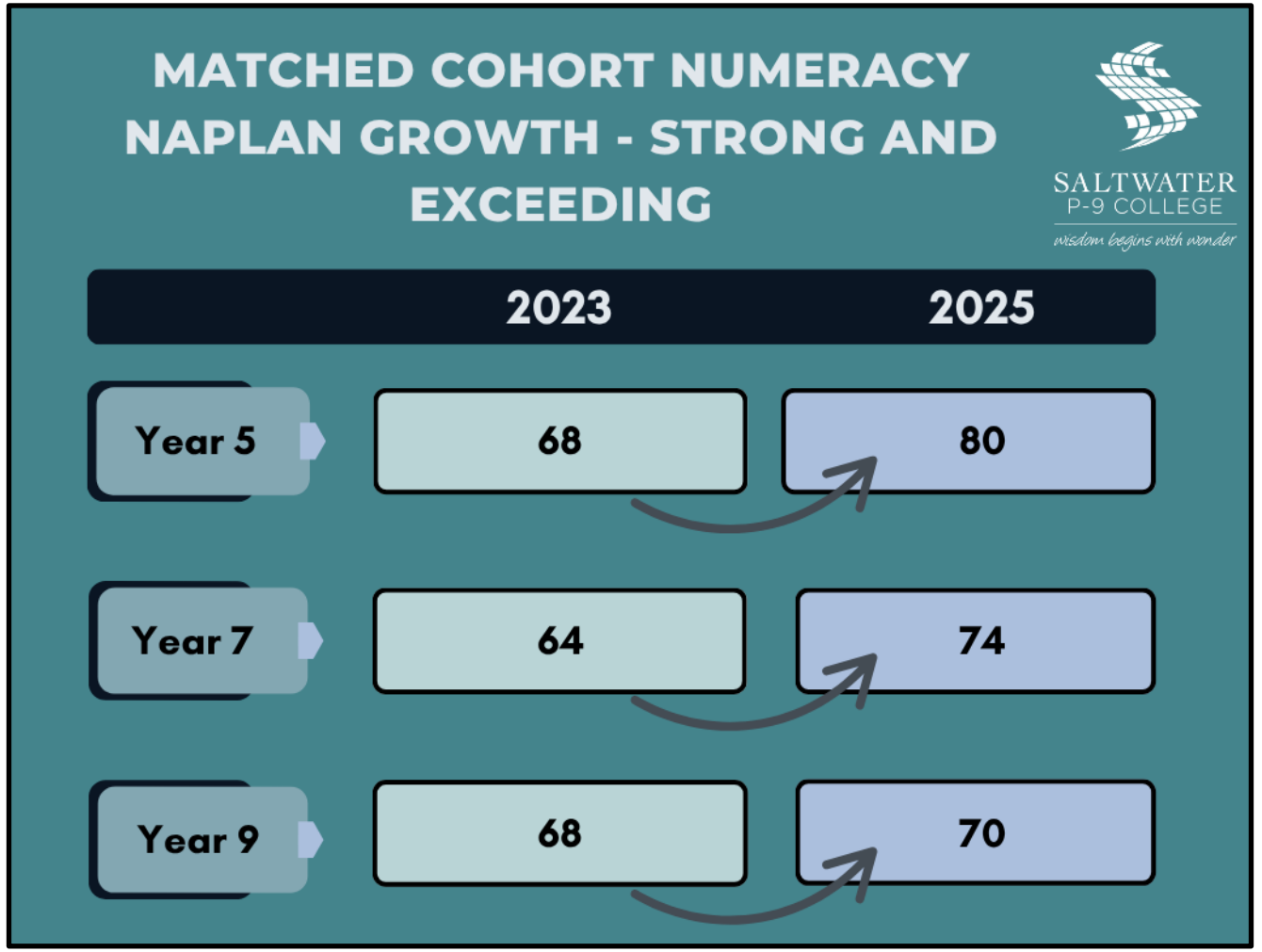
Discussion

1. Could any of the following be helpful in your context?

- Upskilling staff in smaller groups
- Trialling implementation before scaling
- Utilising ’critical friends’
- Identifying precise teacher and learner behaviours
- Developing an instructional playbook
- Rapid action planning
- Regular KIS meetings

2. What is 1-2 actions you could consider and trial?

Data snapshot



Reflection - Key questions

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3. What strategic actions can support whole school implementation?

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