While waiting for the session to begin ... Write down some words / phrases which represent the issues confronting maths teaching/learning in your workplace


expertise
teacher
pl
experience
constraints
risktaking
time
anxiety
literacy
aip
resources
attitudes
cultural
knowledge
assessment
fixed
enough
differentiation
evidencenbase
attitude
funding
negative
mindset
proficiencies
much
assessing
capacity
focusingonliteracy
change
experience/not

THE UNIVERSITY OF MELBOURNE

Loving mathematics: Leading cultural change in your school

Wee Tiong SEAH

20 Jun 2019

There are cafes, and cafes …


PUBLICATIONS
THE AUSTRALIAN
It's on: PM to call poll today

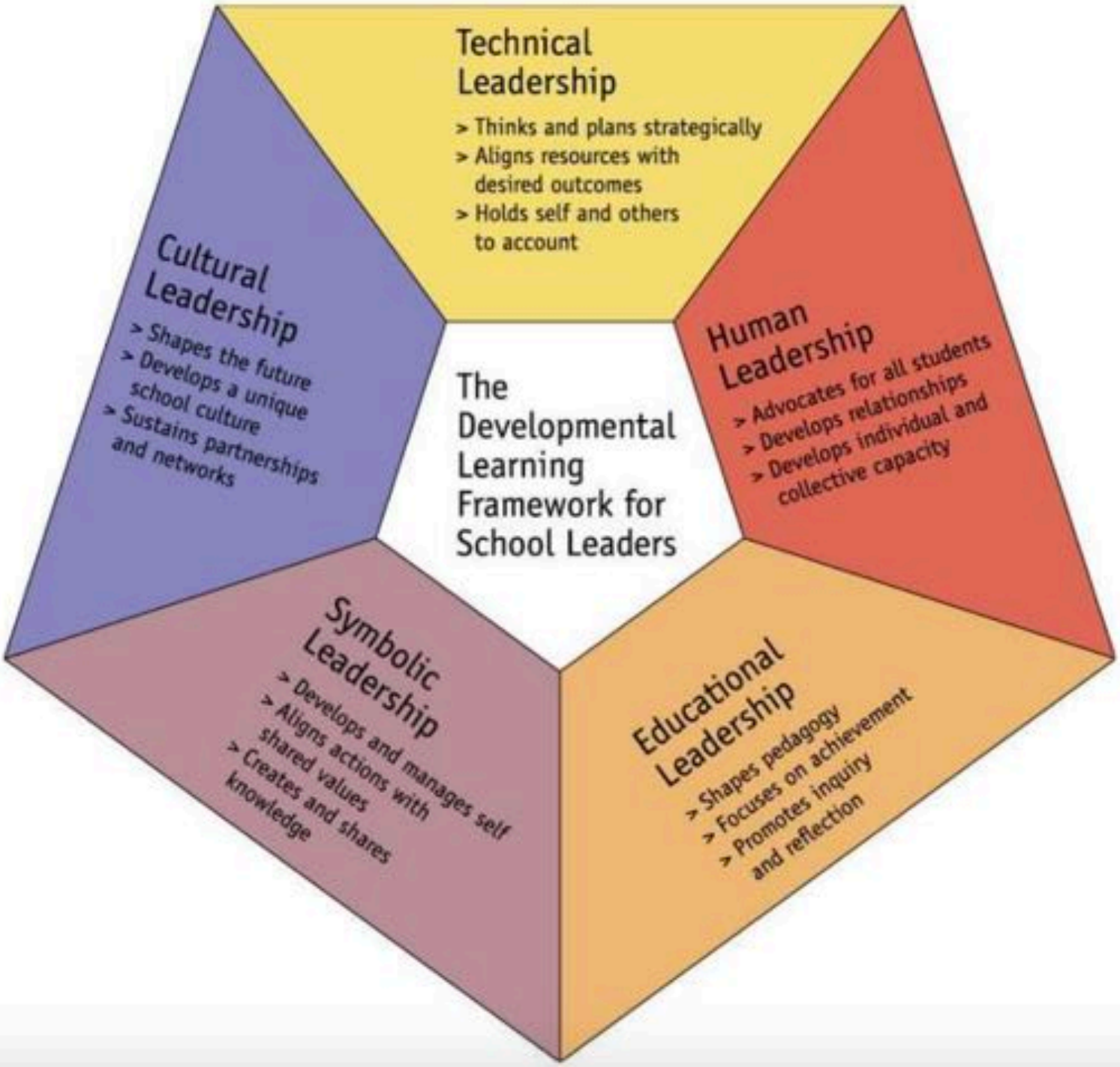

STANDING
ROOM ONLY

Thomas Sergiovanni

Managerially loose, culturally tight

vs

Managerially tight, culturally loose


Technical Leadership
> Thinks and plans strategically
> Aligns resources with desired outcomes
> Holds self and others to account
Human Leadership
> Advocates for all students
> Develops relationships
> Develops individual and collective capacity
Educational Leadership
> Shapes pedagogy
> Focuses on achievement
> Promotes inquiry and reflection
Symbolic Leadership
> Develops and manages self
> Aligns actions with shared values
> Creates and shares knowledge
Cultural Leadership
> Shapes the future
> Develops a unique school culture
> Sustains partnerships and networks
The Developmental Learning Framework for School Leaders

CULTURAL LEADERSHIP

An effective leader demonstrates an understanding of the characteristics of effective schools and a capacity to lead the school community in promoting a vision of the future, underpinned by common purposes and values that will secure the commitment and alignment of stakeholders to realise the potential of all students.

CAPABILITIES

> Shapes the future
> Develops a unique school culture
> Sustains partnerships and networks

PROFILES

Level 1	Level 2	Level 3	Level 4	Level 5
Leaders articulate a vision for the school and celebrate important events that reflect the school's vision. They communicate with stakeholders to build alliances to support the school's vision. They talk about the value of diversity and support the development of a unique school culture. They make sure that families and carers are informed of school policies, programs and activities and utilise local experiences to enrich learning and teaching. They influence others by using logical arguments.	