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SMART (Specific, Measurable, Achievable, Relevant and Timely) Goals in mathematics = Students' Success

Dr. Jennifer Sze (she/her)

Acknowledgement of Country

I acknowledge the Wurundjeri Woi-wurrung people as the Traditional Custodians of the land on which La Trobe University Bundoora Campus stands. I pay my respects to their Elders past and present and remain committed to working together to care for this land.

Key Take-aways

- Growth mindset in mathematics believes intelligence and mathematics abilities are not fixed traits.
- Growth mindsets can be cultivated by positive cultural norms.
- The vital role of engaging students in meaningful discussions to achieve their goals.

“We teach who we are” (Palmer, 2019, p. 16)

I am a Mum, Teacher and Academic

Think Pair Share

List the common

barriers that your

learners experience.

Image Pinterest (2024)

Slido

How have you set SMART Goals for your students in your maths class?

I've gone from "Let's do Maths – YAH"

Image Sze (2024)

Image Pinterest (2024)

SMART GOALS IN MATHEMATICS

Jennifer Sze, The University of Melbourne

In the insightful podcast, *Numeracy Guide Level 3 to 8 Examples of how to use the HITS with a focus on developing students' numeracy*, Jennifer Bowden underscores the vital role of engaging students in meaningful discussions to ensure they not only comprehend but also can realistically achieve their set goals. Through these dialogues, teachers wield language strategically, fostering active engagement with learning objectives. This active participation extends to peer and self-assessment, enabling students to effectively monitor their progress and development.

Jen emphasised the collaborative creating of visual aids, displays, or 'I can' statements, as tangible benchmarks for individual success within the classroom. Such visual representations empower students to identify achieved goals and strategically plan next steps in the learning journey. Jen discussed the necessity of understanding students' behaviours, actions, and learning processes, advocating for a holistic assessment approach that encompasses all domains of learning. Bowden elucidates how these goal-setting practices seamlessly integrate into classroom dynamics and are adaptable across various subjects and environments, whether in specialist areas or within students' homes. This adaptability underscores the universality and practicality of the goal-setting framework (Buzza & Dol, 2015).

ELEMENTS OF SETTING GOALS

- Based on assessed student needs
- Goals are presented clearly so students know what they are intended to learn
- Focus on surface and/or deep learning
- Challenges students relative to their current mastery of the topic
- Links to explicit assessment criteria.

In a study by Bostwick et al. (2017), they discovered that growth mindset, self-based growth goals, and task-based growth goals were well represented by an underlying growth orientation factor. To ensure students achieve success in their learning in mathematics, teachers might want to consider the following reflective prompts:

- What are the key steps in setting effective numeracy goals?
- How can you ensure that the numeracy learning goals you set are clearly communicated to the students?
- How can you set realistic goals to challenge all students in your classroom?
- How do you encourage students to engage actively in planning goals?
- Explain why it is important to link numeracy goals to assessment.

PUTTING IT INTO ACTION

Referring to setting goals for students to achieve success in mathematics, I reflect on my time as a middle years literacy and numeracy support teacher, where I was responsible for Year 8-10 students, who were at risk of not completing their study due to academic performance well below the standard level. For context, these students came from a diverse cultural and religious backgrounds. My goals with these students was to form a trusting relationship and practise culturally responsible pedagogy (Howard, 2022). I was sensitive to the culture of my students and where possible, weaved stories from their respective countries into my teaching.

I guided the students in setting their precise daily learning objectives, with the overarching Specific, Measurable, Achievable, Relevant and Timely (SMART) goals of enriching their involvement and confidence in mathematics. By involving students in crafting their learning objectives, I empowered the class with a sense of ownership and agency over their educational journey (Sides & Cuevas, 2020). As the objectives evolved in clarity and specificity, I noticed the shift in students' attitudes and behaviours towards mathematics learning. The goal-setting approach did bolster students' commitment to achievement-oriented behaviour.

THE EFFECTS OF GOAL SETTING

Goal setting underpins the vital role of growth mindset as advocated by Professor Jo Boaler. Boaler's growth mindset in mathematics (2019) is based on the idea that intelligence and mathematical ability are not fixed traits.

These traits can be developed through careful intervention by teachers through effort and supportive learning environment. Literature has shown that growth mindset and setting goals in mathematics empowers students to develop their abilities and to achieve their fullest potential.

