Annual Report: Education Committee of NZ Statistical Association: December 2012 to November 2013

Mike Camden; for AGM of Tue 26 Nov 2013.

The year

Over these 12 months, we met 5 times, on 3 December, 30 January, 8 April, 24 June, and 14 October. We continued to use Statistics NZ's offices and video links between Auckland and Wellington (and sometimes Christchurch). Members elsewhere phoned in.

The year has been a happening one for statistics in NZ schools. The new curriculum-driven achievement standards in statistics for the National Certificate of Educational Achievement (NCEA) reached NCEA Level 3. We have commented on assessment materials for these standards where possible, and on the ongoing need for resources

It has also been Maths of Planet Earth Year (http://mpe2013.org/), the International Year of Statistics (http://www.statistics2013.org/), and the year of NZAMT13 (http://nzamt13.org.nz/). This was the 13th biennial conference for the NZ Association of Maths Teachers, and the first NZAMT conference to have both mathematics and statistics in its title.

The team

The team continues to expand, and has members from most of the possible forms of involvement in statistical education. The size and range of the group demonstrates the the enthusiasm and commitment of the statistics education committee in NZ. We welcome the four new members at the end of the list.

Alasdair Noble (Plant and Food Research, Lincoln) (link with NZSA Executive)
Alex Neill (NZ Council for Education Research) (chair)
Matt Regan (University of Auckland)
Mike Camden (Statistics NZ)
Derek Smith (Te Aho o Te Kura Pounamu, and Otago University)
Maxine Pfannkuch (University of Auckland)
Tim Burgess (Massey University)
Pip Arnold (Cognition Education)
John Harraway (Otago University))
Anne Lawrence (Massey University)
Sashi Sharma (Waikato University)
Chris Wild (University of Auckland)
Michelle Dalrymple (Cashmere High School, Christchurch)
Emma Mawby (Statistics NZ)
Alan Keegan (Statistics NZ)
Anna-Marie Martin (Avondale College)
Marion Steel (Team Solutions)
James Curran (NZSA President) (University of Auckland)
Jeanette Chapman (Otago Girls' High School)
Rachel Passmore (St Kentigern College)
Marie Fitch (University of Auckland)
Nicola Petty (Statistics Learning Centre).

Statements on curriculum, assessment, and resourcing

We, together with some people outside the committee, have put effort into several specific issues. They are outlined below. We maintain excellent relationships with key staff in the NZ

Qualifications Authority (NZQA). and the Ministry of Education.

The new NZ Scholarship performance standard in statistics

This is up and running for the first time this year. We commented on the 2012 sample exam, and communicated our views to the NZQA.

The document headed "Some personal thoughts and comments on the New Zealand Scholarship Statistics Sample Examination and Schedule" is posted on C@S website: http://new.censusatschool.org.nz/level-8-scholarship/ at http://new.censusatschool.org.nz/wp-content/uploads/2013/04/ScholarshipResponse.pdf .

Letter to school principals on resourcing

The 2012 AGM asked us to draft an open letter asking principals to be aware of the pressures that the curriculum changes put on teachers. This was sent by President James Curran, and starts with these paragraphs:

> I am writing to you in my capacity as President the New Zealand Statistical Association to alert you to the magnitude of changes to the statistics strands of the revised New Zealand curriculum, particularly the new demands on access to computers and for teacher up-skilling. NZSA asks that you take the following factors into account when making resourcing decisions about purchase and deployment of computer equipment and professional development for teachers.
>
> The world of data is growing explosively in the size and pervasiveness of data collection, and also in a huge, unmet demand for growing numbers of people with skills to deal with it. The ability to learn about how the real world works using data is becoming ever more-critically important.
>
> The statistics strands of the New Zealand curriculum are preparing students to live in this new world with a forward-looking, computer-centred curriculum that is more advanced than any anywhere else in the world.

Linear transformations and linear combinations of random variables

We communicated our views on this to the Ministry of Education:

> Our interpretation is that linear transformations of continuous random variables have been removed from the curriculum

NCEA Level 2 exams, 2012

The new Level 2 standards were assessed for the first time in 2012. We communicated our response to NZQA on the Achievement Standard 91267: Apply probability methods in solving problems, and said, among other things:

> We hope that this exam is part of an ongoing process in which the teaching of the area moves ever closer to the intent of the curriculum. … We strongly recommend that present and future exam writers help to move us to a new way of teaching and learning Probability.

NCEA Achievement Standard 91586: Apply probability distributions in solving problems

We're working on comments for this standard and its exemplar.

Resources on Probability

We discussed the need for improved resources with the Ministry in July, and were very impressed by the speed with which these, and improvements to the glossary, were put in place.

Other issues

There are plenty, as follows.

Census at School

This had its biennial run this year. It attracted thousands of respondents, and some appreciative treatment on national radio.

Software

Genstat for Teaching and Learning continues to provide further useful features, in time series and randomisation. Further lessons to go with it are being produced.

The iNZight system continues to become yet more user-friendly. The teachers in iNZight workshops at the NZAMT conference had many audible 'wow' experiences, as they met time series methods, scatterplot matrices, rotating 3D plots, etc.

Last year's road show

About the time of the last AGM, the Auckland team, with people from other centres, presented on the new features and software resources, around the country.

The committee congratulates Maxine Pfannkuch and her team of organisers and presenters. They reached a large proportion of NZ’s maths teachers, about 700 people, from across the country. Observations suggest that teachers were engaged, appreciative, and convivial. This support came at a crucial time as NCEA standards that use the Curriculum’s innovations were coming into use.

The new mathematics education group

Several people from within the mathematics education community have seen our committee as a very successful one, that has helped to lead statistical education to where it is in NZ. They have discussed our procedures with us, and have set up a similar group, with some of our members on it. They are concerned that mathematics education moves in a direction that meets the needs of the world, and that mathematics has a strong positive profile.

Science fairs

We continue to be interested in the future funding of the prizes for these, and in ways of enhancing the statistics at them.

World statistical congress and International Association for Statistical Education satellite

NZ was well represented at these events, with various NZ presenters, including an invited

paper at WSC in which Maxine Pfannkuch and Chris Wild described:

> how a group of professional statisticians, statistics education researchers, and practising teachers worked together to produce a curriculum that reflected modern and future statistical practice and that incorporated statistics education research findings about student learning.

NZ Association of Mathematics Teachers' 13th biennial conference

NZAMT13 was held in Wellington in October, with about 400 participants. The committee and NZSA helped to choose and fund the 2 keynote statistical speakers: Allan Rossman (Caltec), on real-life examples that cast light on important questions, and Chris Wild, on being caught in the path of the data deluge. We instigated an informal statistics forum, in which teachers discussed their resource needs. The leading concern is about suitable local datasets for assessment.

The new Government Statistician, Liz MacPherson, gave a presentation at the closing ceremony, with animated forms of Florence Nightingale's graphics.

It seems that teachers very much appreciate the input of the statistical community. Their commitment to and enthusiasm for getting the statistics right was apparent.

Context in assessment

We're interested in providing views on how much background research students should do into context, in internal assessments. We're interested in looking at this next year.

Ethical issues in experiments

We're interested in looking at this too, next year.