CURRICULUM, PEDAGOGY AND BEYOND

THE MATHEMATICAL ASSOCIATION OF VICTORIA

MAV24 CONFERENCE

Keynote

Leveraging student learning progress, resources and practice

Leonie Anstey

Values and core beliefs

Moving from one way to hybrid pedagogies

Ref: G. Claxton: In *The Future of Teaching: And the Myths That Hold it Back* (2021)

A core value of CARE

Caring about mathematical proficiency

The proficiencies of Understanding, Fluency, Problem Solving and Reasoning are fundamental to learning mathematics and working mathematically … (VCAA website)

Caring using routines – thinking, reasoning, justification

Implement systems and structures in the classroom for students to respond using mathematical argument?

A core value of CARE

Caring for who our students are becoming as mathematical workers and thinkers in the world of THEIR future and not OUR past.

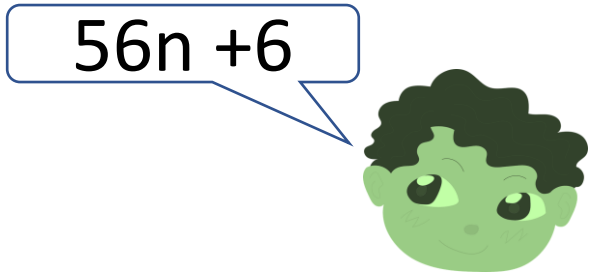
(Dr. Matt Sexton, Director MTLC, Senior lecturer: Mathematics Education, ACU)

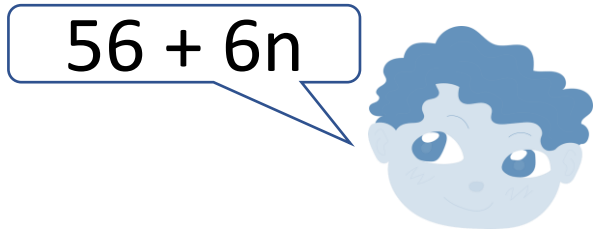
To care for a student's mathematical identity includes a willingness to challenge and push them, (with constant support), to maximise their potential, strengthen their resilience, and likely leading to improve outcomes later in their life.

(Steven Goldberg, Head of teaching and reporting, Prahan High School)

A core value of care (secondary)

Ali recently joined a gym with a monthly fee of $56, and a session cost of $6 and Ali is wondering how often they can go to get value for money? Ali asks their friends who say that there is a way to work out the monthly cost to help your decision.





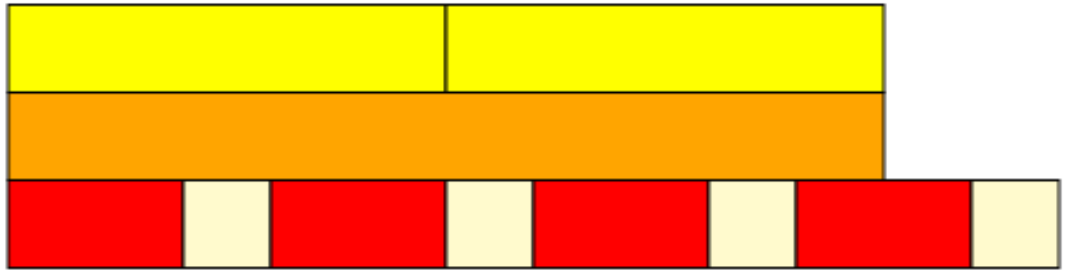
Dialogue Prompts
What is each characters thinking?

What questions could each character answer? (What makes you say that)

What is the resource? [NAPLAN 2012-2016 test papers (acara.edu.au)]