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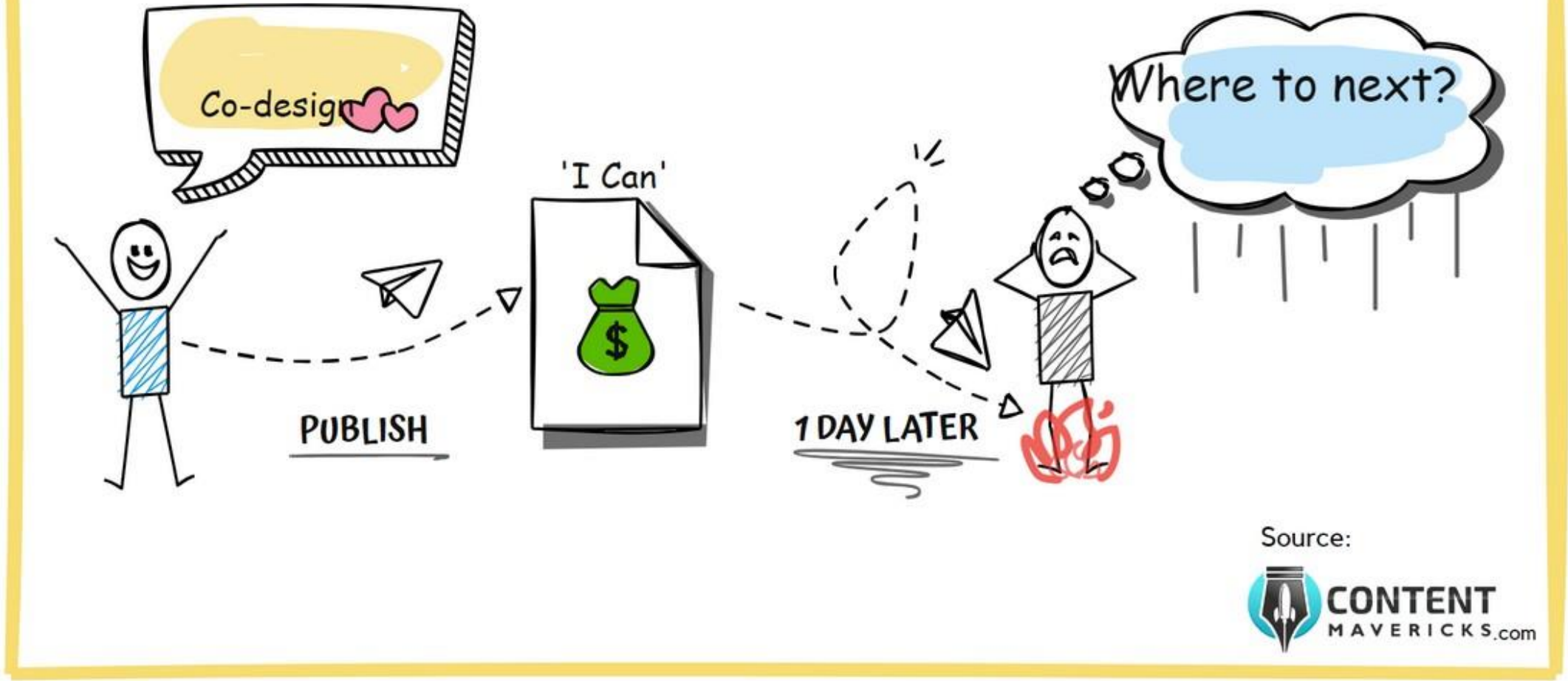
Listen to the podcast episode at: https://bit.ly/SMART-Goals-success

MAV's mathematics education consultants can work with your school to set SMART goals for your unique context. Reach out to our friendly team: primary@mavvic.edu.au or secondary@mavvic.edu.au.

(Sze, 2024). Smart Goals in Mathematics. *The Common Denominator*, Term 4, 2024 p.25

Image Sze (2024)

Setting meaningful goals (Sze & Bowden, 2024)



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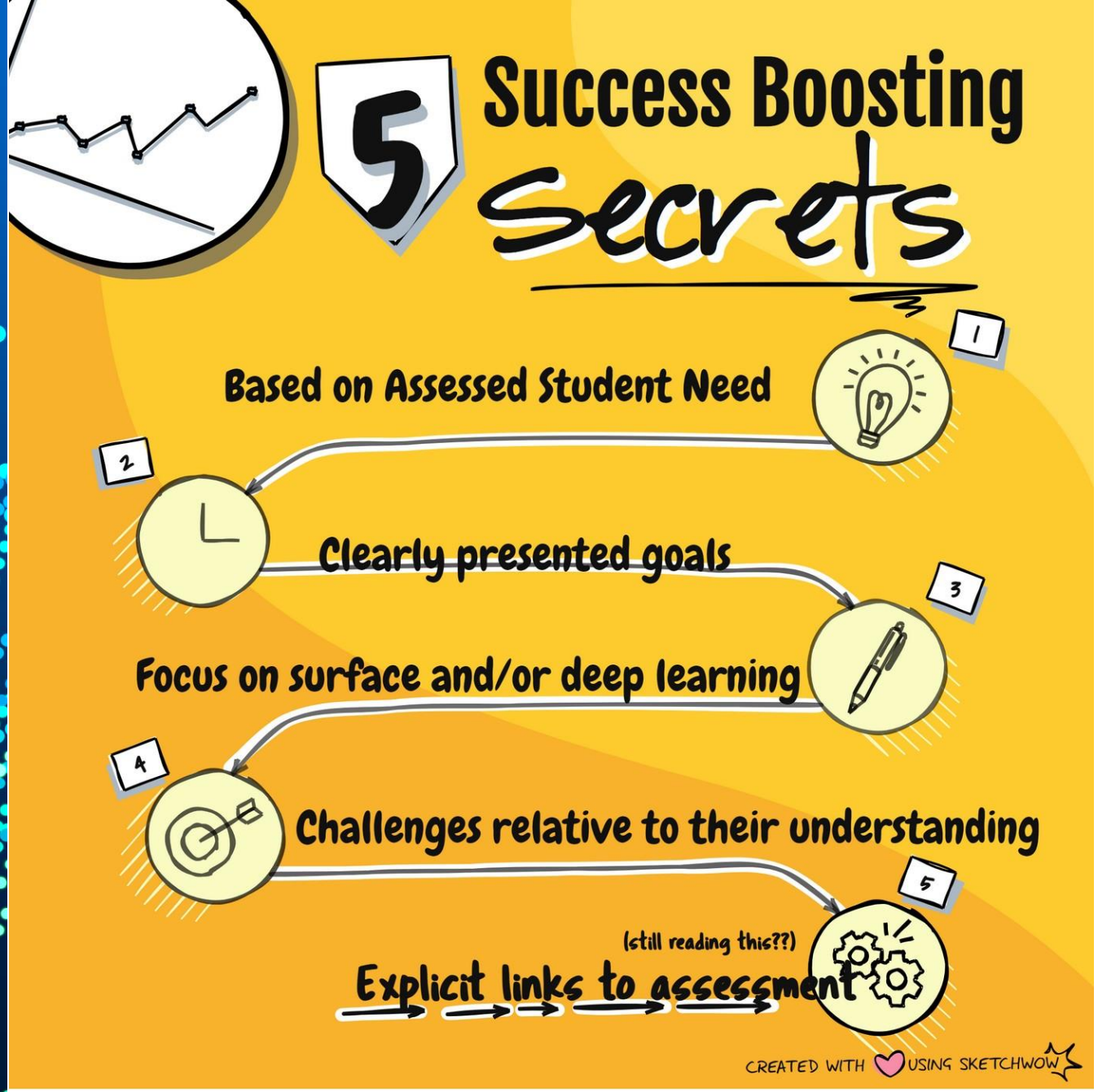

