



Catholic  
Education  
Tasmania

Student Focused  
Christ Centred  
Learning for Life

The following resource has been  
created for attendees of the  
Teaching Matters Summit.

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# Improving your school by harnessing the science of learning

DR NATHANIEL SWAIN  
LA TROBE UNIVERSITY

## TEACHING MATTERS

*SCIENCE OF LEARNING  
NATIONAL SUMMIT*



Catholic  
Education  
Tasmania



CATHOLIC EDUCATION  
Archdiocese of Canberra & Goulburn



SOLAR LAB  
Science of Language  
and Reading Lab



# FIND OUT MORE, STAY IN TOUCH

## DR NATHANIEL SWAIN

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SENIOR LECTURER – LEARNING SCIENCES AND  
LEARNER ENGAGEMENT



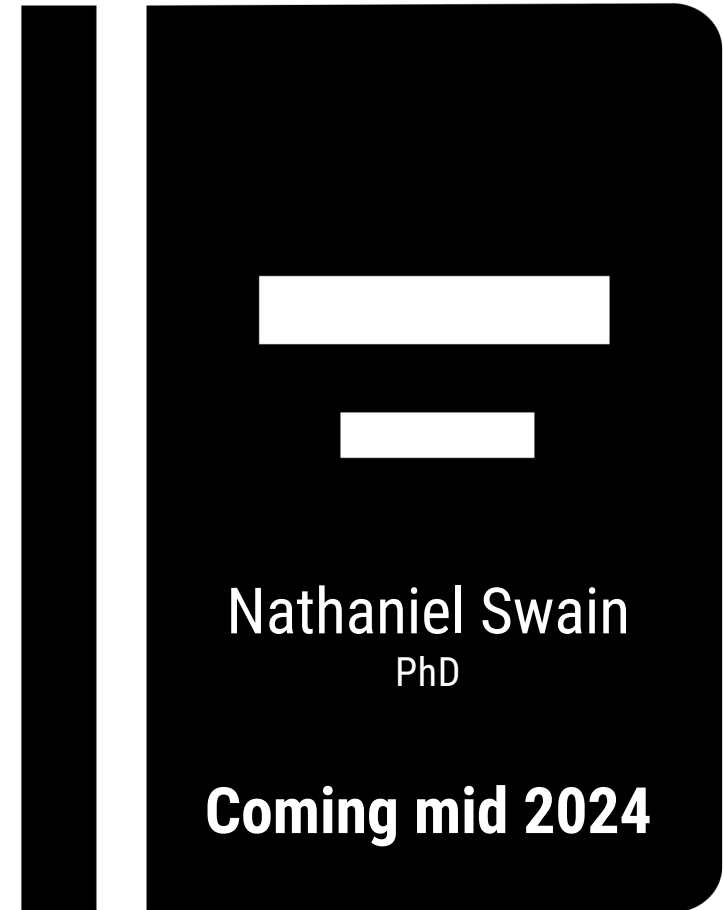
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# HARNESSING THE SCIENCE OF LEARNING

Success stories to help kickstart  
your school improvement



# Contributing Authors

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## Contributing Schools + Systems

Churchill

Challis

Bentleigh  
West

Riverwood

Catalyst

Yates  
Avenue

Brandon  
Park

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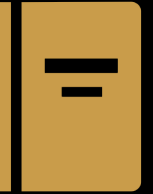
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Stories change lives

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How can schools harness the science  
of learning?



Edu-Renaissance

The wicked  
challenges

To walk with  
purpose

# Edu-Renaissance

- *Practice*
- *Policy*
- *Movement*



*Practice*

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Churchill  
Primary

## *Policy and systems*

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CECG

CET

MACS

Tas Gov

NSW

SA

QLD Gov

AERO

Grattan

CIS

*Policy and systems*

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TEEP  
NSRA

ResearchED

SoTLA

SBP

Think Forward

La Trobe SoE

SOLAR Lab

ACU ACAL

LDA

SPELDs and DSFs

DVS

CODEREAD

# Just a Pendulum Swing?

# Edu-Renaissance

- *Practice*
- *Policy*
- *Movement*





# The wicked challenges

## *FOUR PROBLEMS*

1. *Teacher Knowledge*
2. *Beliefs and Enactment*
3. *Curricular*
4. *Leadership + change*

How to spread change and refine practices?

# TYPES OF KNOWLEDGE

**GEARY, As Cited In** Sweller, J. (2008) Instructional Implications of David C. Geary's Evolutionary Educational Psychology, *Educational Psychologist*, 43(4), 214-216,



## BIOLOGICALLY PRIMARY KNOWLEDGE:

- Basic, universally acquired information
- Acquired from acculturation and interaction
- Serves as fundamental precursors to academic learning

## BIOLOGICALLY SECONDARY KNOWLEDGE:

- Not learnt naturally
- Acquired through deliberate instruction and explicit learning
- Still can be discovered but is harder, slower! And less reliable.