Resource illustration: manipulatives

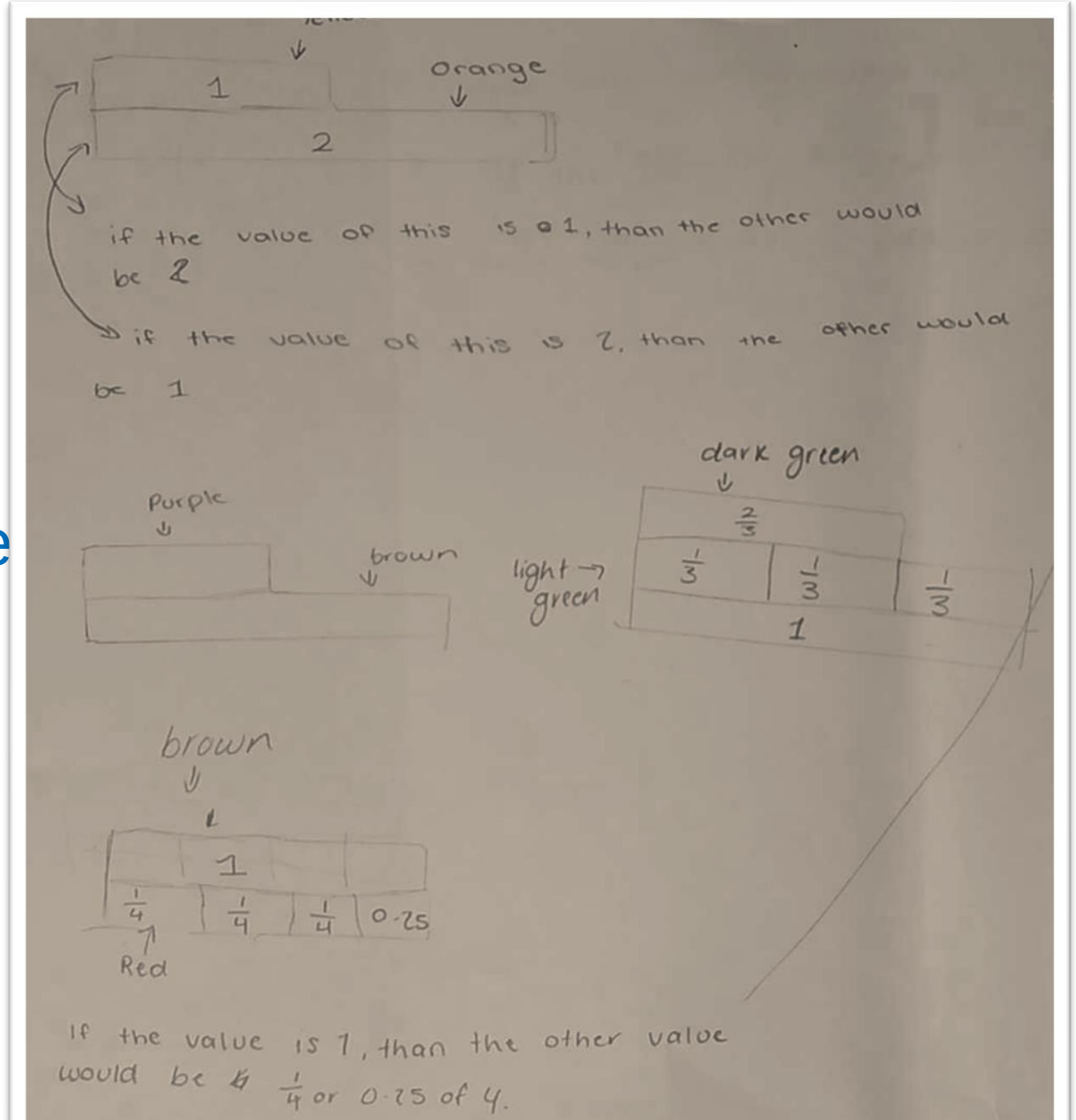
What mathematics do you see?



How do you see it?

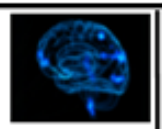
It isn’t the resource that determines the learning.

- Photo removed.
- Young child using Cuisenaire rods to form and analyse patterns.



Care: expectation of/for learners:

MAKING



connections with maths ideas

- Connecting technical maths with the everyday
- Creating mental images
- Matching symbols, drawings, and words
- Visualising their maths learning
- Thinking about maths concepts

SAYING the maths

- Using technical maths language
- Discussing mathematics
- Seeking to convince
- Explaining reasoning
- asking questions and responding to questions

Evidence of Learning

WRITING the maths

- Using words and language
- Drawing diagrams / representations
- Recording using symbols
- Writing technical maths language

DOING the maths

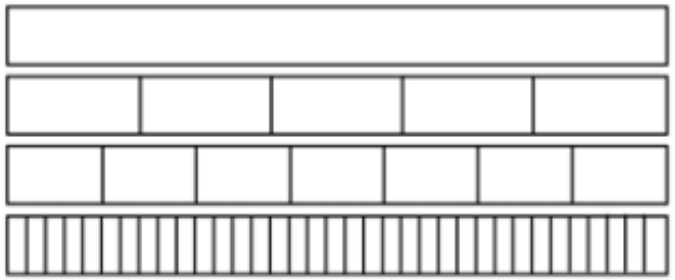
- Using materials / manipulatives/representations
- Demonstrating using materials / representations
- Thinking by doing
- Showing understanding by doing

Resource illustration: Lesson plans

Unreasonable fractions

L8, Sequence 1, Lesson 2

Use the worked example to demonstrate the process to answer the remaining questions.

