

Stronger Smarter Institute Research & Impact Footprinting Reading Review - Summary



Maths as Storytelling.

Matthews, C. Maths as Storytelling: Maths is beautiful. In Price, K. 2015. *Aboriginal and Torres Strait Islander Education: An introduction for the teaching profession*. Second edition. Cambridge University Press, Melbourne, VIC.

This Reading Review provides a summary and review of Dr Chris Matthews' chapter on *Maths as Storytelling*, from the book *Aboriginal and Torres Strait Islander Education*, edited by Dr Kaye Price. Matthews explores the connection between culture and mathematics and how Indigenous people have been positioned as mathematical learners. He explains the Cloud Model as a Culturally Responsive Pedagogical (CRP) approach to mathematics that embraces Indigenous student identity. Matthews describes how 'Maths as Storytelling', based on the Cloud Model, can be used to develop Jarjums' mathematical knowledges. This approach has been used state-wide in Queensland and adopted nationally through the 'Yumi Deadly Maths' program¹.

Maths as Storytelling

Matthews explains two pedagogical approaches that have been developed from the Cloud Model: 'Maths as Storytelling' and 'Maths as Dance'. Just as any strong narrative with meaning and feeling, Maths as Storytelling takes sequential steps in learning and sharing. These steps are:

1.

Understanding symbols

Students explore the use of symbols to construct abstract representations

2.

A simple maths story

Students act out a simple maths story

3.

Students representation - unstructured

Students represent the story using their own symbolism

4.

Students representation - structured

Teachers lead students through a more structured representation of the story using concrete materials

5.

Sharing symbol systems

Students represent another maths story with the same symbols

6.

Modifying the story

Teachers introduce algebra concepts by removing one unit of the concrete materials and challenge students to work out different ways for the story to make sense again.

¹ www.ydc.qut.edu.au

The Stronger Smarter Approach

Matthews developed the Cloud Model in response to the impact of terra nullius education, and perceptions of mathematics as a discipline that transcends people. The Cloud Model aims to reconnect people by viewing mathematics as a cultural product. The beauty of mathematics lies in that fact that mathematics is alive – a knowledge that connects with all people, allowing different expressions of ideas and the emergence of new ideas

This research relates closely to all five of the **Stronger Smarter metastrategies**.

- ▶ **Positive sense of student identity:** Existing perceptions see mathematics as the ‘knowledge of the elite’ and stereotype mathematicians as ‘nerds’. In addition there are cultural biases. The doctrine of ‘terra nullius’ continues to impact on Australia’s education system today, leading to a dismissal of Indigenous Knowledges as having no relevance to mathematics. Cultural biases lead to an overemphasis on learning the language of mathematics rather than allowing self-expression where students use their own language to explore the ideas and concepts embodied in mathematical symbols. This can all contribute to the relationship that Indigenous students will have with mathematics, and can ultimately contribute to their underachievement. In the Cloud Model, mathematics shifts from a rigid objective discipline that must be learned to a creative process that supports a positive sense of student identity.
- ▶ **High-Expectations Relationships:** Changing the relationship of Indigenous students with mathematics will need to be supported by improved relationships between non-Indigenous and Indigenous Australia.
- ▶ **Innovative and Dynamic School Models:** To change the relationship between people and mathematics requires innovative pedagogies where students can start their learning in mathematics through self-expression that values the student’s current knowledge.
- ▶ **Positive Indigenous leadership and innovative staffing models:** To support these innovative pedagogies, educators need to recognise the value the community can bring to the school, to recognise the knowledge that Indigenous Education Workers bring to the school, and value their expertise as co-educators in the classroom.

For more information, see the Stronger Smarter Institute’s full research review of Matthew’s research and more details about the Stronger Smarter metastrategies on the Institute’s website at www.strongersmarter.com.au . Contact us at enquiries@strongersmarter.com.au.

Implications for policy and researchers

- ▶ The education system needs to support innovative Culturally Responsive Pedagogies to, as Matthews says “move forward with a new and deeper understanding of mathematics as a cultural product with a strong relationships to Indigenous cultures, and away from an education paradigm that positions Indigenous cultures as deficit”.

Implications for schools and teachers

- ▶ As educators we must all accept and understand our position within the nation’s shared history of terra nullius. Matthew says we need to “unlearn what we have learned, value what we have historically devalued and start developing a trusting relationship”. In the education system, this involves educators building relationships with students, with parents, and with the community.