Leaders use a collaborative approach to develop a shared vision for the school. They provide opportunities for all members of the school community to have a voice in the school and share their knowledge and experience with others. They promote a sense of pride in current and past achievements and encourage groups and individuals to share them with the school community. They invite families and carers to participate in school activities and draw on expertise in other organisations to extend and enrich learning and teaching.	Leaders make public and reinforce the relationship between the school vision, goals and improvement strategies and use a range of approaches to secure the commitment of others. They use the school's customs and traditions to enhance student connectedness to the school. Processes are established for families and carers to participate in whole-school decision-making. They formally recognise and acknowledge the achievements of individuals and teams. They form partnerships with other organisations to expand learning and teaching opportunities and work with stakeholders for the benefit of the school community. They seek opportunities to share	Leaders consistently reference short-term and long-term school planning and resource decisions to the school vision. They support leaders in other schools to develop processes for shaping a school vision. They respond strategically to opportunities in the external environment for the benefit of the school community. They actively shape, and encourage others to build on, the school's customs and traditions. Families and carers are supported to participate directly in students' learning and personal development. Processes are established that enable individuals and teams to acknowledge their own and others' achievements. They facilitate the sharing of	Leaders coach and mentor other leaders in the use of influencing strategies to secure commitment to their school vision and goals. Their leadership expertise is sought by others and is recognised publicly. To position the school at the centre of the local community, they maximise access to a range of their services. They assist other education systems and organisations to transfer and adapt innovative practices from their school.

The Leadership Framework might be useful for …

… performance and development reviews

… principal selection

… coaching and mentoring

… leadership induction and succession planning

….

