Annual Report: Education Committee of NZ Statistical Association: Jul 2010 to Aug 2011

Mike Camden; for AGM of Tue 30 Aug 2011.

Meetings

We met in August, October, December, February (the day before the quake), May, and June; mostly for two hours of profound thought! Our sympathy goes to all those affected by the earthquakes. Our own activities were impacted by files located in red-stickered buildings.

We meet by video and phone, with the support of Statistics NZ. We are working on using the Kate Wave as a new communication tool for wrapping up video conferences.

The team

The team now has members in Auckland, Palmerston North, Wellington, Christchurch, Lincoln, and Dunedin. It includes people with most of the possible forms of involvement in statistical education. It includes two past presidents of IASE. We are:

Alasdair Noble (Plant and Food Research, Lincoln) (Chair, link with NZSA Executive)
Alex Neill (NZCER)
Mike Camden (Statistics NZ)
Derek Smith (Te Aho o Te Kura Pounamu)
Maxine Pfannkuch (University of Auckland)
Murray Black (Auckland University of Technology)
Tim Burgess (Massey University)
Pip Arnold (Cognition Education)
Lindsay Smith (Epsom Girls Grammar)
John Harraway (Otago University))
Anne Lawrence (Massey University)
David Phillipps (Canterbury University)
Sashi Sharma (Waikato University).
Chris Wild (University of Auckland)
Michelle Dalrymple (Cashmere High School, Christchurch)
Emma Mawby (Statistics NZ).

Providing specialist expertise on time series was:

Paul Cowpertwait (Auckland University of Technology)

If we need to contact the outside world formally, we aim to do this via the president and executive.

The new NCEA standards in statistics and probability

This year, most of our time, has gone into the NCEA standards. They are being redesigned so that the assessment process is in line with the new (2007) NZ Curriculum. The level 1 standards are in action this year, the level 2 standards are finished and ready to go for 2012, and the level 3 standards are out for consultation and use in 2013.

When teachers implement these standards, particularly the level 3 ones, they will find some shifts that (we hope) will make their tasks clearer and more engaging. Here are a few.

- Teachers and students can be liberated from the struggle of getting spreadsheet software to do tasks like seasonal analysis of time series. Instead they are encouraged to use software tools, then reflect on and critique the results

- As in other learning areas, teachers can assess student work as Achievement / Achievement with Merit / Achievement with Excellence, using new criteria that are about the quality and depth of student thinking
- In level 3, students will be able to make inferences using methods such as resampling and randomisation

Ministry of Education people have been very keen to listen to us and to action our proposed changes. They appreciate that NZSA input has been vital in getting statistics education to where it is.

Free software for students

Suddenly we have not one but two transformational products available free to school teachers and students: GenStat for Teaching and Learning, and the R-based iNZight. They both meet the needs of the new curriculum beautifully, but they are different in origin and design.

- GenStat is the professional package, with plenty of visual and analytical statistics, including resampling methods. It is menu-driven and user-friendly.
- iNZight gives visual access to data, graphics and analysis; and can have further processes added. The authors are adding methods that assist students to build informal inference concepts, and to visualise resampling methods.

Teachers have greeted both products with enthusiasm.

We acknowledge the creativity and determination that has made these two items available, and we thank:

- John Harraway, David Baird, colleagues here, and the international office in the UK, for their work and generosity with GenStat
- Chris Wild, Dinieka Chandra, and colleagues, for their work with iNZight. They are using the work of many contributors to R.

There is a third free local product; Doug Stirling's CAST. It can meet teacher and student needs in a different way.

NZSA speakers at NZ Association of Mathematics Teachers conferences

For NZAMT 12 (July 2011, Dunedin), NZSA supported Helen MacGillivray, professor at QUT and president of IASE. Her plenary was titled 'Realisation of the learning riches in statistics'. Another plenary slot was filled by committee member Pip Arnold: 'What is the story? Being a data detective'.

NZAMT 13 is in October 2013, and is named 'Absolutely Positively Mathematics and Statistics'. Three members of this committee are on its organising team, which is seeking strong input from statistical educators.

ICOTS, OZCOTS, USCOTS

NZ was well represented at these conferences, and particularly at the superb ICOTS10 in Slovenia last July. John Harraway was chair of the international programme committee. Of the 26 NZers who participated and presented, several are on this committee. We hope that this means that the education committee is up to date, and in the lead.

The RSS 'read paper': Towards more accessible conceptions of statistical inference

The Royal Statistical Society celebrated World Stats Day (20/10/2010) with an event

involving the presentation of this paper. The paper and the responses by some 36 people give a strong view of where statistical education is heading, and of NZ's role in this. We congratulate the four authors, three of whom are on the committee. The paper is now published: JRSS series A vol 174 issue 2.

Envisioning the Future, and Implementing the Vision

These two conferences were run by the NZIME-funded SSUMS (Senior Secondary and Undergraduate Mathematical Sciences) project, last year and this year. Their vision is for education in all the mathematical sciences, in the last years of school and the first years of tertiary. We aim to keep in touch with the work groups that come from the project.

At the latter conference, three separate speakers pointed out that stats education in NZ is ahead because of persistent input into school curriculum, resources and professional development for teachers, over years, from NZSA people.

CensusAtSchool

The latest biennial launch for this was on 2 May 2011 and includes questions for students on which team they think will reach the final of the Rugby World Cup and go on to win the competition. As well as providing a substantial dataset of student responses collected since 2003, the site contains data analysis tools in line with the new curriculum in statistics, and provides access to professional development resources for teachers. Maintained by the University of Auckland, the site also provides links to international CensusAtSchool resources and to Statistics NZ.

Curriculum in Australia

The new national curriculum in Australia has emerged this month, and statisticians there are interested in how NZ has handled teacher support.

The future

The next few years will be interesting ones for teachers, as the new opportunities for learning and assessment in statistics come into effect. We hope to maintain and improve links with teachers, the Ministry, and NZQA. We hope to be able to channel the statistical community's expertise into supporting teachers and students.