



The Wilkie Way

Newsletter April 2026

www.wilkieway.co.nz

Beware The Science of Maths

Riding on the wave of the popular “Science of Reading” there is now a movement calling itself the Science of Maths.

Information for this newsletter is taken from *The Science of Maths Reconsidered: A critical examination of foundational claims.* by Kate Raymond (University of Oklahoma USA) and Melissa Gunter (Central Connecticut State University USA)

While there is much common ground between the “Science of Maths” (SOM) and current research in maths education most arguments made by SOM are based on scant evidence.

Areas of agreement: There is a need for high quality instruction, large scale research of instructional practices, and clear goals and direction for students.

SOM conclude that these goals can only be achieved through the use of direct instruction, they fail to demonstrate that inquiry, discovery, or other student-centred approaches cannot accomplish the same goals.

SOM claims it is a myth that students should not be exposed to procedural instruction until they have demonstrated adequate conceptual understanding.

This is a long standing debate within maths education - when in fact effective mathematics teaching focuses on the development of BOTH conceptual understanding and procedural fluency. Conceptual knowledge and procedural knowledge work in tandem and are often intertwined. To use an algorithm well, students have to have a strong foundation in understanding of numbers and place value. They need a strong foundation in understanding of what it means to add, subtract, multiply or divide before introducing an algorithm.

SOM claims it is a myth that inquiry learning is the best approach.

The argument given is very thin in that the view of inquiry based learning is interpreted as an approach that offers no support or guidance to students. Inquiry with support and scaffolding for student success is of benefit to students. There is little evidence to suggest that inquiry methods with support and scaffolding are inferior to explicit instruction methods.

Further myths claimed by SOM include:

- Teaching algorithms is harmful
- Productive Struggle is important
- Growth mindset increases achievement
- Executive training function is important
- Timed assessments cause maths anxiety



The emergence of SOM as a contemporary contributor to the discourse of mathematics education should be treated with caution especially when picked up by politicians, policy makers and the media. Their inclination to support SOM is probably because of its focus on procedural fluency (which is easily measured) rather than sense making, reasoning, or problem solving for which is harder to gather “hard data” as evidence of this occurs over time and in application outside of the school setting. (Becoming numerate!)

We should focus on the common ground:

Timed assessments: - be wary of timed assessments when used ineffectively in providing useless data, creating high stakes assessment practices, used to compare students, or used as a means of withholding something, e.g. morning tea break.

Explicit instruction: defined as “an instructional design and delivery approach characterized as unambiguous, structured, systematic and scaffolded.” This approach can equally be applied to inquiry, problem based learning or other student-centred approaches. However to add to the definition should be “responsive and flexible to individual learning needs.”

It is imperative that as educators we do our due diligence with all new ideas, examining each critically and always ask ourselves **why?**

We need to make sure we go beyond asking ourselves;

What do I need to teach? (the curriculum)

How am I going to teach it (which resource am I going to use?)



Tales from the classroom

Setting Achievable Objectives: Part 1

Tena Koutou Tamarilki ma, eh noho

We'll cross our legs and put our hands in our laps.

Your lap Eru, please not Courtney's.

That's a good boy.

James, would you like to come and sit down with everyone else?

No you wouldn't.

Well I would like you to come and sit down, here, right next to me. I need someone to hold something special for me.

Yes, you can be my special helper.

Now this morning children we are going to do some counting. How far do you think we can count?

To twenty, Odette, that would be really clever wouldn't it?

To fifty, wow Zane, super duper clever.

No William, I think we would run out of time if we try counting to a zillion, trillion billion and I don't want to miss my morning tea, do you?

Lets try counting to 20

One, two, three, four.....

Courtney, will you stop kissing Eru and join in counting with us.

I don't care if you are counting the kisses, Eru doesn't like it.

No you don't Eru.

Let's start again.

What's the matter Tiana?

You need to go to the toilet, That's the third time this morning. Can you wait until morning tea?

No you most definitely couldn't could you?

Did mummy pack you a spare pair in your bag?

What a thoughtful mummy.

Oh and a plastic bag for your wet ones!

What a very thoughtful mummy.

Well run along dear and change, yes Elsie can help you but don't be all day.

Are we ready to start counting?

William! Don't sit in the wet patch.

One, two three four five six, ,seven, eight, nine, ten, eleven, twelve, thirteen, fourteen, fifteen, sixteen, seventeen, eighteen, nineteen, twenty.

to be continued



Wilkie Way Membership - annual subscriptions

School membership - via invoice

Under 30 students \$65 + GST
 31 to 100 students \$180+GST
 101 - 300 students \$290 + GST
 301- 500 students \$400 +GST
 501 - 700 students \$520 + GST
 701+ students \$630 + GST
 Non NZ School \$750 - paid via paypal

Individual Membership

\$60.00
 payable via Paypal

Last term's graduated problems on the theme of dogs is now available in the members area with the solutions and notes also available.

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Problems with Dogs

Jip had 8 puppies. Some were black and some were white. How many of each colour could she have?

A tin of dog food costs \$3.00. Sam's dog eats 3 tins every week. How many tins does his dog eat in one year? How much does it cost to feed the dog for one year?

