CURRICULUM, PEDAGOGY AND BEYOND









Workshop: The craft of mathematics teaching: Getting the balance right

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Outline

- Relationships with maths
- Adding relationships with mathematics to your toolkit
- Getting the balance right

Relationships with mathematics Why do so many students disengage in mathematics?



Mathematical engagement

the **level** and **quality** of students' involvement in the mathematical activity of the classroom and their commitment to learning the mathematics. Similar age Similar backgrounds Similar classroom communities

YET

Each student engaged in mathematics differently Each student had a unique journey through mathematics with unique learning experiences and outcomes

BECAUSE

Each student had a unique relationship with mathematics



Using students' relationships with mathematics as a tool in research and in the classroom

Case studies of students' mathematical journeys

Identifying vulnerable and thriving students

Seating arrangements

Classroom practices

The impact of teachers on students' relationships with mathematics

Identity stories about students using parent data

Mathematical engagement

ITE students' mathematical journeys

Navigating challenge, embracing confusion

Getting to know your students

Using relationships with mathematics





Scenario One: Educating Yorkshire

In groups of 3-4

Sheridan Hannah Beth Lauren





Voice-over	Among the kids who have missed the mark there is one group of girls who have been testing Thornhill's maths department to the limit.
Teacher	Hannah and Lauren and Sheridan and Beth have been from maths teacher to maths teacher to maths teacher and were getting thrown out of lessons
Sheridan	Oh dear! I've done it wrong
Teacher	and they were not making progress at all.
Hannah	Aww that's nice and cold
Teacher	I did a test with them, and they all got Us
Sheridan	Squeal! I'm not good at maths[yell]yeah, it's just like I read it andnogoes in oneno.
Lauren	I'm going to be a hairdresser. I'm not going to need to know what x times 2 pi R whatever it is. I won't need to know that. You don't need to know that in hairdressing. Cannonball!
Hannah	When do you need to find the area of a triangle in life? It's so pointless.

Scenario: Educating Yorkshire

Educating Yorkshire | It Doesn't Add Up (S1 - Ep6) | C4

1. Do they have positive and/or productive relationships with maths?

- 2. What can we say about their:
 - Views of maths (nature of maths, importance, usefulness and beauty of maths, difficulty)
 - Mathematical knowledge
 - Perceptions of their ability
 - Feelings about maths
 - Habits of engagement
- 3. Can we say anything about Beth?

4. What ideas do you have to support the teacher and the students?



How students experience maths in their classroom is how they come to view mathematics Thornhill maths department

Get to know students Get to know their maths Be explicit with them about their relationships with maths and its impact Have high expectations Make students accountable Accept and harness students' social needs Make connections with maths and their lives, and with other maths Use a variety of tasks Ensure all students experience success, challenge, and confusion Stay connected with families SEATING PLANS! (Where would you place these students in the classroom?

When doing maths

1

Zone of

Confusion

Be organised and ready to learn Don't give up when you are stuck Expect to be confused. Embrace confusion Try the task yourself first Concentrate. Maths is thinky Cooperate. Talk to others about the task Don't just get an answer. Make sure you understand Mistakes are windows into your thinking Be proud of your progress Reflect on your doing

What does great maths teaching look like?

Teaching maths

Teaching

You don't teach maths. You teach students. (Andy Begg, 1995, 2009 ... 2017 ...) Teaching understanding, fluency, problem solving, reasoning

... through the prescribed scope and sequence for mathematics, the pedagogical model and practice principles

Victorian Maths Curriculum Victorian Teaching Model

Teaching

Effective Pedagogy

- An ethic of care
- Arranging for learning
- Building on students' thinking
- Worthwhile mathematical tasks
- Making connections

EDUCATIONAL PRACTICES SERIES-19

pedagogy

- Mathematical language
- Tools and representations
- Teacher knowledge

Download a PDF or order a hard copy from "Down the back of the chair" <u>www.thechair.co.nz</u>









Do you reach these dizzy heights of maths teaching?

What constraints and challenges do you experience?



How can you grow your mathematics teaching practice while maintaining balance?



Teachers' need to have to have the following needs met:

Basics Needs: Nutrition, hydration, sleep, exercise, refreshment

Balance: To set boundaries and create routines so that they can have rich lives both in the classroom and at home.

Belonging: To feel positive connections with other people, both in school and outside school. **Positive engagement:** To enjoy their work, so they have energy and passion for their teaching.

Significance: To know that they make a positive difference through the work they do.

Teacher's relationships with mathematics teaching

- Knowledge (MCK, PCK, PCKM)
- Beliefs about mathematics
- Philosophyofteaching
- Macro-feelings
- Identities and self-efficacy as a teacher of mathematics
- Embedded ways of teaching

Context, current expectations opportunities and constraints

Mathematics teaching

Suggestions of ways to grow with balance

- Reflect on your own relationship with mathematics
- Think about your philosophy of mathematics teaching
- Reflect on your teaching practices
- Develop a brave vision for mathematics teaching at your school
- Consider how to tackle or minimise constraints that prevent you from enacting the vision
- Adopt a growth mindset for yourself
- Don't make big changes to your pedagogy. Make incremental changes.
- Be a magpie, but don't throw the baby out with the bathwater
- Be cautious about maths programmes that ask you to use them exclusively
- Engage in challenging mathematics by yourself, as colleagues, and with your students. Find opportunities to experience confusion, challenge and success

Scenario Two: What do we think of Girl Math?

https://www.youtube.com/shorts/rPtZ_D51WUM

Girl math handbag@caitlinwiig

Is this a help or a hindrance? Can we use it in our classroom?

[Accept and harness social needs]



You are welcome to contact me for any questions <u>naomi.ingram@otago.ac.nz</u>

Full resources on here:

https://drive.google.com/drive/folders/168rmP-DrzzIlG9VFmZojOZjo2lDJmShT?usp=sharing







Be in it to WIN!

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A02 - (Year 1 to Year 6) Supporting High Potential and Gifted Learners in Mathematics

Pedagogy

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(i) Description

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Dr Chrissy Monteleone







Event App

App Download Instructions

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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.