



# The Wilkie Way

## Newsletter September 2024

[www.wilkieway.co.nz](http://www.wilkieway.co.nz)

### Teaching Guidance in the refreshed curriculum

#### A mastery structured approach which includes explicit teaching

The mastery approach to teaching math is a pedagogical strategy designed to ensure that all students achieve a deep and thorough understanding of mathematical concepts.

Explicit teaching is a structured and systematic approach to instruction where the teacher clearly defines and demonstrates what students need to learn.

#### Structured Curriculum

**Coherent Progression:** The curriculum is structured to build knowledge incrementally, ensuring that each new concept builds on previous learning in a logical sequence. *(There is no one single sequence)*

**Interconnected Topics:** Emphasis is placed on making connections between different areas of mathematics to reinforce understanding and application. *(Students need help to make connections so keep looking for them.)*

#### Conceptual Understanding Before Procedural Fluency

**Deep Understanding:** Students first develop a deep understanding of the underlying concepts before moving on to procedural skills. *(Teachers need to ensure they have a deep conceptual knowledge of the mathematics - No standard algorithms without understanding)*

**Active Participation:** Engage students actively in the learning process through questioning, discussions, and interactive activities.

#### Formative Assessment and Feedback *(Dependent on teacher knowledge.)*

**Feedback:** Constructive feedback is provided to guide students in their learning process, helping them to understand mistakes and refine their skills.

**Formative Assessment:** Ongoing assessments help teachers gauge student understanding and adjust instruction accordingly.

#### Clear and Simple Language

**Accessible Explanations:** Use clear, simple language to explain concepts. Avoid jargon or overly complex explanations that might confuse students.

**Concrete Examples:** Provide concrete examples and practical applications to make abstract concepts more understandable.

#### Direct Instruction

**Modeling:** The teacher demonstrates the skill or concept step-by-step. *(using representative words and symbols)*

**Think Aloud:** Teachers should use “think-aloud” strategies to show their thought process, making their reasoning and problem-solving visible to students.

#### Guided Practice

**Supportive Practice:** Students practice the new skill or concept with teacher support. During this phase, the teacher provides immediate feedback and helps students correct mistakes in their thinking.

**Interactive Engagement:** Teachers might work through problems together with the class, encouraging students to contribute and ask questions.

## Independent Practice

**Autonomous Application:** Students practice the skill or concept independently to solidify their understanding. The teacher monitors progress and provides assistance as needed.

**Varied Practice:** Providing a variety of practice problems helps reinforce learning and applying the skill in different contexts. *(This needs to occur over time - see review & retention)*

## Differentiation, Support and Scaffolding (see next page)

**Gradual Release:** The teacher gradually reduces support as students become more proficient. This might start with a high level of teacher involvement and move towards more student independence.

**Support Structures:** While all students work towards the same learning goals, differentiated instruction is used to provide additional support where needed. This might include extra practice, visual aids, prompts, and cues or modified tasks. Supported learning may be needed to gradually build students' confidence.

**Enrichment:** For students who grasp concepts quickly, enrichment activities provide opportunities for deeper exploration. *(All students should have the opportunity for enrichment activities but some may require more scaffolding than others)*

## Collaborative Learning

**Peer Interaction:** Students often work in groups or pairs to discuss and solve problems, which can deepen their understanding through collaboration and explanation.

**Classroom Environment:** A supportive classroom environment encourages students to ask questions, share ideas, and learn from each other.

## Review and Reinforcement

**Regular Review:** Periodically review previously taught concepts to reinforce learning and ensure retention.

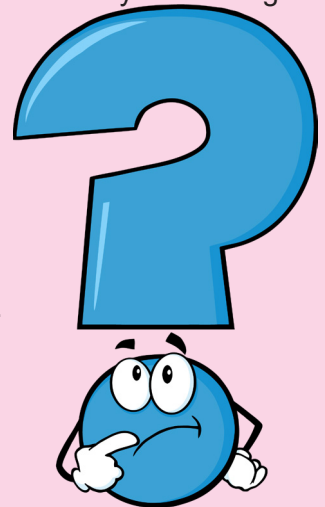
**Reinforcement Activities:** Use reinforcement activities and practice to help students consolidate their knowledge and skills

## So where does problem solving fit in to the refreshed curriculum?

I can't see that there is anything contentious in the guidelines for teaching mathematics. Many teachers are already doing some if not all of the recommended guidance. We must be careful not to swing the pendulum wildly in the vain hope of finding a magic bullet. We know there is a wide variety of learning styles and one size will never fit all. As teachers we must continually add to our kete of teaching approaches so we can pick and choose the one that will work for that student and for that concept. Sometimes it takes teaching the same concept through a number of different approaches as well as different activities before the student "gets it"

An idea of the mastery approach is that the student must be proficient with the concept before moving on is something I struggle with. Many concepts develop over time and depth of understanding depends on the knowledge that you have. The idea of "ticking off" a concept as learnt goes against the idea of developing a concept of for example commutativity. Knowledge and skills can be learnt but proficiency and depth of understanding will also develop over time given the necessary time to practice and apply in a variety of different situations

Deep learning does not happen in one lesson and I am always reminded of my 11 year old daughter's response when I asked her what she had learnt at school on a particular day.