Mark takes his dog for a 35 minute walk. He left home at 5.35pm, what time did he get back from?

If he walks his dog every day, how long does he spend dog walking in a week? (Give your answer in hours and minutes)

Ratu has to feed 4 dogs. Two of the dogs eat 350g of dog, the other two eat 225g of dog roll every day.

If a dog roll weighs 1kg, how many dog rolls does Ratu have to buy each week?

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Problems with Dogs Solutions & Notes

Jip had 8 puppies. Some were black and some were white. How many of each colour could she have?
 Using the two coloured counters really helps students solve these types of problems and encourages them to be systematic and hopefully recognise the patterns.
 1 + 7 2 + 6 3 + 5 4 + 4 5 + 3 6 + 2 7 + 1
 As both colours need to be represented 0 + 7 isn't an option and with two colours the commutative pairs are necessary.

A tin of dog food costs \$3.00. Sam's dog eats 3 tins every week. How many tins does his dog eat in one year? How much does it cost to feed the dog for one year?
 Key knowledge required: 52 weeks = 1 year
 52×3 or $52 \times 32 = 52$ 156 tins of food every year
 156×3 or $156 \times 156 = 156$ \$468 to feed the dog for one year
 Representatives to solve: base 10 equipment

Mark takes his dog for a 35 minute walk. He left home at 5.35pm, what time did he get back from the walk?
 If he walks his dog every day, how long does he spend dog walking in a week? (Give your answer in hours and minutes)
 $5.35pm + 35 \text{ minutes} = 6.10pm$ He got back from his walk at 6.10pm
 Key knowledge: 7 days in one week
 $35 \times 7 = 245$ minutes

Ratu has to feed 4 dogs. Two of the dogs eat 350g of dog roll every day and the other two eat 225g of dog roll every day.
 If a dog roll weighs 1kg, how many dog rolls does Ratu have to buy each week?
 Step 1: How much dog roll does each pair of dogs eat in a week?
 $350 \times 2 \times 7 = 700 \times 7 = 4900g = 4.9kg$
 $225 \times 2 \times 7 = 450 \times 7 = 3150g = 3.15kg$
 Total dog roll eaten in one week is $4.9 + 3.15 = 8.05kg$
 8 dog rolls is not quite enough but for 50g you could manage at a pinch!
 On the safe side - buy 9 dog rolls.

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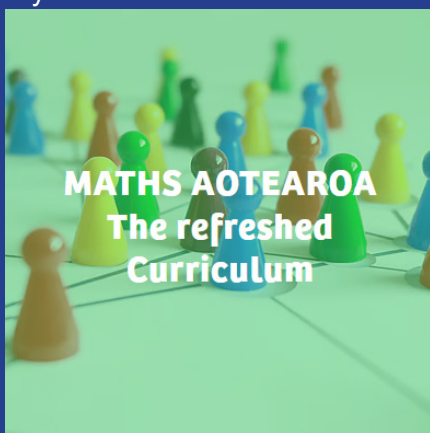
I am currently working on Maintenance Sheets 11 - 20 for years 3 - 8.

Maintenance sheets 1 - 10 for years 3 - 8 are already available by clicking on the Year Group or the picture of the corresponding Maths Aotearoa Book.

Maintenance means practice of the previous years learning not new learning.

Free to all website visitors:

If you follow this icon from the home page of wilkieWay.co.nz you will find links from the new maths curriculum to Maths Aotearoa. Maths Aotearoa is a structured maths scheme of work - (Before structured maths was a buzz word) that has been available first as Pearson Mathematics, (2000) then as Pearson Maths (2nd edition specifically aligned to the 2007 curriculum) and then Maths Aotearoa (3rd edition specifically aligned to the learning progressions)



As MOE erroneously believe a NZ company can't produce to the necessary scale to supply schools they have chosen not to fund a New Zealand product written for NZ teachers and students that is a close fit to the new curriculum. (It could have been made a perfect match).

Maths Aotearoa provides a resource that encourages mathematical thinking - logical, creative and critical thinking, all required to make our students able to function beyond the memorisation of mathematical knowledge. A knowledge rich curriculum has no value unless the knowledge is used - **NOW** in a student's life, not at some hyperthetical later date.

Join the Facebook group:

Wilkie Way & Maths Aotearoa - a place to share how you are using these resources and inspire other teachers or to ask questions about how you could use a resource.



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Problems with Bottled Water

Mum bought 12 bottles of water and shared them between her 3 children.

How many bottles of water did they have each?



The supermarket sold 1L bottles of water for \$3.50 and 3L bottles of water for \$8.50.

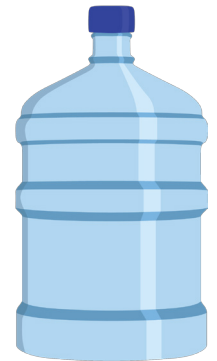
What is the most amount of water you could buy with \$50.



The Marae bought 35 3L bottles of water to add to the 19 3L bottles in the cupboard.

Last weekend they used 40% of the water.

How many full bottles of water do they have left at the Marae?



The school bought 120 bottles of water of 3 different brands for school camp. They bought twice as many Kiwi Blue as Tongariro and 12 less Pump than Tongariro.

How many bottles of each brand did they buy?