… mathematics leadership

Cultural leadership in mathematics education

A vision of the future

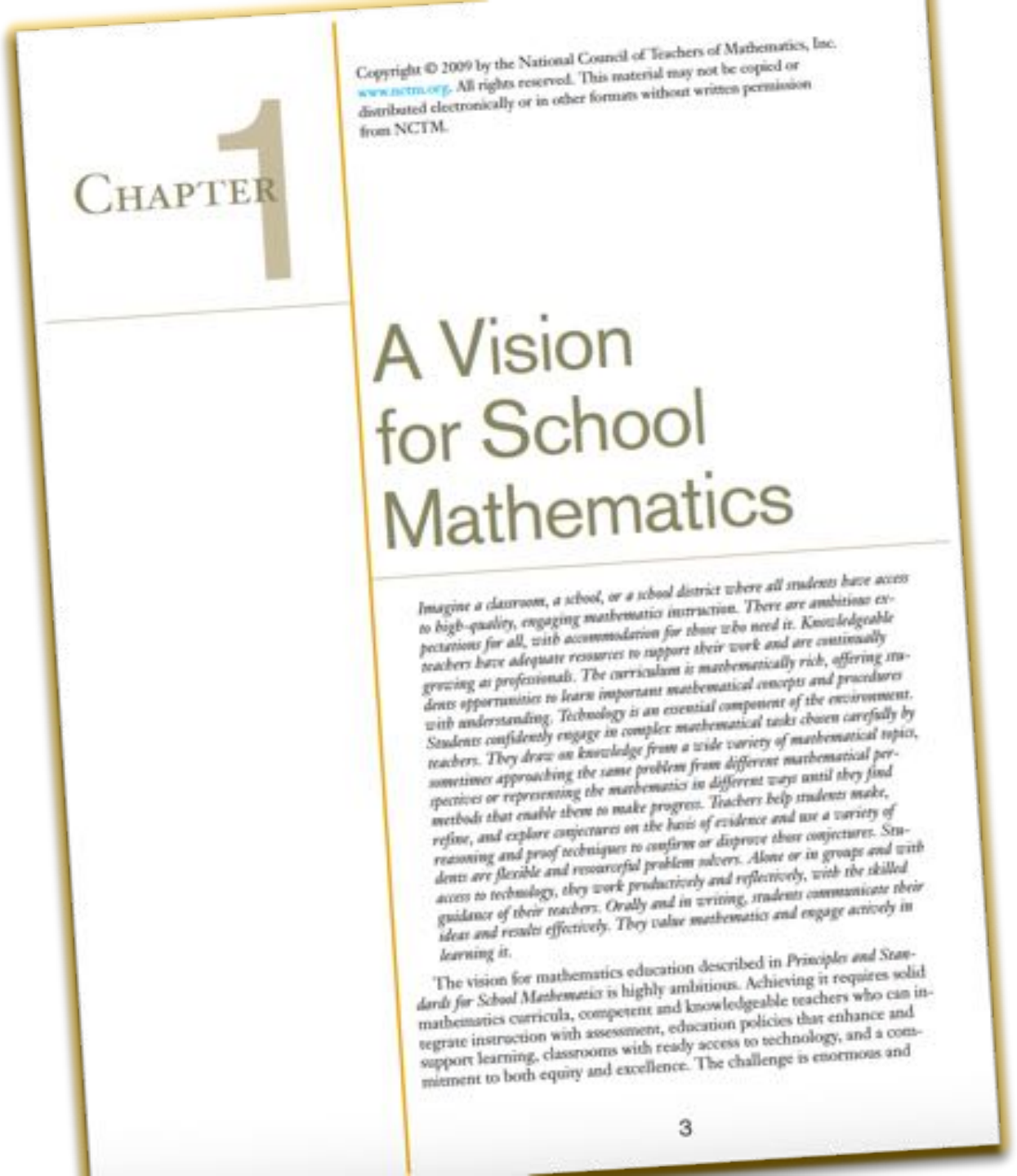
A vision for mathematics education in your workplace