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Mindset and resilience (Boaler, 2024; 2019)

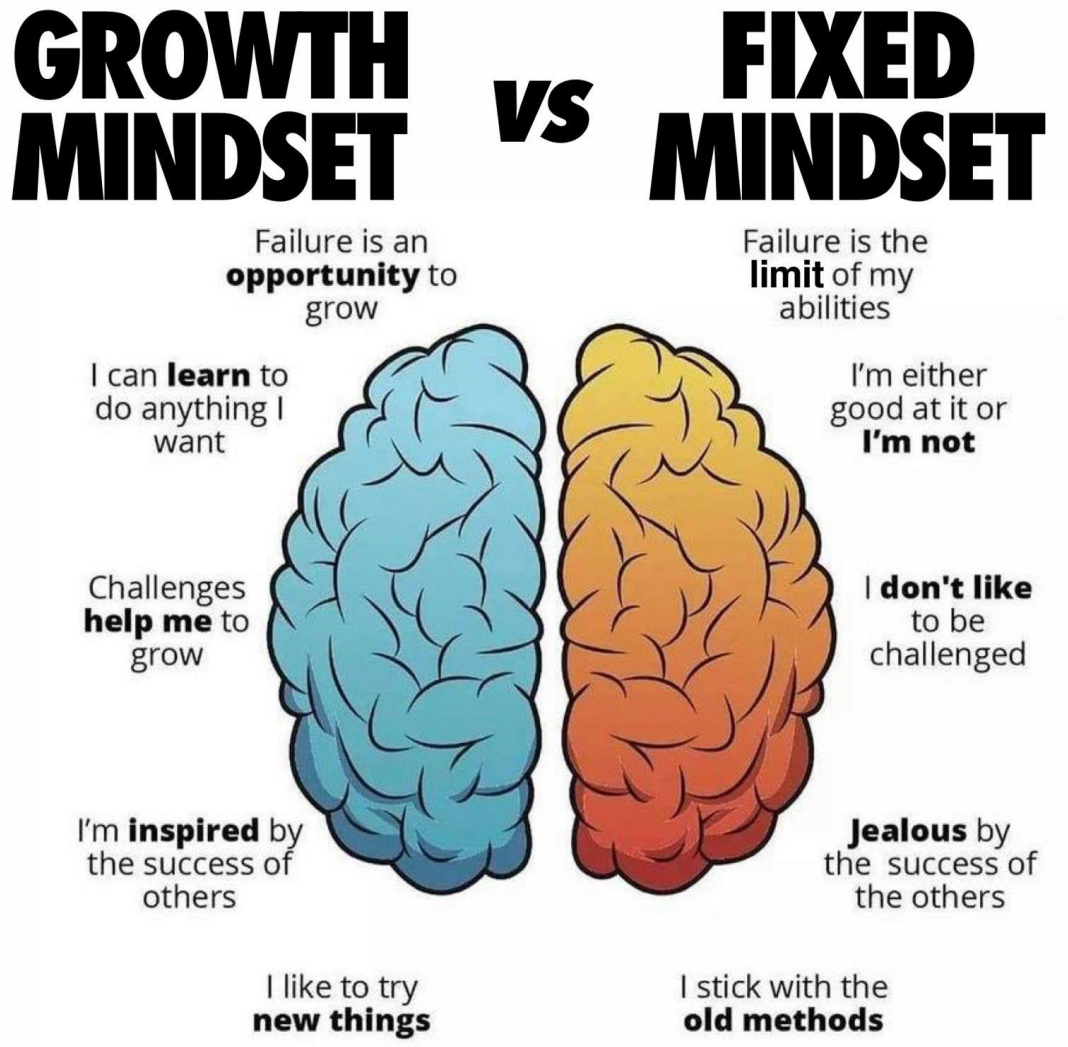


Image from YouCubed (2024)