**“How do I know if I have learnt anything at all, until I need to use it again.”**

When talking to teachers in the UK who have been down the mastery route for the last 10+ years, they all said they virtually never had time to apply knowledge and skills and problem solving seldom occurred. Their maths time was taken up with direct teaching and review - teach - practice. (and these classes all had a learning assistant, one step up from a teacher aide.)

Problem solving should be embedded into the curriculum but,

- there is a place for explicit teaching
- there is a place for students to work collaboratively
- there is a place for students to work individually
- there is a place to think about the social context of our students, schools, and community

Lesson Type	When might I use it	Proficiencies Address
Direct Instruction	Delivering knowledge - whole class, group or individual Generally in situations where there is a right or wrong answer to closed questions. A WALT can be useful: e.g. We are learning to read an analogue clock.	Procedural fluency Conceptual understanding
Review – teach – practice	Checking on students recall of knowledge or a procedure. Generally with a selected group of students: <ul style="list-style-type: none"> <li>• based on a formative assessment (something you have noticed);</li> <li>• requested by students (managing own learning)</li> </ul>	Procedural fluency Conceptual understanding
Problem Based Learning	Mostly whole class with differentiated learning experiences Focus is on student thinking	Procedural fluency Conceptual understanding Problem solving Adaptive reasoning Productive disposition

## Differentiated Learning

Enabling and extending prompts are a tool to support differentiated learning experiences whilst allowing all students to learn mathematics through problem solving

**Enabling prompts** – to engage students who are not progressing on the original task, eg:

- a reduction in the number of steps,
- less complex numbers, or
- a variation in the representation involved in the task.

Importantly, these prompts do not tell the student how to proceed and are designed to re-engage them in the original task. Students need time for productive struggle

**Extending prompts** – to engage students who find the original task easy and are intended to elicit abstraction and generalisation of solutions.

It exposes these students to an additional task that is more challenging using similar mathematical reasoning

# New Resources for Wilkie Way Members

## Subscriptions purchased at the online store at [www.wilkieway.co.nz](http://www.wilkieway.co.nz)

Individual \$55 - paid via paypal

NZ School paid via invoice - complete form at online store

Under 30 Students \$60 + GST 30 to 100 students \$160+GST

101 - 300 students \$260 + GST 301- 500 students \$360 +GST

501 - 700 Students \$460 + GST 701+ Students \$560 + GST

Non NZ School \$660 - paid via paypal



The student resources are gradually being reorganised into phases with many more resources being added. This is a work in progress.

Reorganised so far:

<b>Addition and Subtraction:</b>	Folders: Basic Facts	Phase 1	Phase 2	Phase 3
<b>Fractions Decimals &amp; Percentages:</b>	Folders: Phase 1	Phase 2	Phase 3	Posters
<b>Numbers &amp; the Number System:</b>	Folders: Phase 1	Phase 2	Phase 3	
<b>Geometry:</b>	Folders Phase 1	Phase 2	Phase 3	



## The Wilkie Way Teacher Challenge



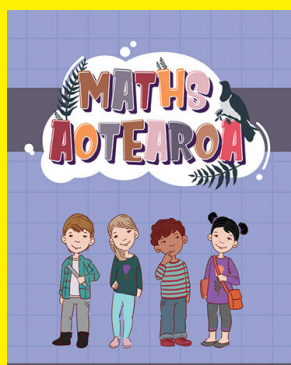
### Good as Gold

#### How much is in each bag?

$$\$125 + \text{bag} + \$40 = \$376 - \$28$$

$$\$300 \times \$8 \div \$12 = \$ \text{bag} \times 5$$

$$\$6 \times \$8 \times \$7 = \$4 \times \text{bag} \times 3$$



As yet we have no idea what teacher guides and workbooks are going to be given to schools, print or digital? **Edify, publishers of Maths Aotearoa** have been invited to tender. I have been making a match to the new curriculum content and the book content to year content match is very close. (8 teacher guides - one per year). The teaching guidance includes explicit teaching and guided practice with problem solving opportunities throughout. They were written specifically for NZ. The ideal outcome would be for MOE to allow schools to choose from endorsed texts (as they do in the UK and USA) Many schools have invested in various text based programmes that suit the needs of their school and this investment should not be "thrown out" because the MOE hands out a free resource.