Worked example	**Q1.**	**Q2.**
Is $\frac{3}{5}+\frac{2}{7}=\frac{5}{35}$ correct? Justification: 	Is $\frac{3}{5}+\frac{2}{7}=\frac{5}{35}$ correct? Justification:	Is $\frac{16}{20}-\frac{3}{15}=\frac{18}{30}$ correct? Justification:

Systems and Structures
Pedagogical decision making

Explanation and exploration (Avoid the polarizing view)

Some of the factors that teachers make base decisions

- Prior knowledge of content and ways of working
- Prior experience
- Content area (way to teach systems to solve linear equations will be different to mathematical modelling)
- Age
- Mood, context

Which approach and why?

Pose this provocation:

Teacher led instruction and inquiry learning: what are the opportunities

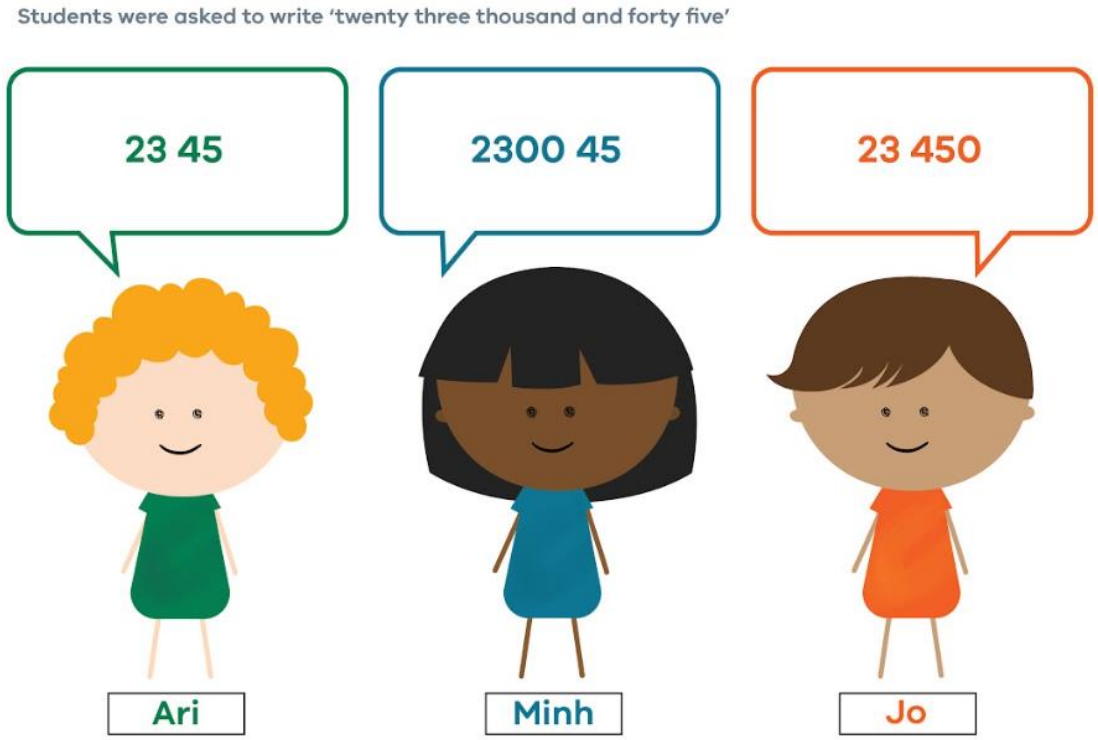
Caring to create mathematical identity

Inclusive classrooms

- students thought for themselves
- confident in their own understandings
- willing to entertain and assess the validity of new ideas and approaches, including those put forward by their peers
- a belief in themselves as mathematical learners and, as a result, were more inclined to persevere in the face of mathematical challenges.

Anthony, Glenda, and Margaret Walshaw. *Effective Pedagogy in Mathematics*. Educational Practices Series, No. 19. International Academy of Education and International Bureau of Education, 2009.

Inclusive classrooms: expectations



Students were asked to write

Twenty three thousand and forty five

What could **each character** be **thinking**?

What advice **might you** give them?

