

Workshop 2

Tuesday 3rd October, 1445

Workshop summary

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W2C

Teaching research skills for NCEA L2 and L3 Statistics

Marion Steel

Research is now a required part of the statistics standards both at NCEA L2 and L3. We are all beginners in teaching students how to do research and include it in reports, so this is an opportunity to share what is working in the classroom. I will bring the experience of running our large L2 and L3 Statistics courses, with the resources and teaching ideas which we have found helpful. Please bring questions, ideas and successes to share.

Recommended Audience: Year 11 – 13 Teachers

Marion is currently HOD Statistics at Epsom Girls Grammar School. Her other interests include gifted and talented education in maths, kayaking and cooking.

W2D

BYOD in the maths classroom

John Mitchell

Many schools are introducing BYOD into their schools. It appears that there is a dearth of research on achievement and engagement in the effect of BYOD in maths classrooms. My research looked into the achievements and engagement of two year 9 classes in a couple of schools. It involved visiting several schools both in the Wellington area and the UK. I intend to share with you some of my findings and introduce some of the things I now incorporate in my lessons. This is not a resource session.

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

I started teaching in 1998 after completing 22 years in the Royal Air Force. I taught in two schools in the UK and was Head of Maths at a boys grammar school in Kent. In 2009 I immigrated to New Zealand and have taught at two schools in Wellington. Current Assistant HOD at Hutt Valley High School. I was on study leave in 2016, working on a thesis for a Masters of Education.

W2E

Underground Mathematics

Ingrid Rinsma

From this year the new GCSE and A level Mathematics Examinations in England have a focus on problem solving, while the A level also includes mathematical argument and proof. This talk will concentrate mainly on the Underground Mathematics project, which has rich resources suitable for Year 13 but also some for Year 12. These resources have been developed with teachers and help students to see the connected nature of Mathematics and promote discussion while deepening their understanding.

Recommended Audience: Year 12 – 13 Teachers

Ingrid is currently teaching at Hillcrest High School. She has recently returned from the UK where she learnt about Underground Math and how it can be used as problem solving material for our senior students

W2F

Positive financial futures for our young people

Jane Watson, Yolande Rosario

Financial Capability is a core life skill for participating in society – it creates an important foundation for future learning, attitudes and behaviours to be developed. The mathematics classroom provides important opportunities to deliver Financial Capability and to make a real difference in improving financial outcomes for young people over their lifetime.

The mathematics classroom can play a part in helping students make smart decisions about money by equipping them with the right tools, skills and information to navigate through increasingly complex and sophisticated financial products.

This presentation will:

- provide suggestions for the integration of Financial Capability into the Statistics and Mathematics matrices
- showcase resources, including assessments, that teachers of Mathematics can use for the delivery of Financial Capability
- explore opportunities to provide evidence for the measurement, statistics and number components of numeracy.
- Share case studies of how schools have implemented Financial Education in different Mathematics courses
- be interactive and engaging with resources to take away ready for use in the classroom

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

Jane is a Roaming Teacher at Young Enterprise Trust. She provides personalised professional development for teachers, and works with them on curriculum planning, course development, assessment delivery and moderation of assessments.

Jane was on the Advisory Group for qualifications relating to the Financial Capability project undertaken by Core Education on behalf of the Ministry of Education in New Zealand to re-write the Financial Capability progressions. She works with the New Zealand Qualifications Authority to review and write assessments standards in Financial Capability for the National Qualifications Framework.

Yolande is Head of Curriculum for Young Enterprise Trust and takes responsibility for the development of programmes and resources in the areas of both Financial Education and Enterprise Education. Her focus is on ensuring that learning materials created are engaging and aligned to the curriculum. Yolande recently developed a tailored financial capability programme for young mums attending Teen Parent Units.

W2G

Is it possible that mathematics is not as perfect as we have been always told? Or unique learning opportunities that mathematical discrepancies entail

Igor Kontorovich

My presentation will consist of three parts: In the first part, I will argue that while mathematics has been often presented as a coherent and well-connected structure, it is saturated with discrepancies and inconsistencies of different sorts. Illustrations will be used in the second part for demonstrating that even students who are well-versed with school mathematics may be not aware of the imperfect nature of the discipline. Specifically, when encountering discrepancies, students can infer that they are the ones to make a mistake and some of them even renounce their perfectly valid ways of thinking for achieving at least temporary coherence.

In the last part of the presentation, I will propose that multiple discrepancies can be detected in curricular mathematics, which provides unique opportunities for developing meta-ways of thinking. The meta-ways of thinking can serve as useful points of reference for students when coping with new concepts and non-routine problems. Furthermore, developing meta-ways of thinking may have a positive impact on students' image of mathematics as a discipline. My presentation will contain ideas for activities that can be used in elementary, secondary and high-school classrooms for developing meta-ways of thinking among all students.

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

I am a researcher in the Mathematics Education Unit, Department of Mathematics, the University of Auckland. My research is aimed at promoting excellence in mathematics educations among all students and teachers. I concentrate on learning/teaching processes in which knowledge of a specific content can be deepened and enriched as well as in developing powerful ways of thinking that are useful in multiple mathematical domains. I believe in the power of these processes to prepare students for future math-related jobs and university studies.

W2H

Personalised Learning in Year 11

Liz Sneddon

This year I have set up a Year 11 course that is extremely flexible, both with the choice of Achievement Standards, and the assessments that students complete. The key has been designing assessments that can be completed as a project, managing the authenticity and validity through randomisation, and allowing and encouraging students to engage with and understand topics before they sit the assessment. Multiple pathways means that each student is developing their own personalised learning programme for the year. Come along and find out about the innovative assessment ideas and structures we have designed to track students' progress.

Recommended Audience: Year 11 – 13 Teachers

Liz Sneddon is a mathematics and statistics teacher, who has been fortunate to be granted a Ernest Duncan Award in 2015 for the workbooks and resources she developed for teaching statistics to junior classes. She is passionate about teaching and learning, and building relationships with students is a core philosophy. Personalising learning is a strand that she has been working on for a few years now, in order to enable students to work on topics that interest them and work at their own pace.

W2J

Behaving like a mathematician

Gillian Frankcom

The NCEA has brought the word investigations much more into the centre of the different pedagogies that maths teachers use to teach mathematics. We begin quite closed, then open out the activities with What If.... At the end of the workshop we will discuss the difficulties associated with changing our teaching style, and how to spot low floor high ceiling activities. Bring your laptop.

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

Gillian is an Initial Teacher Educator at Auckland University

W2K

Risk Activities for the classroom

Lorraine O'Carroll

Risk is one of the most important concepts we can teach our students; topics such as insurance and weighing up health risks will be a part of their working life. This workshop will include a range of teaching activities that introduce concepts of risk, not just relative risk.

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

Lorraine is currently the Head of the Mathematics Department at Reporoa College in the central North Island. In 2014 she completed her Masters in Professional Studies, with a dissertation that looked at Year 13's Statistical understanding of Risk.