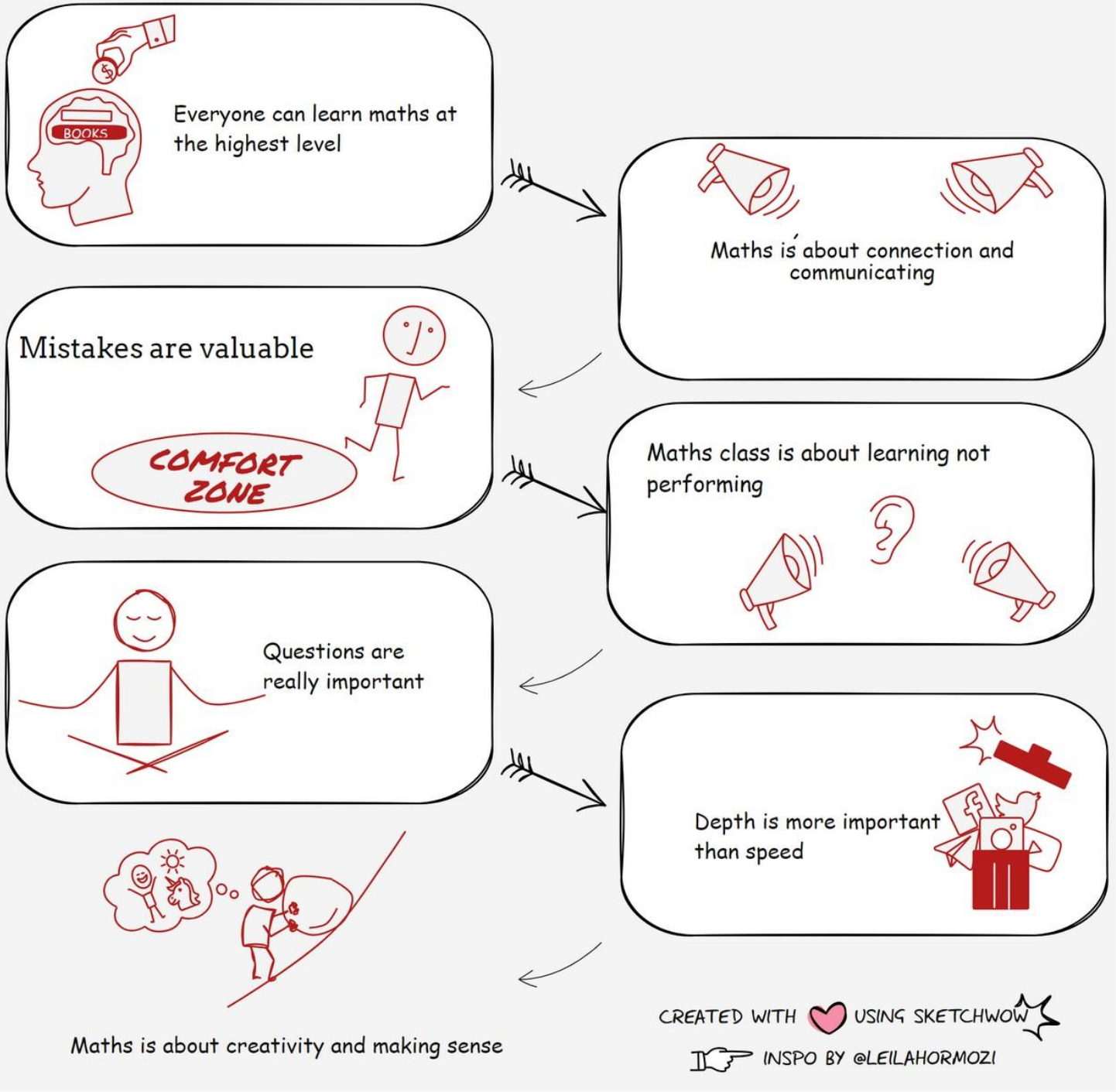


Image Sze (2024)

Attitudes (Li & Koch, 2017)