What questions would you design that each character could answer now, and one that they might struggle with?

Resource illustration: Fraction and decimals interview

How might this support you in your role?

Mathematics Online Interview and Fractions and Decimals Online Interview

For each pair, circle the number which is larger.

0.3	0.217
0.9	0.10
0.234	0.8
0.12	0.6
0.087	0.87

0.653	0.3
0.43	0.2
0.7	0.87
0.123	0.09
0.89	0.7

Systems and Structures: teacher knowledge

Professional learning teams: Identify the mathematics

Staff meetings: Developing teachers with a positive mathematical identity

Mathematics chats

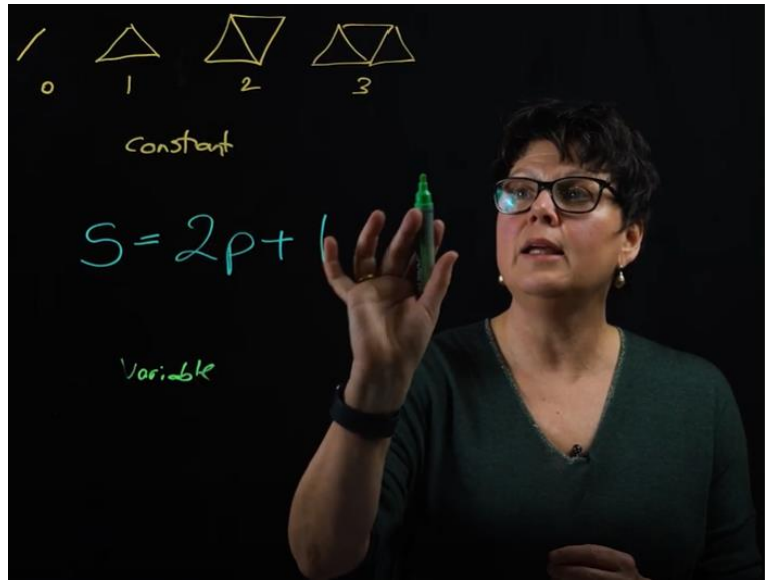
Resource illustration: teacher knowledge Build Me Up: on-demand Professional Learning Program

Material – on demand modules related to content areas in VC2.0

Systematic Approach – identify content that you would like to learn more about, and listen to on-demand video and use support materials

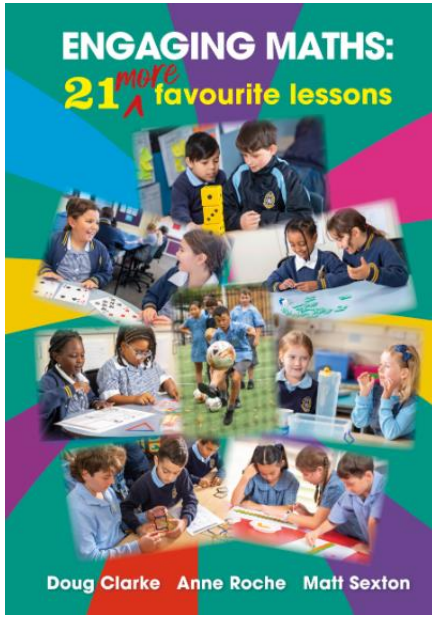
Human- connect through a network by becoming part of the Community of Practice. It enables networking and discussions about the learnings in the modules.