Common purposes and values

Identifying these as they pertain to your vision

Commitment and alignment of stakeholders

Some ways of achieving this



CHAPTER 1

A Vision for School Mathematics

Imagine a classroom, a school, or a school district where all students have access to high-quality, engaging mathematics instruction. There are ambitious expectations for all, with accommodation for those who need it. Knowledgeable teachers have adequate resources to support their work and are continually growing as professionals. The curriculum is mathematically rich, offering students opportunities to learn important mathematical concepts and procedures with understanding. Technology is an essential component of the environment. Students confidently engage in complex mathematical tasks chosen carefully by teachers. They draw on knowledge from a wide variety of mathematical perspectives and sometimes approaching the same problem from different ways until they find methods that enable them to make progress. Teachers help students make, refine, and explore conjectures on the basis of evidence and use a variety of reasoning and proof techniques to confirm or disprove those conjectures. Students are flexible and resourceful problem solvers. Alone or in groups and with access to technology, they work productively and reflectively, with the skilled guidance of their teachers. Orally and in writing, students communicate their ideas and results effectively. They value mathematics and engage actively in learning it.

The vision for mathematics education described in *Principles and Standards for School Mathematics* is highly ambitious. Achieving it requires solid mathematics curricula, competent and knowledgeable teachers who can integrate instruction with assessment, education policies that enhance and support learning, classrooms with ready access to technology, and a commitment to both equity and excellence. The challenge is enormous and

(NCTM, 2009)

Imagine a classroom, a school, or a school district where all students have access to high-quality, engaging mathematics instruction. There are ambitious expectations for all, with accommodation for those who need it. Knowledgeable teachers have adequate resources to support their work and are continually growing as professionals. The curriculum is mathematically rich, offering students opportunities to learn important mathematical concepts and procedures with understanding. Technology is an essential component of the environment. Students confidently engage in complex mathematical tasks chosen carefully by teachers. They draw on knowledge from a wide variety of mathematical topics, sometimes approaching the same problem from different mathematical perspectives or representing the mathematics in different ways until they find methods that enable them to make progress. Teachers help students make, refine, and explore conjectures on the basis of evidence and use a variety of reasoning and proof techniques to confirm or disprove those conjectures. Students are flexible and resourceful problem solvers. Alone or in groups and with access to technology, they work productively and reflectively, with the skilled guidance of their teachers. Orally and in writing, students communicate their ideas and results effectively. They value mathematics and engage actively in learning it.

EDUCATIONAL LEADERSHIP

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February 2004 | Volume **61** | Number **5**
Improving Achievement in Math and Science Pages 6-11

Issue Table of Contents | Read Article Abstract

A Vision for Mathematics

William H. Schmidt

A common, coherent, and challenging curriculum can transform mathematics education in the United States.

The No Child Left Behind (NCLB) Act has the potential to change U.S. education forever, but if we continue to hold some of the beliefs that underlie our current education policy and practice, then realizing the NCLB vision will be difficult, if not impossible.


THE VISION:
TO MAKE PEOPLE HAPPY
-WALT DISNEY


"Att skapa en bättre vardag
för de många människorna"
"To create a better everyday
life for the many people"

What is your vision for maths / numeracy education in your school / centre?

What is your vision for maths / numeracy education in your school / centre?

Responses

Empower teachers with the skills/knowledge to challenge students

Students willing to have a go and persist even when the maths seems difficult.

Empowering maths learners | Whole school approach

Engaged classrooms catering for all student needs | engaging students

Success for all students even those struggling with mathematics/ numeracy

access to all students - differentiation | Growth

Enjoy investigating problems - discovering solutions

Open ended and challenging tasks | Empowerment | Purposeful

Everyone is a mathematician | to empower all stakeholders in math growth

Fulfilling potential | Confident, creative and capable learners

Efficient, deep and point of nedd | conceptual | Foster a love of maths

Linking of concepts across all areas of maths | Life long learners of maths

Equality between structured and inquiry based math learning

To improve student outcomes by improving teachers practice

Assessment capable students | growth mindest | develop an inquiry mindset

Confident and resilient mathematicians

Empowered learners who are challenged and thrive in their supported and engaging learning environment.