Maths Anxiety

Curiosity

Enjoyment

Image from www.judyhornigold.co.uk

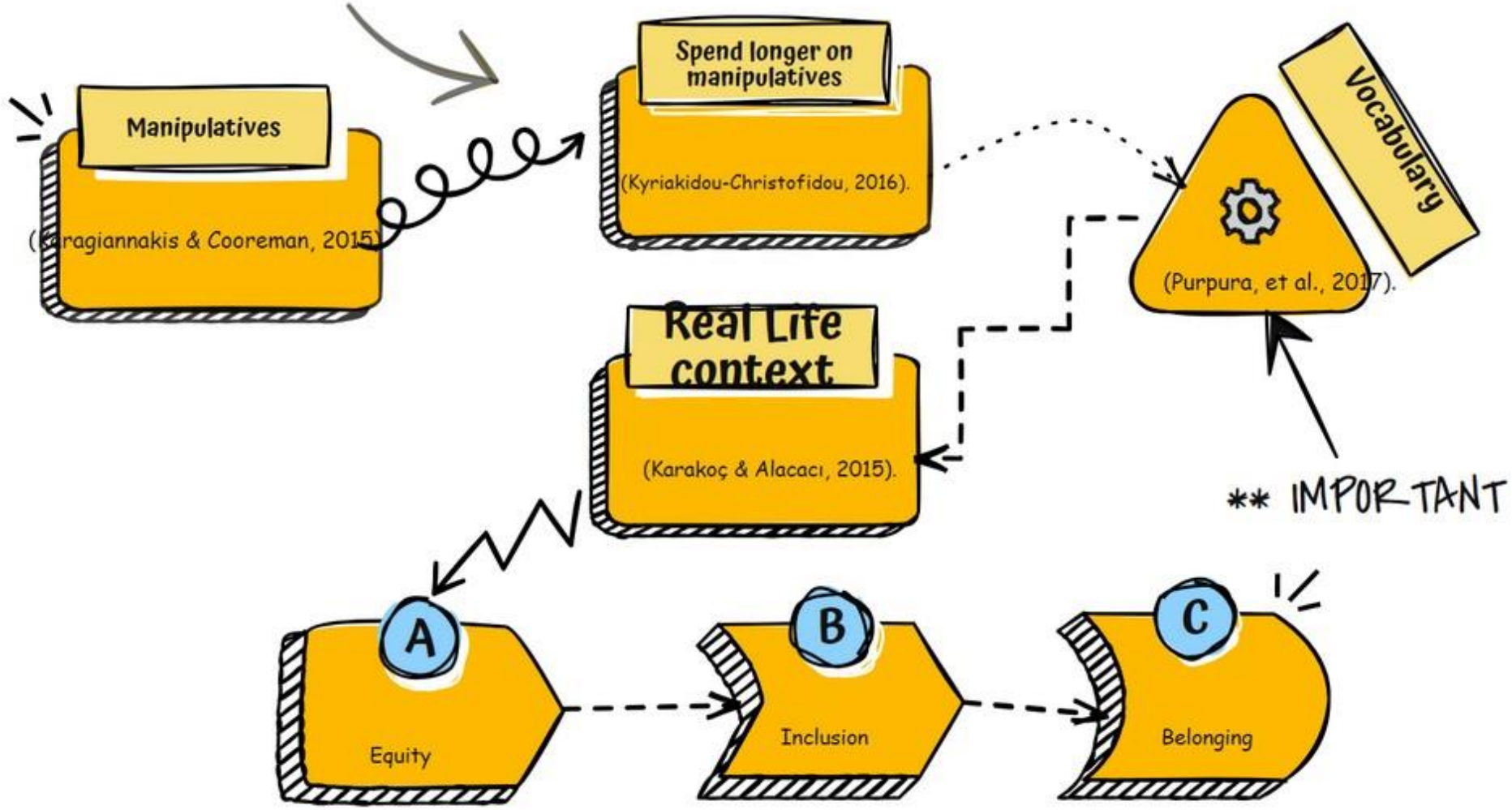
An ‘accidental’ secondary teacher

Image Sze (2024)

My MYLNS Room after TLC

Image Sze (2024)

Supporting Students with MLD



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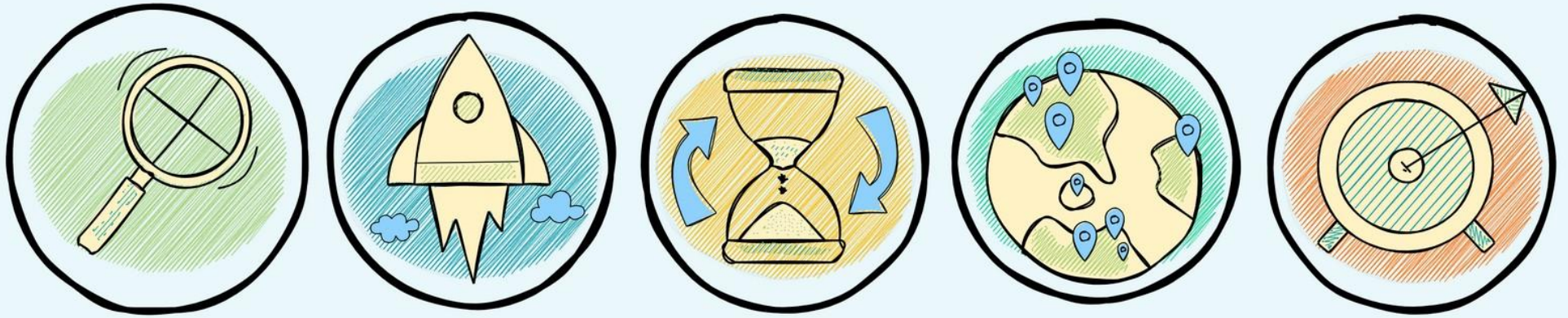
5 Singapore Maths and MLD



01

Number Sense

Mastery of number sense is the hallmark of Singapore maths.

02

'seeing maths'

Teaching maths using manipulatives (CPA/CRA)