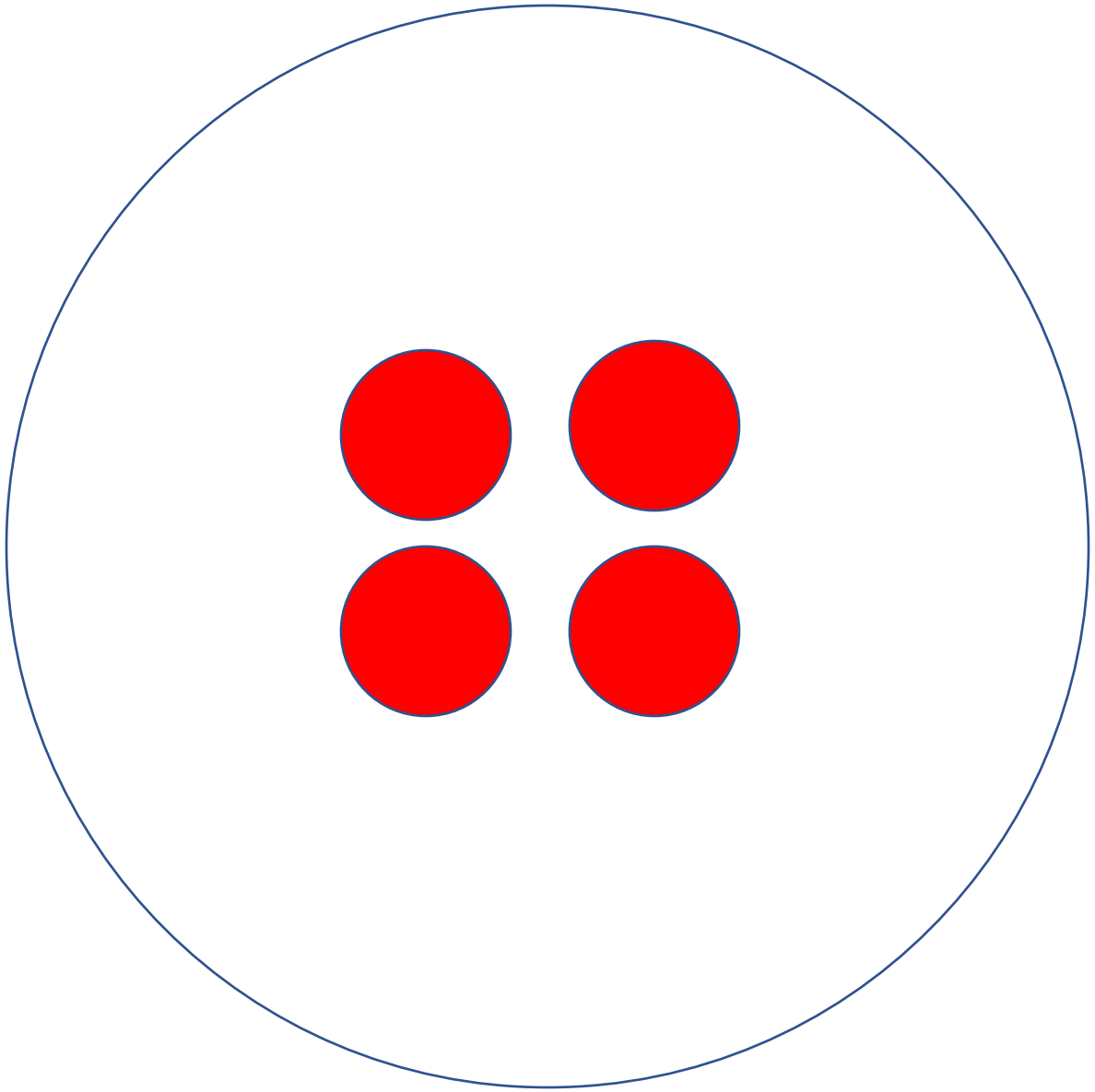
Emotional – review and reuse the videos to create your own mathematical knowledge and skills to feel more confident and competent in the mathematics classroom.