**BIO. SECONDARY KNOWLEDGE SHOULD BE TAUGHT EXPLICITLY**



The Congo River, a wide river in the middle of Africa, has many small waterfalls and islands. These features, along with the danger of **rapids**, make travelling on some sections of the river impossible. 🗨️

In 1897, gold was discovered in Klondike, Canada. Excited travellers quickly built simple boats and travelled down the Yukon River to reach its meeting with Klondike River. Little did they know that the Yukon has several small waterfalls. Of the 800 boats that travelled the river, 150 were wrecked. Sadly, ten people drowned on the journey, confirming that the power of rivers must be respected.



Teacher and students read together.



Why would rapids make it dangerous to travel on the Congo River?



Rapids would make it dangerous to travel on the Congo River because \_\_\_\_.

### Vocabulary

**rapids**, n. a place on a river there the water moves swiftly and violently



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Teacher and students read together.



Why would rapids make it dangerous to travel on the Congo River?



Rapids would make it dangerous to travel on the Congo River because **the water in them makes it difficult to control boats** (because the water runs quickly and violently).


### Vocabulary

**rapids**, n. a place on a river there the water moves swiftly and violently

# The wicked challenges

## *FOUR PROBLEMS*

1. Knowledge
2. **Beliefs and Enactment**
3. Curricular
4. Leadership + change



How to spread change  
and refine practices?

# The wicked challenges

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# The wicked challenges

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How to spread change  
and refine practices?



# To walk with purpose

## ***Next Steps***

- 1. Mindshifts*
- 2. Caveats*



1. Put student learning at the heart of teaching;
2. Make effective and engaging teaching the norm;
3. Plan curriculum that is coherent, knowledge-rich, and includes regular review;
4. Teach at the whole-class level responsively;
5. Make it, easy for your students to participate; and
6. Invest in your professional knowledge.

# TO RESPOND TO STUDENT NEEDS SHOULD WE:

(A) CATER TO STUDENT **INTEREST**, OR (B) BUILD STUDENT **FOCUS AND CAPABILITY** ?

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*In both of these classes, students are not enthusiastic about or confident with writing.*

**TEACHER A -  
ANASTASIJA**

**TEACHER B -  
KIARA**

# Caveats

1. Not an ideology
2. Down with 'appeals to nuance'
3. It's about 'best bets'
4. Critical reading of the research
5. Spread *substance* not *style*

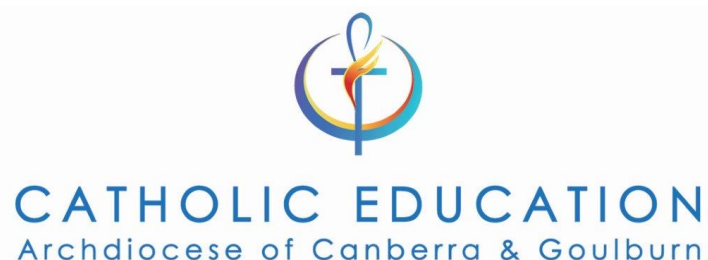
# *Next Steps*

1. Be unafraid of trying and failing
2. Be diligent but open to admitting the need to re-shift

# Featured Schools

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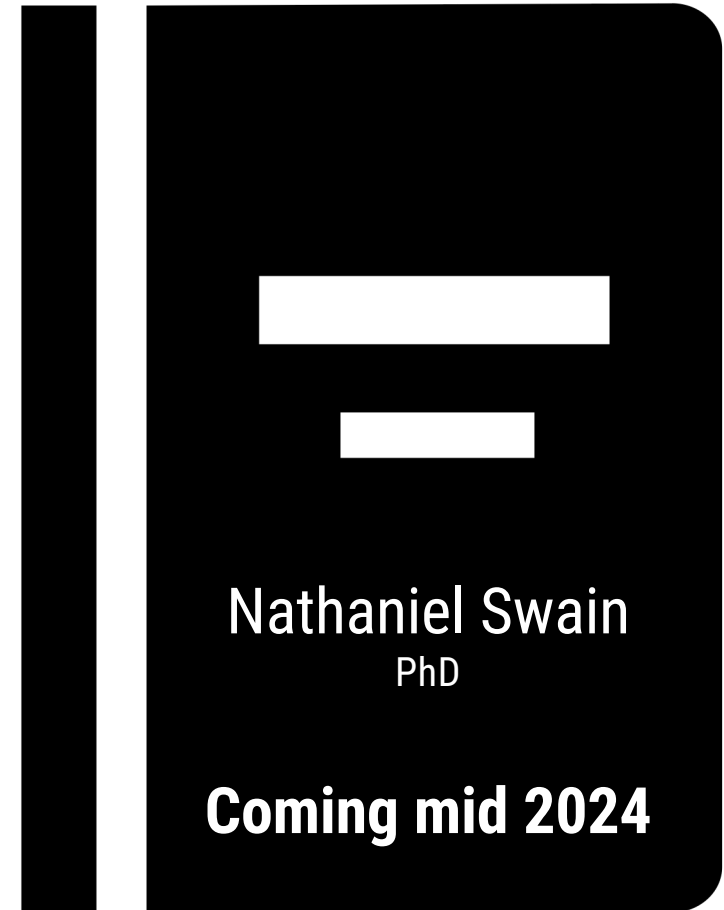
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*A final thought*

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