

## OZCOTS: BRINGING STATISTICAL EDUCATORS AND STATISTICIANS TOGETHER

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*The first Australian Conference on Teaching Statistics, OZCOTS, was run in 1998 and involved papers given by the Australians at ICOTS5. Its success in bringing together Australians involved in teaching statistics resulted in regular OZCOTS gatherings from 1999 to 2002. In 2006 Helen MacGillivray was awarded one of the first Australian Learning and Teaching Council's Senior Fellowships, and as part of her programme, OZCOTS was revived, this time running as a two-day satellite to the 2008 Australian Statistical Conference (ASC) and involved a wider audience. OZCOTS 2008 was modelled on the IASE's satellite conferences to ISI Conferences. Further OZCOTS meetings were held during the 2010 and 2012 ASC's. In 2012 the publisher Springer requested to publish a volume based on OZCOTS meetings, this will be available in late 2014. This talk will discuss some of the experiences of these OZCOTS events.*

### INTRODUCTION

The first OZCOTS conference in 1998 was inspired by papers given by Australians at the 5th International Conference on Teaching Statistics (ICOTS) which had been held in Singapore earlier in 1998. Its success in bringing together Australians involved in teaching statistics resulted in annual OZCOTS gatherings from 1999 to 2002. These were quite informal events, having no formal proceedings. In 2006 Helen MacGillivray was awarded one of the first Australian Learning and Teaching Council's (ALTC) Senior Fellowships. In 2008, as the culmination of this programme, Helen revived OZCOTS and together we ran it as a two-day satellite to the 2008 Australian Statistical Conference (ASC), with a one-day overlap. The success of OZCOTS 2008 led to further equally successful OZCOTS programs in 2010 and 2012, both attached to the biennial ASC meetings.

### OZCOTS 1998 to 2002

Between 35 and 50 people took part in each of the first five informal OZCOTS meetings which ran for one or two days and included presentations given at a previous meeting (eg ICOTS, IASE roundtable or satellite), or as practice runs for upcoming meetings, so that local people who could not attend those meetings had a chance hear the presentations. As well as the talks, in most of the meetings an optional workshop was held. These included building statistical animations using Excel, the use of packages as PaceXL and Fathom and hands on experience of being a student in an online classroom. These meetings proved very popular and enabled local statistics educators to get to know each other and gain new ideas for teaching statistics.

### OZCOTS 2008

After the initial five OZCOTS meetings, they were not held again till 2008 when OZCOTS 2008 ran in association with the ASC held in Melbourne in July 2008, as mentioned in the Introduction. The Conference Committee consisted of Helen MacGillivray (joint chair, joint editor), Brian Phillips (joint chair, local arrangements), Michael Martin (joint editor), Kay Lipson and Peter Howley, with entertainment provided local balladeer extraordinary, Peter Martin. OZCOTS 2008 was modelled on the successful International Association for Statistical Education's (IASE) satellite conferences to ISI Conferences, with papers in proceedings and an optional refereeing process available to authors. The program consisted of six keynote papers, eighteen contributed papers, and two discussion panels. The six keynote speakers were members of the Helen's Senior Fellowship's international collaborative team, and their participation in OZCOTS 2008 was fully funded by her Fellowship. The arrangement was that the first day of OZCOTS was available to ASC delegates at no extra charge and was highly successful with standing room only available at times with many ASC delegates attending. A number of the ASC

delegates who had not pre-registered for the second day of OZCOTS, became so interested by the first day that they stayed on for the second.

The program included the six inspiring keynote talks, 18 contributed presentations and two panel discussions which covered a wide range of topics as can be seen in the OZCOTS 2008 proceedings which can be found at the IASE website under Regional publication, [http://iase-web.org/Publications.php?p=Regional\\_Publications](http://iase-web.org/Publications.php?p=Regional_Publications). As well as the Australian Learning and Teaching Council, OZCOTS 2008 had support of the 2008 ASC and the Victorian Branch of SSAI. The Melbourne experiment with about 70 registrants led to a most interesting and informative program with many lively discussions.