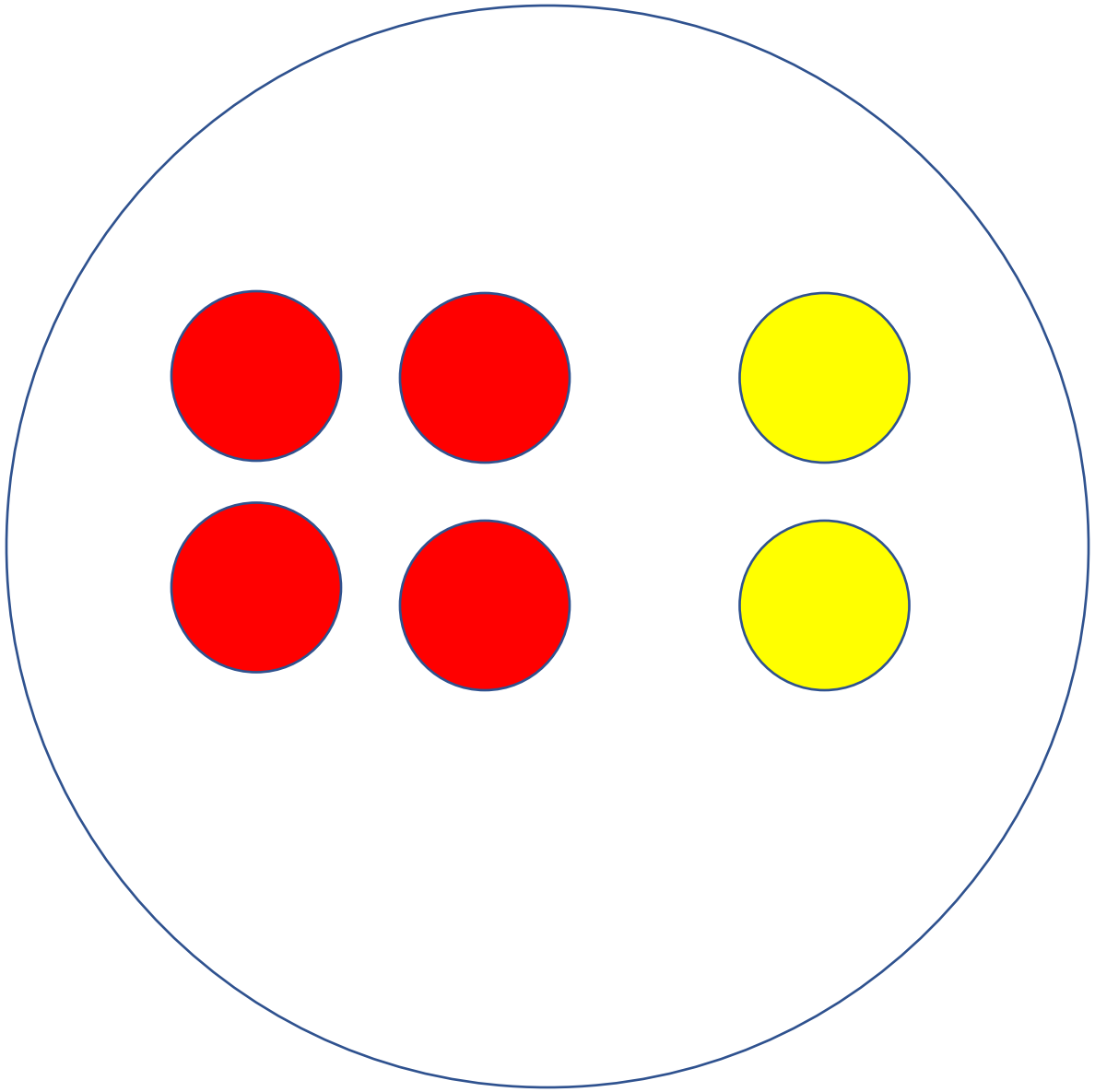


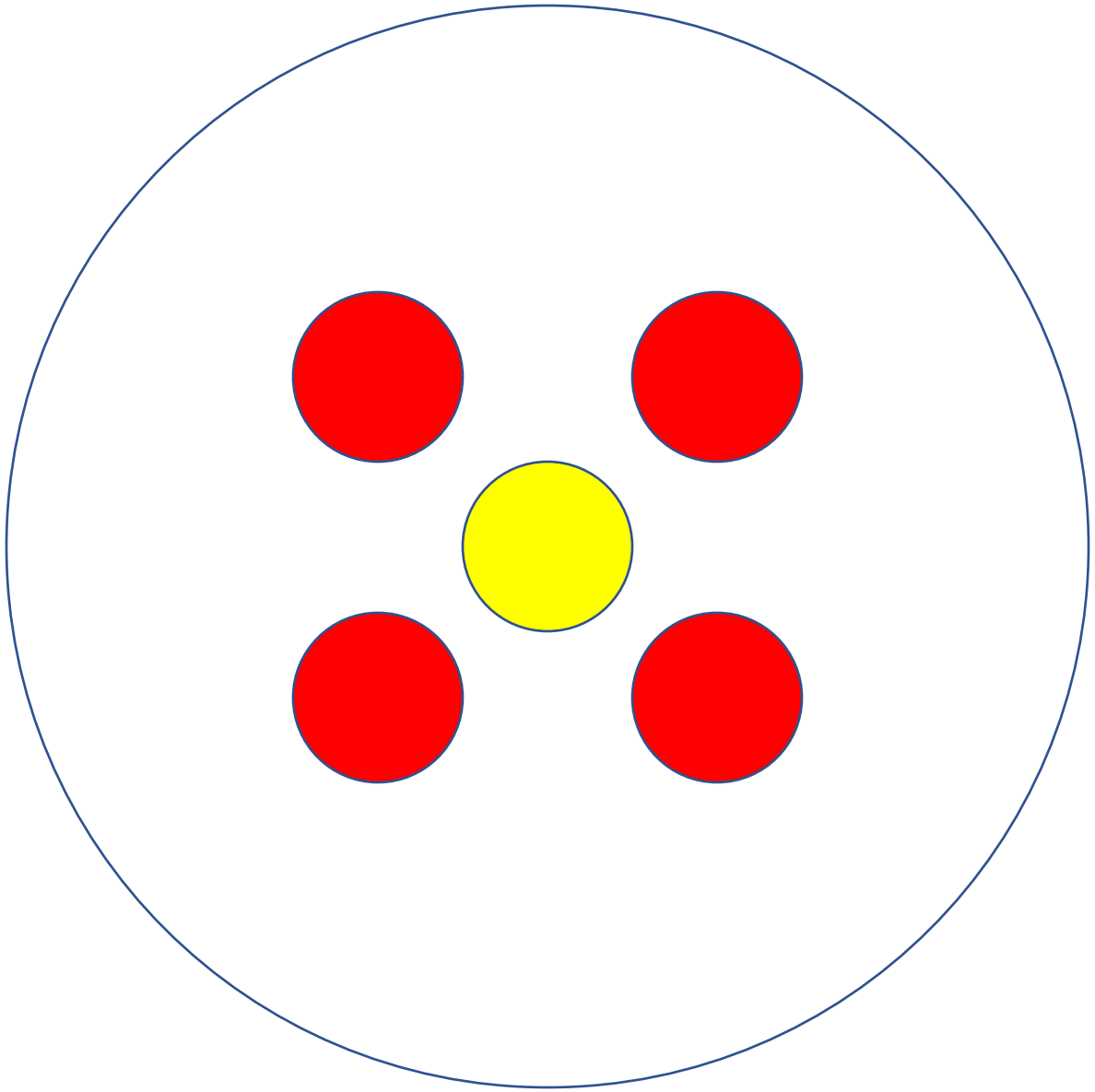
Resource illustration: Look, make, check, adjust