03

Language of maths

Singapore maths encourages communication and collaboration among students

04

Connections & Finding Patterns

Using the Bar model to show students to find connections & finding patterns

05

Less reliance on procedures

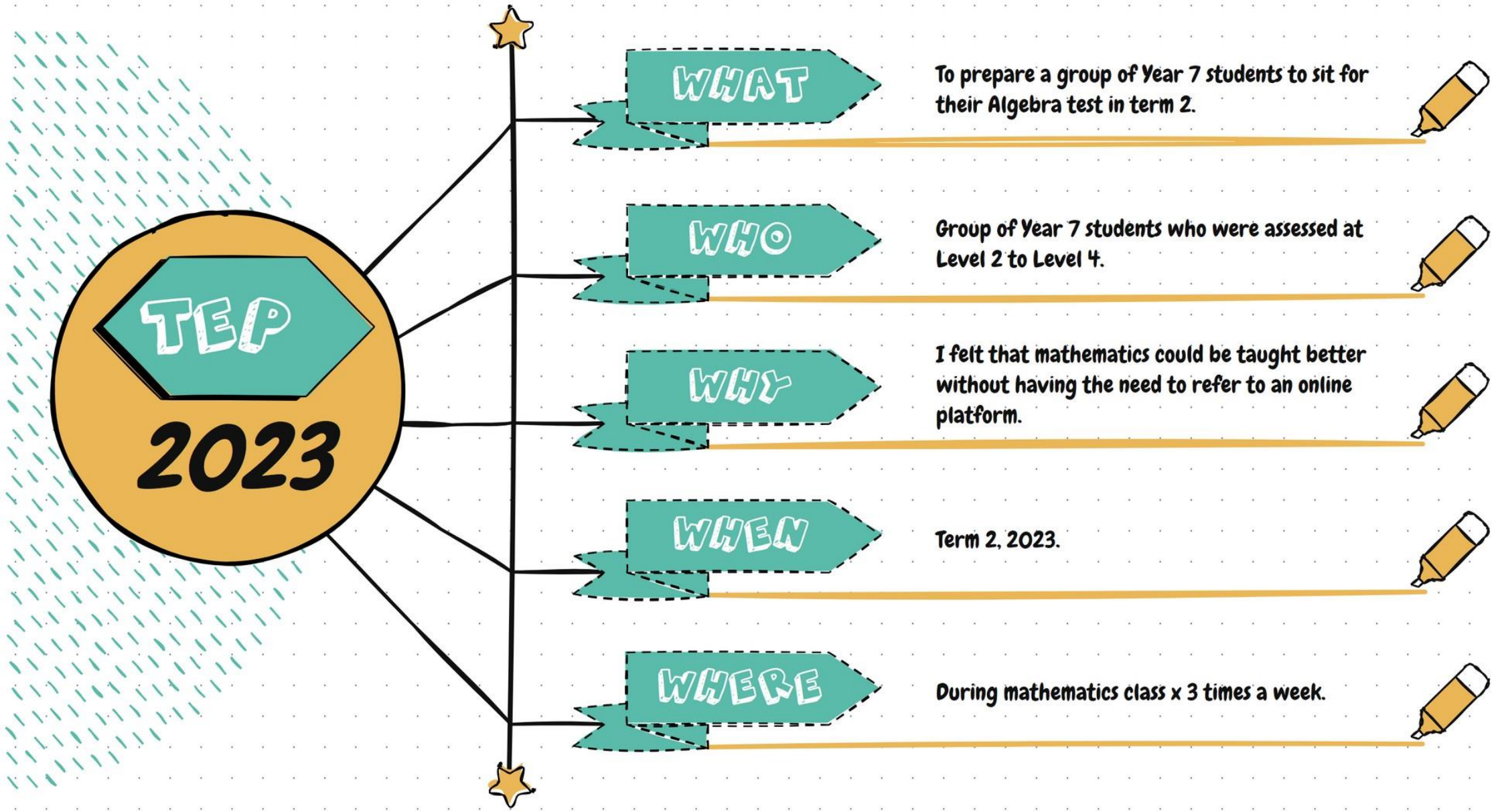
Students are encouraged to think about their own thinking.

Image (Sze, 2024)

Multisensory Manipulative-based Mathematics (Dyscalculia UK, 2024; Yoshimoto, 2024)

- Warm up – maths facts (fluency), number talk etc.
- Review – review of previously learned concepts, skills or operations.
- New concept
- Word problem
- Summary

Image (Sze, 2024)



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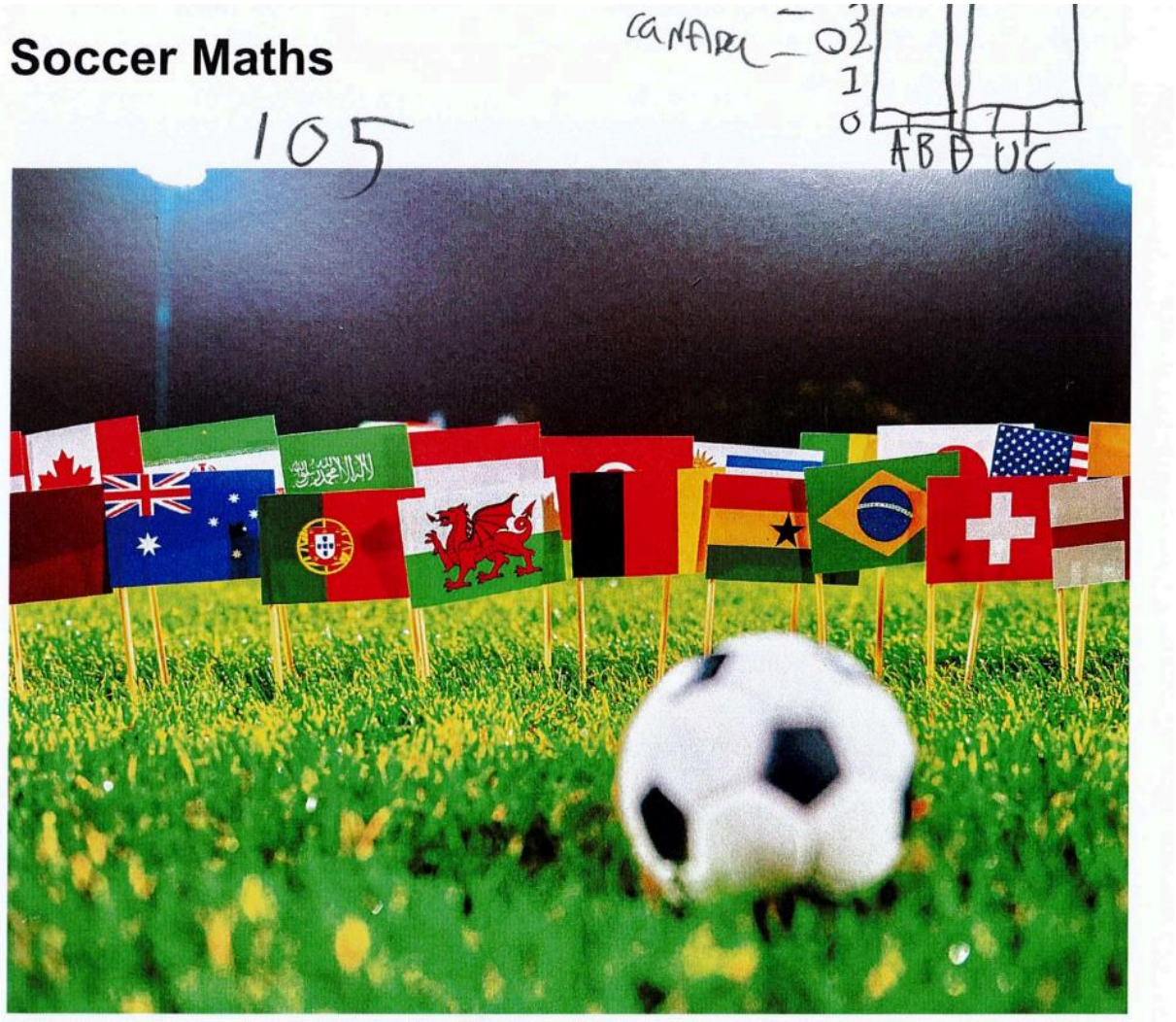
Linking goals to assessment (Boswick et al., 2017)

