

## Workshop 5

Wednesday 4<sup>th</sup> October, 1155

### Workshop summary

<b>W5D</b>	Doing Mathematics Like a Research Mathematician	Anthony Harradine ( <b>S</b> )
<b>W5E</b>	What technologies can we use when triangulating teaching, learning and assessment to the Mathematics Achievement Standards?	Derek Smith
<b>W5F</b>	Numerics in the Bible	Murray Hamilton
<b>W5G</b>	Stimulating simulations through code: Harnessing the power of statistical and algorithmic thinking (AS91628)	Anna Fergusson
<b>W5H</b>	Getting Started with Flipped Learning - making your own videos	Stephen McConnachie
<b>W5I</b>	Developing problem solving skills levels 3 to 5 - Ideas to support teaching and learning across the strands.	Sandra Cathcart
<b>W5J</b>	Raising engagement and achievement in Mathematics and Statistics through BYOD	Misbah Sadat
<b>W5K</b>	Activities for building strong relationships	Grant Ritchie, Michelle Dalrymple
<b>W5L</b>	Developing Statistical Thinking through Year 7 - 10	Dave Phillipps

### W5D

#### Doing Mathematics Like a Research Mathematician

*Anthony Harradine*

Sounds hard, hey! Well it is not, and it might just be the answer to some of your prayers. If you can add-up, take-away and do a few other lowly mathematical processes you'll be sweet-as. Intrigue, surprise, OMG-moments - while doing mathematics? Well yes, but like a research mathematician does it - just with simpler tools. It will be fantastic (sic) fun, and you will get a few gems to take back to the classroom; you'll be chuffed. Comes and see the mathematical beauty that was born when lazy Ms. Dillon set 'funny' homework' and how striking out numbers leads to mathematical thinking that comes from 'nowhere', just like magic (sic).

Seriously, come along, do some maths, and take it back to your students - they will love it. Suitable for all teachers of upper primary, secondary and beyond.

Recommended Audience: Year 7 – 8 Teachers, Year 9 – 10 Teachers, Year 11 – 13 Teachers

*Anthony began teaching mathematics in 1984. Currently Director of the Potts-Baker Institute at Prince Alfred College, he has spent the last thirteen years trying to better understand his 'failures' of the previous twenty. His many mentors have taught him a lot about mathematics and statistics, doing mathematics and statistics, and research. He likes nothing better than sharing ideas with anyone silly enough to have a conversation with him. He really likes mathematics and statistics.*

## W5E

### **What technologies can we use when triangulating teaching, learning and assessment to the Mathematics Achievement Standards?**

**Derek Smith**

Unpacking the Levels 1-3 Mathematics Achievement Standards. What technology should/could/can I use to support my teaching programmes for junior and NCEA classes?

This workshop is presented to you by CASIO our Platinum Sponsor

Recommended Audience: Year 9 – 10 Teachers, Year 11 – 13 Teachers

*Derek is currently on contract to the University of Otago as a Mathematics and Statistics (Central South) Facilitator (Secondary). He has taught mathematics and statistics at secondary schools in the Wellington region for 28 years holding HOD positions and a position as senior lecturer at VUWCE, in Mathematics Education.*

## W5F

### **Numerics in the Bible**

**Murray Hamilton**

Ancient Hebrew has each letter also representing a number, thus the value of words and sentences can be calculated. Russian Mathematician Dr Ivan Panin (1855 - 1942) published books on his extensive life's work on this. The value of Pi and e in the scriptures? The number patterns in the opening verse of the Bible will also be investigated. Dr Panin was also a reader of Greek, which also has numerical values represented by letters. Some interesting number patterns in the words of Jesus will be demonstrated.

Other topics: Pascal's wager, 666 and triangular numbers of the popes' titles, prophetic accuracy of Daniel 2 or chance? This workshop will be of interest to anyone with an open mind and prepared to have their beliefs either challenged (or strengthened) by the mathematics in the Bible.

Recommended Audience: Other

*Murray Hamilton has had over 30 years of experience of teaching Mathematics in NZ schools. Currently he is the Curriculum Leader of Westmount School. He is also a Christian who has found the Mathematics in the Bible to be amazing and faith building.*

## W5G

### **Stimulating simulations through code: Harnessing the power of statistical and algorithmic thinking (AS91628)**

**Anna Fergusson**

Do your students graph and discuss the distribution of their simulation results? Have you tried using spreadsheets for simulations not got frustrated with the associated constraints or learning issues? Do you know how to include data science capabilities in your teaching of statistics? If you've answered no to any of these questions, then this workshop is (highly likely to be) for you! This workshop will explore simulations with a focus on probability modelling and coding. We'll identify the key statistical ideas and concepts that we need to develop, and how coding can support the development of these ideas and concepts. I will share a new tool I have developed using CODAP (Common Online Data Analysis Platform), which allows students to generate and explore data from a simulation designed with code. You will need to bring a web-enabled device along to the workshop as we will be using online resources/tools as part of the workshop.