Thrive on an inquiry approach | Valuing mathematics

confident teachers who develop confident learners | Consistent approach

Differentiation to support ALL students | High impact, hands on experience

I can do it attitude- from teachers and students

Assessment in student tasks rather than spreadsheets

High level engagement and application of skill from students | Engagement

develop multiple strategies | Inquiry | Engagement | Enjoy mathematics

Students becoming risk takers in their learning | Creative, questioning, fun!

students who love maths | Inquiry, real-life connections, authentic | Enthusiasm

Mathematics is a state of mind, a way of thinking, it's everywhere around us

Desire to be challenged | Maths is purposeful and relevant | hands on

Maths that makes kids (and teachers) smile | Interest based | Deep Learning

Whole school approach to problem solving.

Higher order self regulated learning for all | Create lifelong learners | Growth

Mathematics is for everyone | Quality mathematics education for every single student

Collaborative | Confident teachers | To have high impact on student learning

Confidence | All students have self-belief in their mathematical ability.

Open ended | Students and teachers collaborative inquirers | Inquiry

Growth-mindset | Problemandinquirybasedmathematics

Courageous learners teachers

Engagement

72

Responses

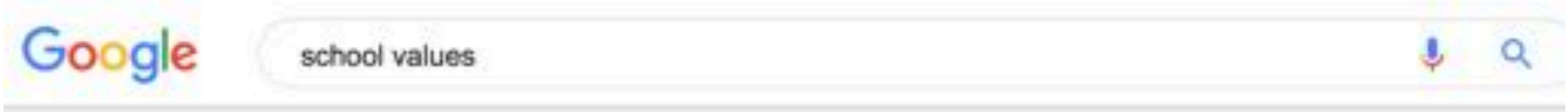
Common purposes and values

But, what are these?

Case: Levi Strauss

The role of corporate values, and how they relate to corporate visions

Levi Strauss' Values: Empathy Originality Integrity Courage



School Values | Melbourne Grammar School

https://www.mgs.vic.edu.au/about/governance-and-leadership/school-values ▾

These are the **values** that shape our **School**: Learning. We **value** inquiry and intellectual growth of all students and staff, recognising their different learning needs, encouraging them to be creative, engaged and lifelong learners. Diversity. Integrity. Excellence. Spirituality. Leadership. A sense of community.

School Values - Glen Katherine Primary School

https://www.glenkps.vic.edu.au/page/116/School-Values ▾

The National Framework for **Values** Education in Australian **Schools** states that '**values** education can strengthen students' self esteem, optimism and ...

School Values — Eltham North Primary School

www.elthamnorthps.vic.edu.au/school-value ▾

Eltham North Primary **School** has in place a set of core **values** that underpin the vision of the **school**. The **values** are unique to our **school** in that they have been ...

Values Education | National Framework: Nine Values for Australian ...

