

# Swan Delta 2019: Reflections of Change

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pronouns: he/him/his

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## Outline

- 1 Delta Conference Series
- 2 Collaboration
- 3 Flipped Classroom
- 4 Assessment
- 5 Online Resources
- 6 Questions?

## Cristina Varsavsky

*Monash University*

- Biennial conference series on Mathematics and Statistics education
- Held in the southern hemisphere (Australia, South Africa, New Zealand, Argentina, Brazil)
- Inspired initially by the *change* in educational practices
- The 12th conference 'Swan Delta' was held in Fremantle, WA 24–29th November, 2019
- Swan Delta Conference theme: Reflections of Change.

## Tanya Evans

*University of Auckland*

Need for more collaboration between those in Maths/Stats Education and lecturers in Maths/Stats

- Lecturers should investigate their teaching more
- Need to analyse what aspects of their teaching are/are not effective
- Avoid reliance on anecdotal 'evidence'

## Interdisciplinarity

As discussed at the School retreat (8th November, 2019), there is always scope for more interdisciplinary research and collaboration.

## Jessica Libertini

*Virginia Military Institute*

Discussed effective ways to begin interdisciplinary conversations:

- Often people ask “What math excites you?” or “What math do your students need?”
- Better: “What problems are interesting to you?”
- Also shared some tasks based on interdisciplinary discussions, and how these tasks lead to a change in research by collaborators.

# Janine Sprakel

*Australian Mathematical Sciences Institute*

Similar comments about using open questions to motivate and encourage students.

## Flipped Classroom

- Where most content is delivered outside of class, and in-class learning is devoted to applying knowledge and conceptual development
- My motivation: *MAST20031 Analysis of Biological Data*





## Ng Wee Leng

*Nanyang Technological University*

Research based on a Linear Algebra class taught using a flipped learning model

- Small sample size: 15 students out of 19 in the class participated
- Used only student responses about amount of time spent on various tasks (videos, quizzes, etc)... did not use metadata
- Overwhelmingly positive feedback (all means/medians  $\geq 5$  for 6 point Likert scales)
- Huge variability in length of time spent on various tasks (order of magnitude difference for most types of tasks)

## Nazim Khan

*University of Western Australia*

### Statistics class using a flipped learning model

- Assessed effect of online components on attendance at lectures
- No positive impact from flipped classroom model

## Tanya Evans

*University of Auckland*

- Utilised quizzes to assess retention of key points from previous lecture
- Optimal inter-study interval is 24 hours

## Future flipped learning research

Currently preparing an ethics application for a study in Semester 1, 2020

- Utilising the large class (220+) available
- Analysing the metadata in addition to student perceptions
- Analyse which aspects of the flipped learning experience are (a) valued by students; and (b) useful.

## Writing Assessment

Chris Sangwin (*University of Edinburgh*)

- Students will (attempt to) game any system
- Why not have “tests worth teaching to?”

Kaitlyn Riegel (*University of Auckland*)

- Students access the internet, not as a last resort, but as a first point of call
- Importance of considering this when writing questions

Emily Cilli-Turner

*University of La Verne*

<http://www.creativityresearchgroup.com/>

A 'Creativity in progress rubric' to help students evaluate and recognise creativity

Scales:

- Making connections
- Taking risks

## Chris Sangwin

*University of Edinburgh*

Developing STACK: an online assessment tool

- Similar to WeBWork
- Allows comparison of consecutive lines of working
- Better (more natural) display of student answers

Also mentioned: <https://www.euclidea.xyz/>

Diana White

*University of Colorado, Denver*

<https://blogs.ursinus.edu/triumphs/>

TRansforming Instruction in Undergraduate Mathematics via Primary  
Historical Sources



## Chris Matthews

*Aboriginal & Torres Strait Islander Mathematics Alliance*

Spoke at the School Retreat dinner (7th November, 2019)

<https://aiatsis.gov.au/collections/collections-online/digitised-collections/ethnomathematics-australia>

## Juan Ponce Campuzano

*University of Queensland*

<https://www.jcponce.com/p/projects.html>

[https://complex-analysis.com/content/domain\\_coloring.html](https://complex-analysis.com/content/domain_coloring.html)

<https://editor.p5js.org/jcponce/sketches/a7rugAqAn>

<http://www.jezzamon.com/fourier/>

Many good visualisations, particularly of complex analysis



# Questions?