Consider how the lesson design meets the needs of learners









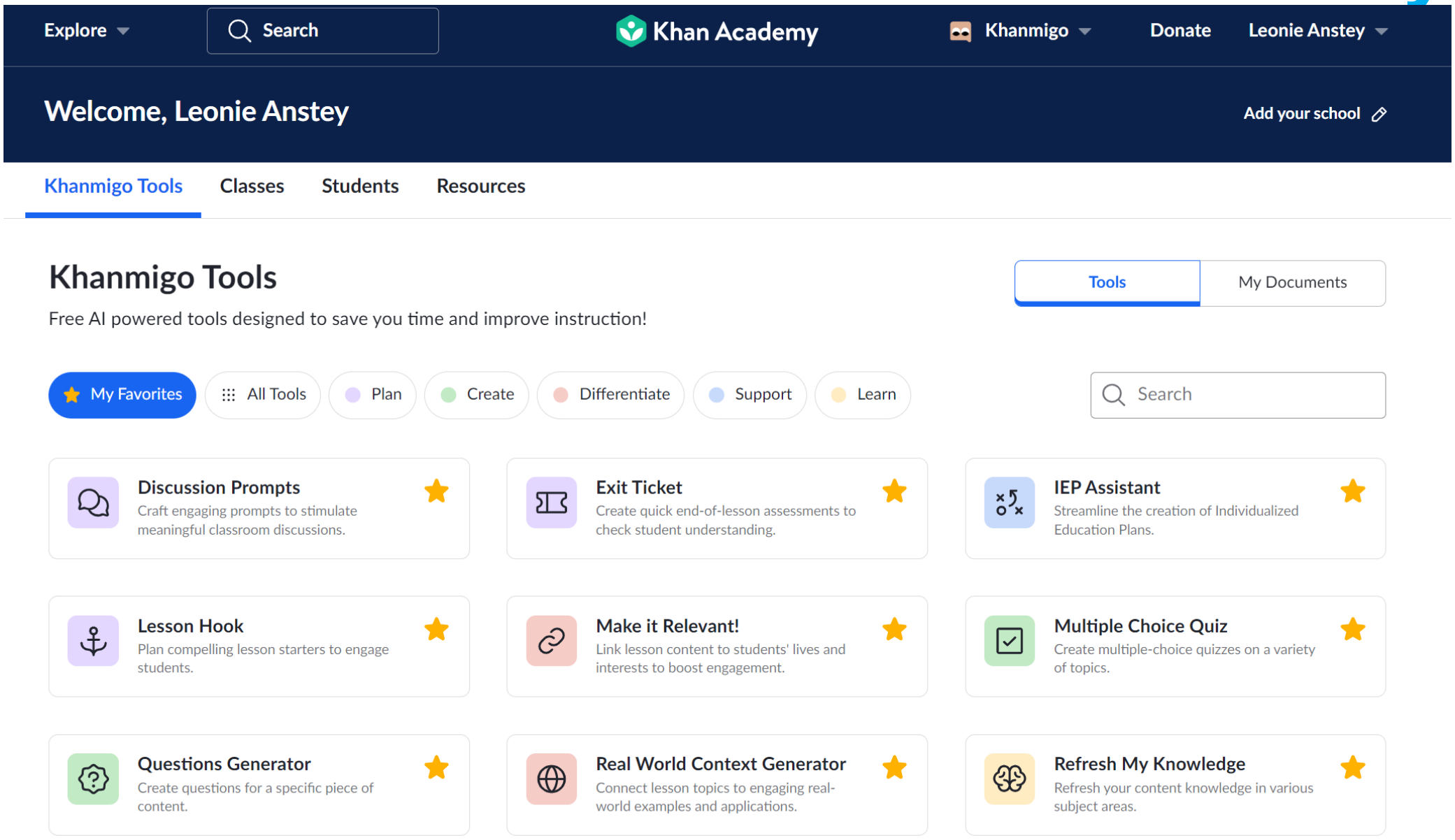
Resource illustration: Vinculum

JACK AND THE BEANSTALK

Jack trades a cow for some magic beans. The beans grow into a beanstalk that grows into the clouds. Jack climbs the beanstalk and retrieves a magic harp and a goose that lays golden eggs.

- How tall is the beanstalk if it reaches clouds? How long would it take to grow?
- Even if Jack climbed at world record pace, how long would it take to climb to the top of the beanstalk?
- Are the golden eggs hollow or solid? Using the density of gold, how heavy are the eggs? What would they be worth in Australian dollars?

Resource illustration: Khan academy



Our amazing teachers is the answer

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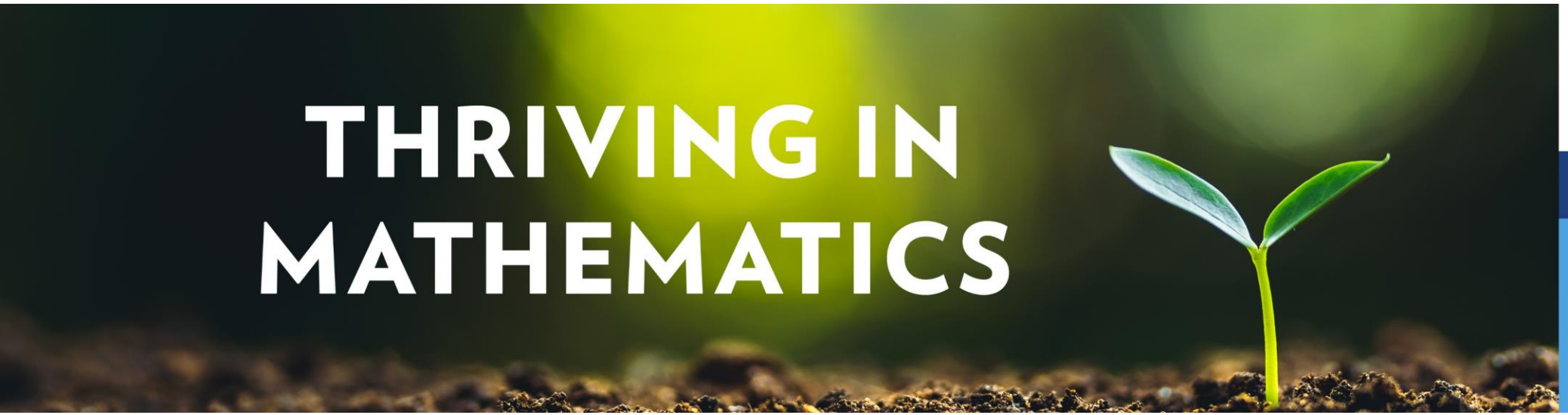
Thank you, MAV25 Conference, Complete Survey & Morning Tea



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4 AND 5 DEC 2025

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Step 2: Enter Event Code: **mav**

Step 3: Enter the email you registered with

Step 4: Enter the Passcode you receive via email and click 'Verify'. Please be sure to check your Junk Mail for the email, or see the Registration Desk if you require further assistance.

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Be in it to WIN!