

## Annual Report: Education Committee of NZ Statistical Association: November 2018 to November 2019

For AGM of Wed 27 Nov 2019.

The AGM needs to note the magenta text, at the end of this report, about:  
Endorsement of modification to policy 15: budget item for the Education Committee  
Our plans for 2020

### A year of progress

**New Zealand's own online refereed statistics teaching journal** took flight in September: the *Statistics and Data Science Educator (SDSE)* is now online at: <https://sdse.online/>. The committee congratulates Maxine Pfannkuch (Managing Editor *SDSE*) and Anna Fergusson (Website and Technical Editor *SDSE*). We look forward to seeing it progress further, with teachers around the country contributing and reviewing lesson plans. The website notes its NZSA basis:

*Statistics and Data Science Educator* is an online journal set up for teachers by members of the New Zealand Statistical Association (NZSA) Education Committee under the auspices of NZSA. It has peer-reviewed lesson plans for teachers at all levels, early childhood to graduate.

The journal aims to improve the quality of teaching resources and the designing of tasks. Task design has a critical influence on students' reasoning processes, what they learn, and on how they experience and understand the nature of statistical activity and thinking.

### The Ministry of Education's **NCEA Change Package 2019**

(<https://conversation.education.govt.nz/conversations/ncea-review/>) emerged in May this year. It leads to the **Review of Achievement Standards (RAS)** (<https://conversation.education.govt.nz/conversations/ncea-review/review-of-achievement-standards/>) for 2020 and beyond. In October, the Ministry called for expressions of interest for people to be on a Subject Expert Group for this RAS. At time of writing, the Ministry are assessing these. We are preparing ourselves to support the members of the Subject Expert Group in statistics wherever we can.

One central issue for us is the structure of NCEA for *Mathematics and Statistics*. We hope that our 'learning area' becomes two 'subjects' at NCEA Levels 2 and 3, with enough flexibility to enable schools to meet the learning needs and learning pathways of their very varied students.

We've made input to the Ministry's processes along the way. Our inputs include a paper in May (*Learning Area and Subjects in Mathematics and Statistics*), and a visit to both Ministry and NZQA in Wellington in October by a team of five of us (Chris Wild, Anna Fergusson, Pip Arnold, Michelle Dalrymple, Derek Smith, Mike Camden). Chris led a presentation, at both meetings, on the state of school statistics education, and on what the committee had to offer.

The Association's new arrangement for funding some of the committee's activities helped with travel for this visit.

The **International Data Science in Schools Project (IDSSP)** (<http://www.idssp.org/>), after consultation, released its *Curriculum Frameworks for Introductory Data Science* in September. Its Curriculum Team includes Chris Wild, and its Advisory Group includes Chris Franklin, Michelle Dalrymple, Anna Fergusson, and other NZ-linked people. We've recently drafted a statement of support for consideration by NZSA president and executive.

The NZ Association of Mathematics Teachers held its 16th biennial conference in Hutt City in October: **NZAMT16: Embracing Ako, Game On**. The NZSA-supported keynote speaker this time was Anna Fergusson, who showed that data and exploration of it can be accessible and engaging. Several committee members presented workshops. We ran a forum, to explain our interests and to seek teacher feedback. The feedback included concerns about assessment and its impacts on teacher happiness and on learning, the huge need for professional development, and the huger need that will

follow the reform of NCEA.

We congratulate convener Derek Smith and his team on running a smooth and inspiring conference.

Chris Franklin, our overseas (USA) member, was present and summarised the conference like this:

I was amazed at where NZ teachers are: their confidence and competence, and their interest. Anna's keynote at the conference was a huge boost to statistics education in NZ

### International engagement continues

This includes these activities:

- Collaboration continues between ourselves and the ASA/NCTM committee in the USA, with some of our members involved in writing of their resources (see below).
- Members are involved in the International Data Science in Schools Project: <http://www.idssp.org>.
- Anna Fergusson presented workshops with a data science focus at JSM/MWM, held July 28-August 1 in Denver, Colorado.
- ASA/NCTM is on track to release two resources next year, including one titled *Focus on Statistics - Investigations for the Integration of Statistics into High School Mathematics Classrooms*, a collection of data centric investigations for High School students, for which Anna was the graphics editor. The second resource is a statistics book for teacher educators with Christine Franklin as one of the co-authors.
- Pip Arnold is a member of the Pre-K-12 *Guidelines for Assessment and Instruction in Statistics Education (GAISE)* second edition writing team. The *GAISE II* document signals progression in statistics education from the original *GAISE* which was published in 2005. The *GAISE II* document is designed to support both teaching and learning, and policy direction, both in the United States and internationally. *GAISE II* will be rolled out April 2020 at the 100<sup>th</sup> anniversary NCTM conference in Chicago, Illinois.
- Rhys Jones has been asked to join the Royal Statistical Society's new Teaching Statistics Special Interest Group.
- In setting up *SDSE*, Maxine Pfannkuch has been exchanging ideas with Catherine Case, Editor of *Statistics Teacher*, about criteria for good lesson plans and including an Editor's Note.

ASA/NCTM = American Statistical Association / National Council of Teachers of Mathematics

JSM/MWM = Joint Statistical Meetings / Meeting Within a Meeting of ASA/NCTM

We're also interested in progress in other areas. They include: **statistics for primary schools**, the **NCEA external assessments**, concepts about **samples and populations in inference**, NZ's **Networks of Expertise** providing professional development in Mathematics and Statistics, **Census At School**, **software** progress, **science fairs** and their ongoing funding, and **poster competitions**.