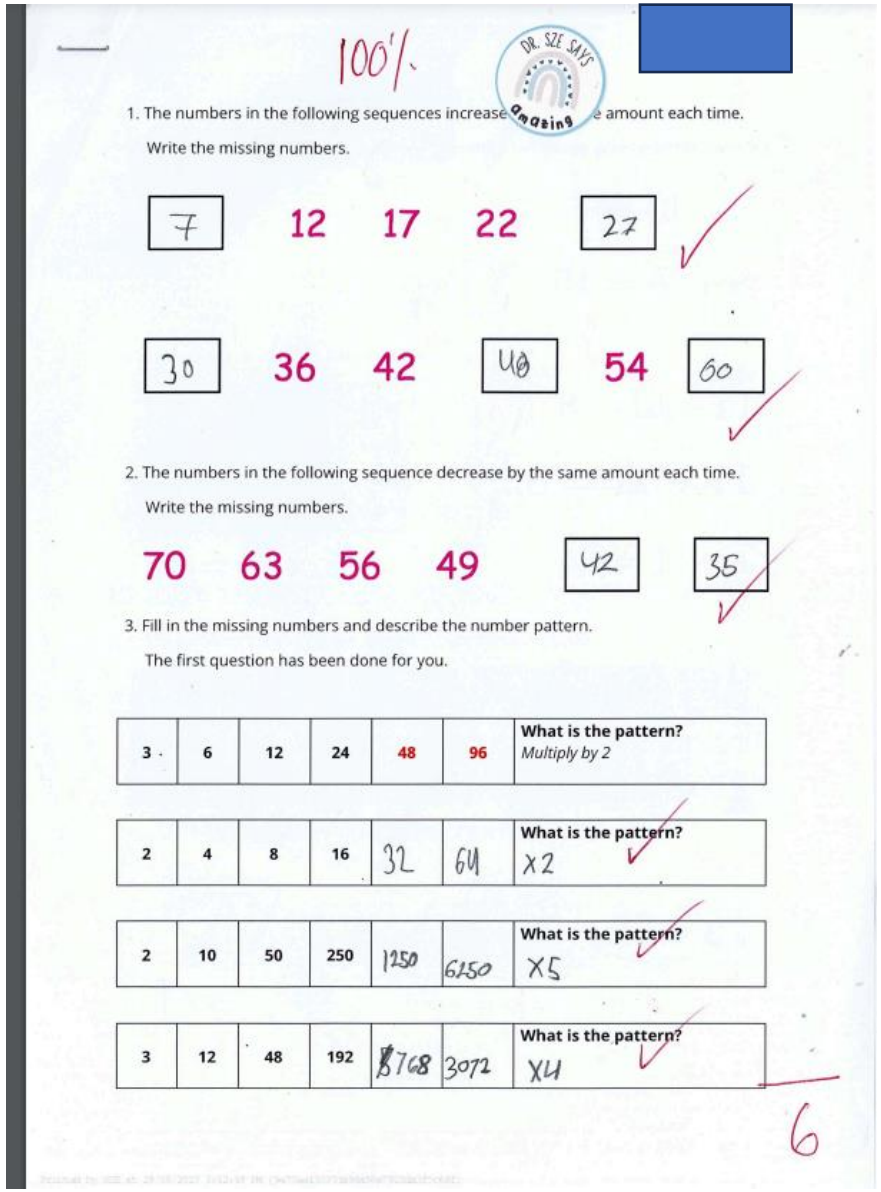


5 students assessed at Levels 2 to 4

Recognise and use rules that generate visually growing patterns and number patterns involving rational numbers (VC2M6A01)

Image Sze (2023)

Linking goals to assessment (Boswick et al., 2017)



100%

1. The numbers in the following sequences increase by the same amount each time.

Write the missing numbers.

7 12 17 22 27 ✓

30 36 42 48 54 60 ✓

2. The numbers in the following sequence decrease by the same amount each time.

Write the missing numbers.

70 63 56 49 42 35 ✓

3. Fill in the missing numbers and describe the number pattern.

The first question has been done for you.