www.curriculum.edu.au/values/val_national_framework_nine_values,14515.html ▾

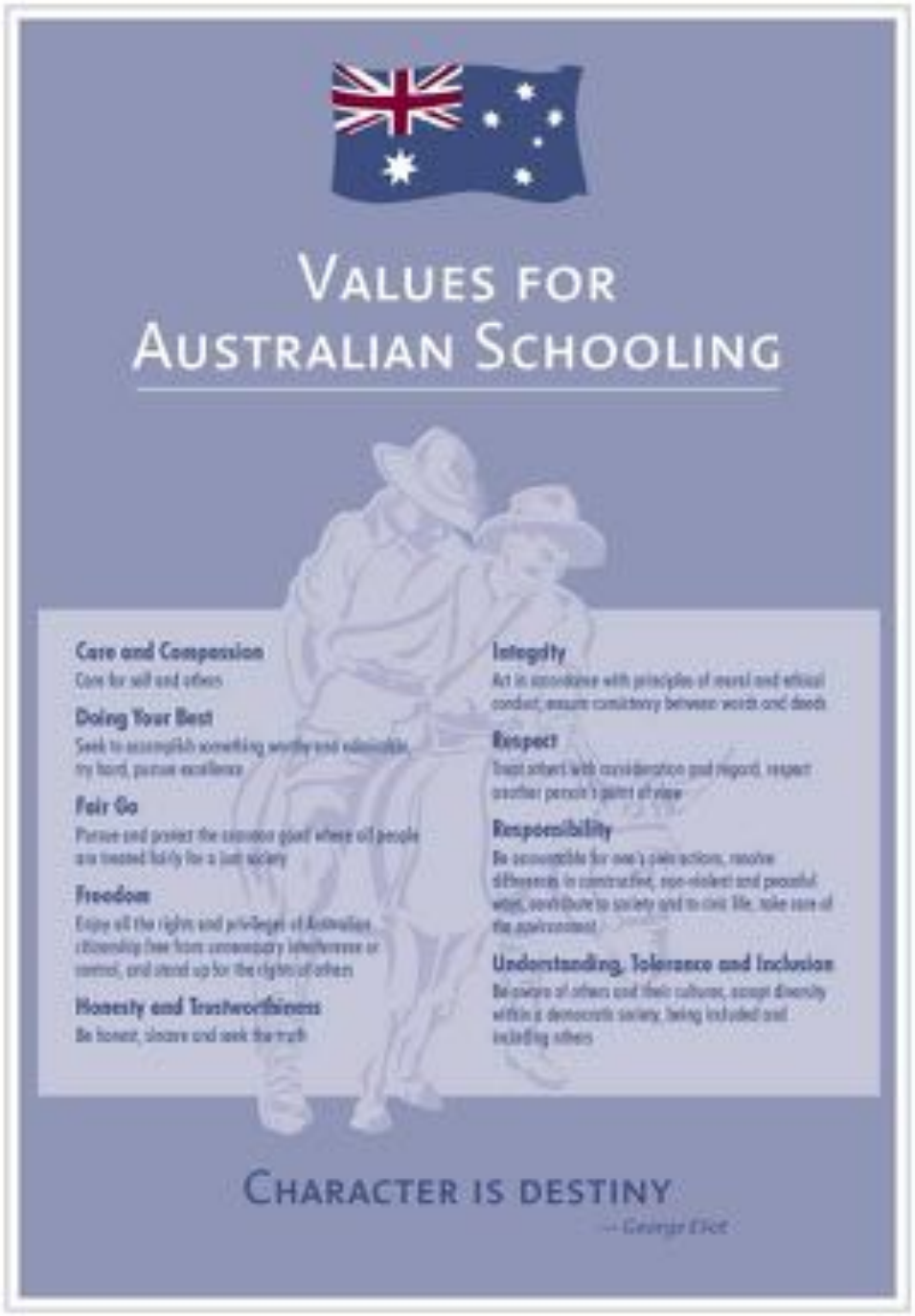
Nine **Values** for Australian Schooling were identified for the National Framework for **Values** Education in Australian **Schools**. They emerged from Australian ...

Fair Go: Responsibility
Doing Your Best: Respect
Care and Compassion: Integrity
Freedom: Understanding, Tolerance and Inclu...

School Values - Maiden Gully P.S.