### Who we were in 2019

Here's the set of 26 members as at the end of 2019. The first eight people formed the steering group for 2019.

- Alasdair Noble (AgResearch) (convenor and link with NZSA Executive)
- Mike Camden (secretary)
- Maxine Pfannkuch (University of Auckland)
- Chris Wild (University of Auckland)
- Michelle Dalrymple (Cashmere High School)
- Anna Fergusson (University of Auckland)
- Mark Hooper (Otago Boys' High School) (meetings scribe)
- Pip Arnold (Karekare Education)
  
- Derek Smith (University of Otago)

- Sashi Sharma (University of Waikato)
- Marion Steel (Epsom Girls' Grammar School)
- Jeanette Chapman (Otago Girls' High School)
- Marie Fitch (University of Auckland) (deputy chair)
- Robyn Headifen (University of Auckland)
- Tilman Davies (University of Otago)
- Dave Phillipps (Lincoln High School)
- Christine Franklin (American Statistical Association and University of Georgia, USA)
- Emma Mawby (Stats NZ)
- Anne Lawrence (Massey University)
- Rachel Passmore (University of Auckland)
- Rhys Jones (University of Auckland)
- Matthew Parry (University of Otago)
- Neil Marshall (NZ Qualifications Authority).
- Rebecca Pollitt (Otago Girls' High School)
- Paul Gardner (Stats NZ)
- Liz Sneddon (Ormiston Senior College)

President Vanessa attended meetings when she was able.

2019 is the year in which a major mover and shaker in international, national and local statistical education retired from the committee: Many thanks and best wishes to you, John Harraway!

### When we met

We had four meetings in the year, with the help of the Zoom conferencing service. We again thank the University of Otago (and in particular Greg Trounson) for their support with this service. Attendance went like this:

Date	Attendees	Apologies	Total
3/02/18 Wedn	18	4	22
08/05/18 Wedn	12	10	22
07/08/18 Wedn	13	6	19
06/11/18 Wedn	15	6	21

### What we released

We sent out four 'statements', during the year:

*External NCEA assessments in Statistics 2018*, 15 May 2019

<https://new.censusatschool.org.nz/wp-content/uploads/2019/05/External-assessments-in-Statistics-2018-As-sent.pdf>

*Statement to NZQA about AS91035, AS91264 and AS91582 clarifications and student exemplars*, August 2019

*Learning Area and Subjects in Mathematics and Statistics*, 11 July 2019

This is a statement for the Ministry, and other stakeholder groups, about ensuring that mathematics and statistics has substantial options in the new NCEA system.

*Kim Hill on RNZ on Sat 7 Sept 2019 10.05 am and 31 Aug 11.40 am: David Spiegelhalter, Hadley Wickham*

### What is our purpose in life?

On September 7, Kim Hill asked David Spiegelhalter if they taught statistics in UK schools. He can answer the 'our purpose in life' question for us (this is an edited version of some of what he said):

Yes, but not as well as in New Zealand. New Zealand is the world leader in statistics education. I take full credit for stealing from New Zealand's way of teaching statistics in schools. It's quite extraordinary the progress that's made. You may not know from inside in New Zealand, but New Zealand has a fantastic reputation for education both in statistics and computing. It is an amazing achievement.

### Endorsement of modification to policy 15: budget item for the Education Committee

At the 28 February 2019 NZSA committee meeting, the Executive approved the inclusion in policy 15 (<https://www.stats.org.nz/policies/>) of a budget item for the Education Committee of up to \$5000 annually to be reviewed each year. **We ask that the AGM endorses this modification to policy 15.** This budget item would be used to further the goals of the Education Committee and could include, but not restricted to: 1. travel expenses for members to attend meetings with officials for example Ministry of Education or NZQA 2. Sponsorship of a speaker at NZAMT or similar conferences. All expenditure would be by the Treasurer of the Association at the request of the Education Committee. The intent of this is to enable the Education committee to operate in a more efficient and accountable manner.

Note: our constitution says:

“The Executive Committee may adopt a policy document to support its management of the affairs of the Association, provided no policy contravenes the constitution. A policy or amendment or repeal shall be passed by a majority of an Executive Committee meeting and shall be notified to the membership in a publication of the Society or otherwise. The Executive Committee shall review any policy upon request from a member. The initial policy document and all modifications to Policy in a given year shall be put to the Annual General Meeting for endorsement.”

### We're looking forward to a busy year in 2020

We'd like the AGM to endorse our proposed Steering Group for 2020:

- Alasdair Noble (AgResearch) (convenor and link with NZSA Executive)
- Pip Arnold (Karekare Education)
- Mike Camden
- Michelle Dalrymple (Cashmere High School)
- Anna-Marie Fergusson (University of Auckland)
- Mark Hooper (Otago Boys' High School).
- Maxine Pfannkuch (University of Auckland)
- Chris Wild (University of Auckland)

We'd like the AGM to consider and comment on our priorities and ongoing activities for 2020. They are very similar to the items for the last three years. The ongoing issues above fit within them. They are:

Priorities:

1. Statistics education in the primary sector
2. Establishing the New Zealand online statistics teaching journal:  
*Statistics and Data Science Educator (SDSE)* <https://sdse.online/>
3. Datasets for teaching, learning, and assessment, that engage and are useful for students
4. Future of our school statistics curriculum [Most of the tasks for 2020 belong here.  
The major one will be support for members of the Subject Expert Group for the Review of Achievement Standards in Maths and Stats.]

Ongoing activities:

1. International collaboration with partners in the USA and UK
2. Reviewing implementation of the statistics strand of the *NZ Curriculum*, with inclusion of assessment. [This is about the operational side of Priority 4]