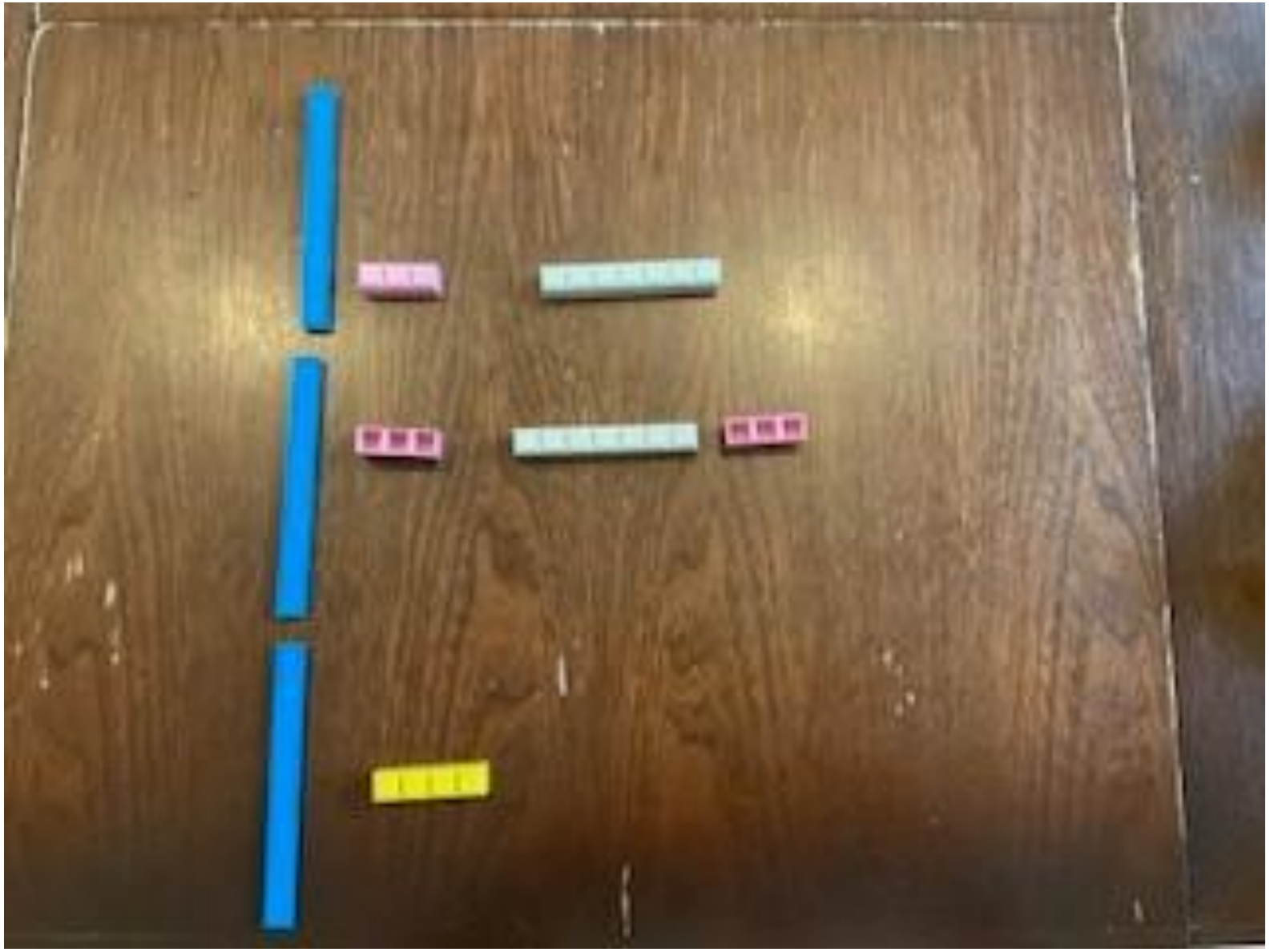
3	6	12	24	48	96	What is the pattern? *Multiply by 2*
2	4	8	16	32	64	What is the pattern? x2 ✓
2	10	50	250	1250	6250	What is the pattern? x5 ✓
3	12	48	192	768	3072	What is the pattern? x4 ✓

6

Recognise, describe and create additive patterns that increase or decrease by a constant amount, using numbers, shapes and objects, and identify missing elements in the pattern (VC2M2A01)

Image Sze (2023)

Teaching Algebra with manipulatives



Solving equations

X + 3 = 7

X + 3 – 3 = 7- 3

X = 4

Image Sze (2024)

Putting it into action

1. Please work together in your group on your case study student
2. Discuss how you can set SMART goals for the case study student
3. Share with the group

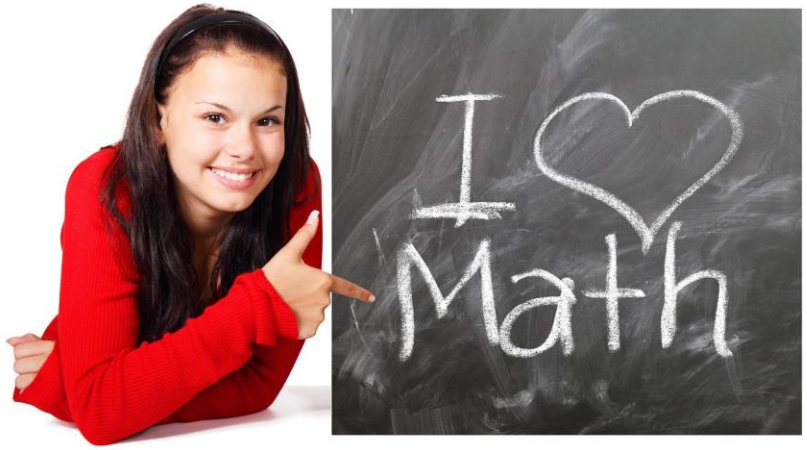


Image Shutterstock (2024)

Staying in touch

Please stay in touch with me and let me know what you are doing with your students in your maths class.

Dr. Jennifer Sze PhD

Lecturer in Learning Intervention | Dyslexia & Dyscalculia | Foundatio...

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Be in it to WIN!