#### *Keynote speakers*

- Chris Wild (New Zealand): “*Applied Statistics as a growth engine for statistics programs*”
- Rob Gould (USA): “*Technological Literacy and Statistics Education: a call for thought and research*”
- Peter Petocz (Aus): “*On becoming a statistician*”
- Adrian Bowman (UK): “*Statistical cartoons: the role of graphics in understanding statistics*”
- Larry Weldon (Canada): “*Experience first, logic later*”
- Michael Martin (Australia): “*What lies beneath: inventing new wheels out of old*”

#### *18 contributed speakers*

#### *Panel discussions*

- What resources do university teachers of statistics need and want?
- National and international commonalities and contrasts in university statistics education.

#### OZCOTS 2010

OZCOTS 2010, held in Perth in December, had the theme of *Building Capacity in Statistics Education*. A similar format to OZCOTS 2008 was used, though the level of funding available was much smaller. The Conference Committee consisted of Helen MacGillivray (joint chair, joint editor), Brian Phillips (joint chair, joint editor) and Alexandra Bremner (local arrangements). OZCOTS 2010 had support of the Australian Statistical Conference 2010, SAS and the NSW and Victorian Branches of SSAI. The program consisted of two keynote speakers, twenty-two contributed papers and three discussion panels. OZCOTS 2010 proceedings can also be found at the IASE website under Regional publications, see [http://iase-web.org/Publications.php?p=Regional\\_Publications](http://iase-web.org/Publications.php?p=Regional_Publications)

#### *Keynote speakers*

- Chris Wild (New Zealand): “*What I see is not quite the way it really is*”
- Delia North (South Africa): “*Transforming statistics education in South Africa*”

#### *22 contributed speakers*

#### *Panel discussions*

- Australian Statistical Conference Panel
- Opportunities and challenges in designing statistics curricula
- National and international networking and planning.

#### OZCOTS 2012

OZCOTS 2012, held in Adelaide in July, had the theme *Statistics Education for ‘Greater’ Statistics*, with the ‘greater’ statistics reflecting the whole process of the practice of statistics. The program consisted of two keynote speakers, eighteen contributed papers, and three discussion panels. The OZCOTS 2012 Conference Committee consisted of Helen MacGillivray (joint chair, joint editor), Brian Phillips (joint chair, joint editor), Olena Kravchuk (local arrangements), with ASC2012 and SAS providing significant support and close collaboration. The full proceedings of

OZCOTS 2012 have not been published, but many of the papers, or expanded versions of them, will appear in the Springer publication, MacGillivray, Martin, & Phillips, (2014).

#### *Keynote speakers*

- Kaye Basford (Australia): “*Beyond the Statistical Fringe*”
- Jessica Utts (California, USA) “*Bayes, Bias and Belief: How I Became a Temporary (?) Bayesian*”

#### *18 contributed speakers*

#### *Panel discussions*

- Evidence-based qualitative research
- Online teaching
- Future plans

Registrations at OZCOTS 2008 to OZCOTS 2012 varied between 50 and 70 plus others from ASC who attended sessions in day one. Of the 68 papers presented, about 30% were refereed.

### THE SPRINGER VOLUME

Many of the authors of papers from the 2008 to 2012 OZCOTS conferences were invited to develop chapters for refereeing and inclusion in a special volume of a Springer publication. Of the presenters at OZCOTS in this period, 24 took up the challenge, and this volume is will be available from Springer late in 2014, MacGillivray, Martin, & Phillips, (2014). There is insufficient space here to discuss the papers in any detail, but the contents are listed in the Appendix. The chapters in Parts A to E were all developed from papers presented at either OZCOTS 2008, 2010 or 2012, and have been grouped under the headings of keynote topics, undergraduate curriculum, undergraduate learning, professional development, and postgraduate learning.

The papers in Part F were accepted as refereed papers for OZCOTS 2012 and have not appeared elsewhere; appear in their OZCOTS 2012 form in the volume. Although short, they cover a range of topics which reinforce and link with, a number of the preceding chapters. Topics include evaluation of learning in an online environment for postgraduates, discussions of resources to support holistic experiential learning of the statistical investigation process embedded in data and context, exploiting sporting interests and some having a discipline-specific focus, on online learning challenges and some of the broad spectrum of statistics educational roles of national statistics offices.

### CONCLUSION

The OZCOTS meetings have showed there is a need among teachers of statistics for local meetings which provide the opportunity to share their experiences and learn from each other. It is anticipated that further OZCOTS events will be held in the future.