Case: Values of School A

Case: Values of School B



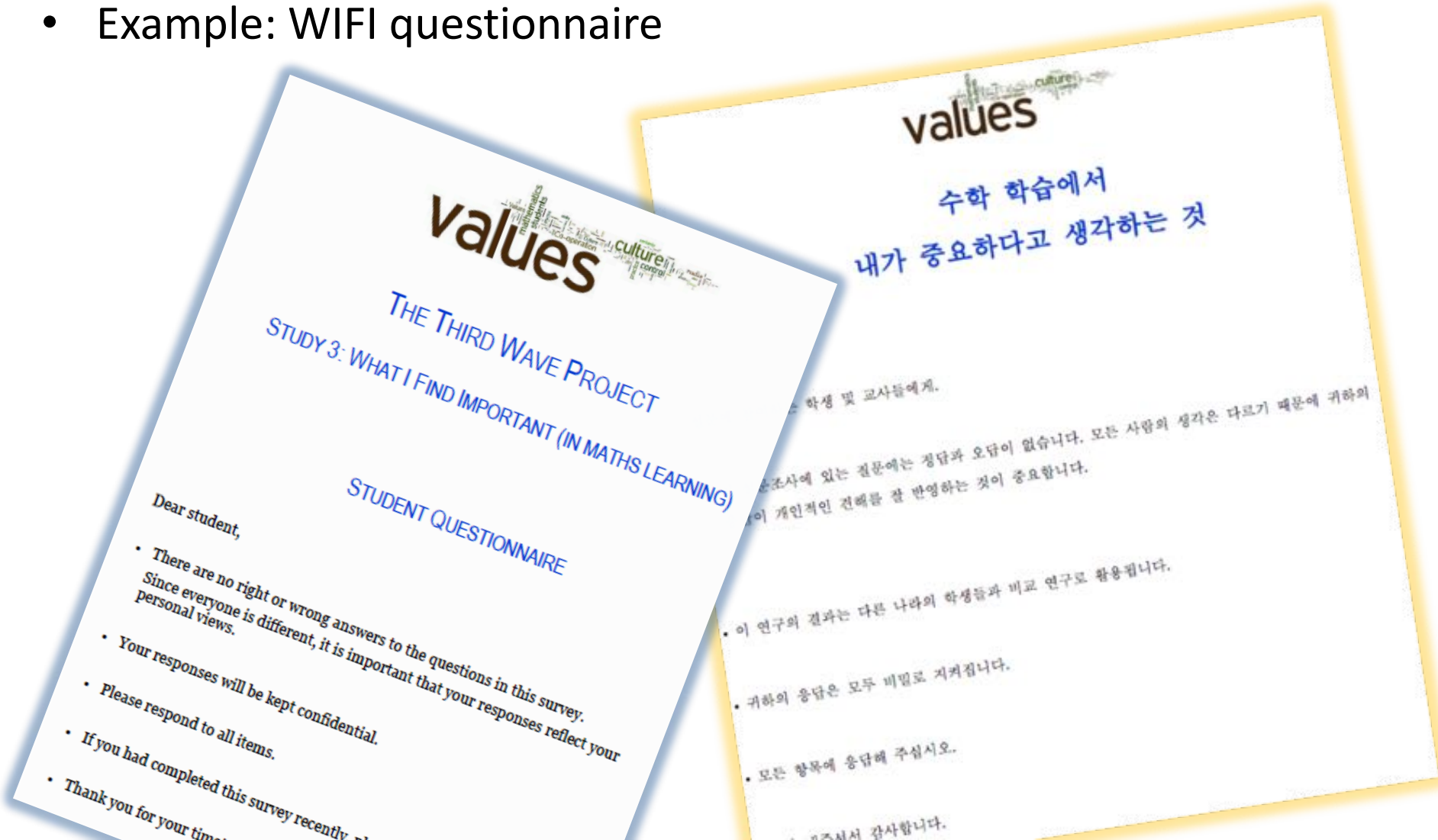
Values for Australian schooling

What's important (to you) in mathematics education?

- Mathematics Proficiencies:
  - Reasoning
  - Fluency
  - Understanding
  - Problem-solving
- Collaboration
- Logical thinking / rationalism (see Bishop, 1988)
- Efficiency
- ….