Recommended Audience: Year 11 – 13 Teachers

*Anna Fergusson teaches intro-level statistics at the University of Auckland. She is interested in statistical education, in particular curriculum and assessment design, and enjoys facilitating workshops to support professional development of statistics teachers. Anna has also worked with the New Zealand Ministry of Education and the New Zealand Qualifications Authority on the development of national assessment standards, tasks and teaching resources for statistics. She also runs a blog for statistics teachers: teaching statistics is awesome*

## **W5H**

### **Getting Started with Flipped Learning - making your own videos**

**Stephen McConnachie**

This is a practical workshop looking at how to make flipped learning videos for Maths. There will be a bit of an overview of the Flipped Learning model and the associated research, but the learning objective is to be able to create your own Maths videos to flip your own classroom. Expect practical video-making tips and the opportunity to make your own during the workshop. This session is suitable for beginners.

Recommended Audience: Year 7 – 8 Teachers, Year 9 – 10 Teachers, Year 11 – 13 Teachers

*Stephen is the e-Learning Coordinator and a Mathematics teacher at Middleton Grange School in Christchurch, specialising in Calculus and Scholarship Calculus. He is the Vice-President of the Canterbury Mathematical Association, and is passionate about equipping teachers in the region to use e-learning effectively. He also loves drinking coffee and playing music.*

## **W5I**

### **Developing problem solving skills levels 3 to 5 - Ideas to support teaching and learning across the strands.**

**Sandra Cathcart**

Students in the junior school need to develop the problem-solving and literacy skills that prepare them for NCEA. In this workshop there will be an opportunity to experience some hands-on activities and resources which you can use in your classroom now, which allow students to think outside skill based activities and develop a more curious mindset.

Recommended Audience: Year 7 – 8 Teachers, Year 9 – 10 Teachers

*For the last 5 years Sandra Cathcart has been a Facilitator and National Co-ordinator for Mathematics and Statistics in the Secondary Student Achievement Professional Learning and Development initiative, focused on raising student achievement in secondary schools. This work focused on change leadership with teachers, middle leaders and senior leaders in a range of schools, involving the facilitation of in-depth professional learning and development centred on teaching and learning. In addition to the work in schools, Sandra has facilitated a number of workshops and clusters, has written a series of national newsletters and a range of online materials and has supported her regional mathematics association.*

## **W5J**

### **Raising engagement and achievement in Mathematics and Statistics through BYOD**

**Misbah Sadat**

This workshop is about sharing my "learning" journey in digital assessments. It is quite specifically geared towards teachers struggling to engage students, particularly boys, in statistics standards. This presentation covers areas regarding engagement, BYOD, collaboration and raising achievement for our low level learners. This will be an interactive workshop because experimenting in digital assessments have raised quite a few pedagogical questions that I would love to discuss with colleagues that may attend the workshop.

Recommended Audience: Year 9 – 10 Teachers, Year 11 – 13 Teachers

*Misbah Sadat is the current Head of Mathematics Faculty at Horowhenua College. She has a B.SC in Mathematics from University of Maryland, USA and a graduate diploma in Teaching specialising in Math Education from Victoria University. She taught Mathematics at Paraparaumu College from 2011 to 2016 and moved to her current position in 2017.*

## **W5K**

### **Activities for building strong relationships**

***Grant Ritchie, Michelle Dalrymple***

Does building strong relationships in the classroom happen by chance? What can we do to foster the development of student-teacher and student-student relationships within our curriculum activities? Grant and Michelle will share a few of the activities that they have used successfully in their classes. Come prepared to play, laugh and enjoy being a "student" in their class.

Recommended Audience: Year 7 – 8 Teachers, Year 9 – 10 Teachers, Year 11 – 13 Teachers

*Michelle and Grant are both currently teaching at Cashmere High School in Christchurch. Both are passionate teachers who love working creatively with their students to achieve the best outcomes possible.*

## **W5L**

### **Developing Statistical Thinking through Year 7 - 10**

***Dave Phillipps***

In Years 7 to 10 we have so much freedom in what we can teach - we're not bound by high stakes assessment and parental expectations of what that means. It's the ideal time to nurture and grow statistical thinking. Yet, Statistics is often the poor cousin in many school's Yr 7-10 schemes. In this workshop we will explore this issue and how we may utilise this prime learning time better.

Recommended Audience: Year 7 – 8 Teachers, Year 9 – 10 Teachers

*Dave Phillipps is currently HOLA Mathematics at Lincoln High School. He has also been a Secondary Mathematics & Numeracy advisor. He strongly believes in the importance of developing students as thinkers and problem solvers within the NZ Curriculum.*