As Helen wrote in the preface to the Springer Volume:

Advancing and maintaining improvements in statistics education need collaboration, cooperation and dedication across the community of statisticians and statistical educators. Australians have been part of the international vanguard for many years, especially among Australians and New Zealanders and, since their inception in 1998, the OZCOTS meetings have contributed to providing a forum and bringing this community together.

### ACKNOWLEDGEMENT

I wish to thank Helen MacGillivray who took OZCOTS to a new level and made the Springer volume possible.

### REFERENCES

MacGillivray, H., Martin, M., & Phillips, B. (Eds.) (2014). *Topics from Australian Conferences on Teaching Statistics: OZCOTS 2008-2012*. ([Springer Proceedings in Mathematics & Statistics](#),

Vol. 81). New York: Springer Science+Business Media.  
<http://www.springer.com/statistics/book/978-1-4939-0602-4>

APPENDIX: Contents of MacGillivray, Martin, & Phillips (2014). *Topics From Australian Conferences on Teaching Statistics*. New York: Springer Science+Business Media.

**PART A KEYNOTES**

- 1 *Interacting with data, concepts and models: illustrations from the rpanel package for R.* Adrian Bowman
- 2 *An elephant never forgets – effective analogies for teaching statistical modelling.* Michael Martin
- 3 *Experience early, logic later.* Larry Weldon
- 4 *Transforming statistics education in South Africa.* Delia North and Temesgen Zewotir
- 5 *Beyond the statistical fringe.* Kaye Basford

**PART B UNDERGRADUATE CURRICULUM**

- 6 *The development of a first course in statistical literacy for undergraduates.* Sue Finch and Ian Gordon
- 7 *Spreadsheets and simulation for teaching a range of statistical concepts.* Graham Barr and Leanne Scott
- 8 *Navigating in a new pedagogical landscape with an introductory course in applied statistics.* Martin Gellerstedt, Lars Svensson and Christian Östlund
- 9 *The Golden Arches: an approach to teaching statistics in a first year university service course.* Małgorzata Korolkiewicz and Belinda Chiera

**PART C UNDERGRADUATE LEARNING**

- 10 *How do students learn statistical packages? A qualitative study.* James Baglin and Cliff Da Costa
- 11 *A comparison of first year statistics units' content and contexts in a multinational study, with a case study for the validation of ASSIST in Australia.* Ayse Bilgin, Caterina Primi, Francesca Chiesi, Maria Lopez, Maria del Carmen Fabrizio, Veronica Quinn, Tamas Gantner, Petra Graham
- 12 *Understanding the quantitative skill base of business students for statistics.* Joanne Fuller

**PART D WORKPLACE LEARNING AND PROFESSIONAL DEVELOPMENT**

- 13 *Square PEGs in round holes: academics teaching statistics in industry* Peter Martin
- 14 *Raising the capability of producers and users of official statistics.* Sharleen Forbes, John Harraway, James Chipperfield and Siu-Ming Tam
- 15 *Education for a workplace statistician.* Kristen Gibbons and Helen MacGillivray
- 16 *Improving teachers' professional statistical literacy.* Helen Chick, Robyn Pierce and Roger Wander
- 17 *Statistical training in the workplace* Maheswaran Rohan and Ian Westbrooke

**PART E POSTGRADUATE LEARNING**

- 18 *Engaging research students in online statistics courses.* Glenys Bishop
- 19 *Engaging entry level researchers in agriculture in statistical communication and collaboration: why? and how?* Olena Kravchuk and David Rutley
- 20 *Researchers' use of statistics in creative and qualitative disciplines.* Sue Gordon, Anna Reid and Peter Petocz

**PART F PAPERS FROM OZCOTS 2012**

- 21 *Evaluation of the learning objects in a largely online postgraduate teaching program: the effects of learning style* Imma Guarnieri and Denny Meyer
- 22 *Problem-based learning of statistical sampling concepts using fantasy sports team data* Robert Brooks, Ross Booth, Jill Wright and Nishta Suntain
- 23 *BizStats: a data and story library for business statistics.* Howard Edwards, Sarah Edwards and Gang Xie
- 24 *Statistics training for multiple audiences.* Emma Mawby and Richard Penny