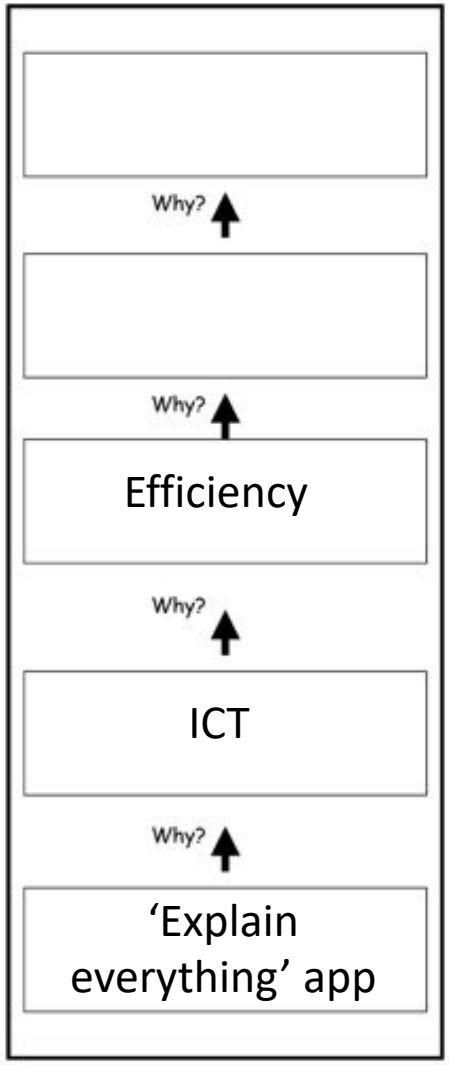
Questionnaire

- Example: WIFI questionnaire



Self-reflection

Example: Freitas et al's (2004) 'why' construal level survey



Self-reflection / interview

- Eg: Repertory grid technique (George Kelly)

My ideal city

	SYD	MEL	BNE	PER	My ideal	

Case: Wells Fargo bank

Commitment and alignment of stakeholders

Ceremonies

Stories

Symbols

(National) Pi day (14 Mar)

Pi = 3.14159265359

Where's the mathematics?

Mathematics is applicational … really?!

Fibonacci Day (23 Nov)

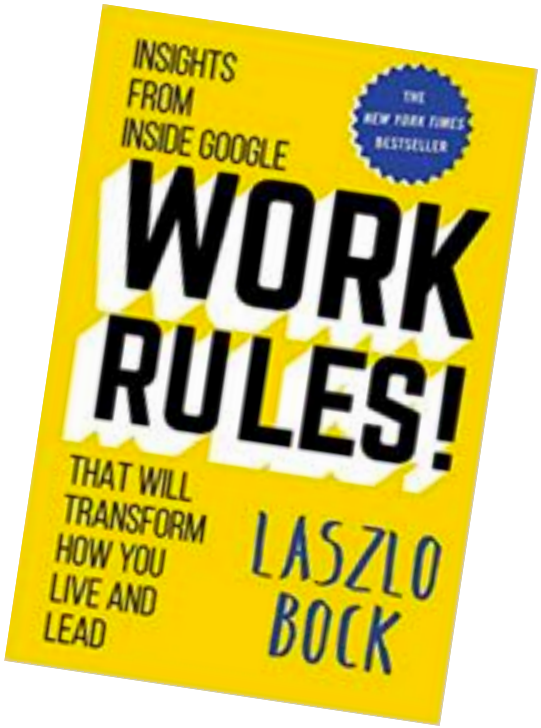
1, 1, 2, 3, 5, 8, 13, 21, ….

That time of the month ...

Stories

Case: Google campuses

- Why the free flow of food?



What might some of the barriers and inhibitors be?

In the other sessions today …

Vision

Values

B1 Mathematics with a spirit of inquiry
C4 Finding clarity

Buy-in

C5 Building teacher capacity through Professional Learning Teams: A problem-solving based approach
C7 Using picture books to enhance connections
E2 Engaging community and family in your mathematics program

Thank you

Wee Tiong SEAH

wt.seah@unimelb.edu.au

https://www.facebook.com/groups/Values.Maths/