



Interesting Times for Statistical Literacy

Curt Hinrichs*

Greetings to the ISLP community! As I write this article I, like many of you, find myself in the midst of the coronavirus pandemic. With the spread of the virus still growing in many countries around the globe many of us are dealing with high levels of stress and uncertainty. We hope you are staying safe as we navigate essential needs, social-distancing, and a major disruption to our way of life. We will get through this, and if there is a silver lining in the tragic daily news is that our communities will have a greater awareness and understanding of statistical literacy.

Never before has the world been so universally drawn to statistical visualizations and models of prediction. Our daily news is filled with these facts and figures as an essential way we can understand this uncertainty. While statistical models are not perfect, they are the best way

to answer many of the important questions we're facing with this pandemic such as how many will be infected and when, how do we allocate health care resources, when can we get back to work, and much more. As George Box said, "All models are wrong, but some are useful," and when we look back on these times we will have the benefits of hindsight to assess how useful our models were. The general public is getting a good dose of statistical literacy and my hope is that this interest will be sustained.

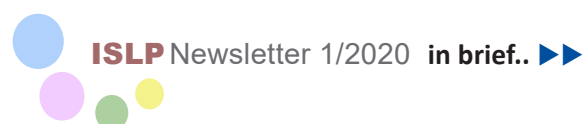
In the wake of the pandemic, educational institutions have closed their doors to thwart the spread of the virus and have shifted to online learning models. The shift has been sudden and institutions have clambered to support these new virtual learning environments. As a result we have heard from many teachers and college instructors who are looking for resources to help support their courses. Volker Kraft, my colleague here on the JMP Academic Team, describes some of the free teaching resources particularly suited to online learning in his article, "Teaching online and learning from home made easier with JMP" in this issue.

We also celebrate the bicentenary of Florence Nightingale (1820-1910), a 19th century data visualization pioneer and nurse in this issue. She is considered the founder of modern nursing and credited with several important innovations both in nursing and graphical displays of data. Nightingale was a prolific nursing teacher and writer who sought to explain things simply which lead to her use of graphical displays of data from the Crimean war. Her contributions to the health care and public health professions resonate especially in this time.

As a sponsor of ISLP we also make JMP Student Edition www.jmp.com/se available to ISLP participants free of charge, and students as well as their teachers and mentors may download copies onto their own computers at home (although students aged <18 must have permission from their parents to do so). For information about getting access to JMP Student Edition, contact your ISLP country coordinators.

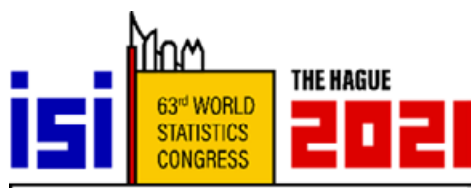
On behalf of the JMP Global Academic team, we wish you health and safety in these interesting times.

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Celebrate the International Year of Women in Statistics and Data Science & the Official Welcome for the ISI WSC 2021 in The Hague!



Join us online on 12 May:

Watch Various Talks about Florence Nightingale, The International Statistical Institute & Find out more about the ISI World Statistics Congress 2021

The ISI will start its celebration of the International Year of Women in Statistics and Data Science on 12 May at 13:00 (Central European Summer Time – CEST) to learn more about Florence Nightingale and the [International Statistical Institute](https://www.isi2021.org/international-year-of-women-in-statistics-and-data-science.html) (ISI) from our distinguished speakers. See more in <https://www.isi2021.org/international-year-of-women-in-statistics-and-data-science.html>.

Florence Nightingale

Why She Is Important to Statistics



12 May 2020 is the 200th anniversary of Florence Nightingale's birth. Nightingale (12 May 1820-13 August 1910) was a British social reformer and statistician, and the founder of modern nursing. She came to prominence while serving as a manager and trainer of nurses during the Crimean War, in which she organised care for wounded soldiers. In 1860, Nightingale laid the foundation of professional nursing with the establishment of her nursing school at St Thomas' Hospital in London. It was the first secular nursing school in the world and is now part of King's College London.

In her lifetime, Nightingale published work concerned with spreading medical knowledge. She was a pioneer in the development of statistical graphics to visually represent data and developed diagrams called coxcombs and used them to illustrate the various causes of death during the Crimean War.

The International Statistical Literacy Project celebrates the 200th anniversary of Florence Nightingale's birth, and all women in statistics!



Covid-19: Changing Perceptions of the Role of Statistical Literacy in Society

James Nicholson*

I have been involved in mathematics and statistics education since I started work as a secondary school teacher in 1978. I was fortunate in learning maths and statistics that I found it made sense. So in my teaching and in developing both curriculum and data visualisation materials I tried to find ways to help people 'make sense' of what they were learning. I guess that this was my initial foray into the world of statistical literacy – a focus on the understanding of principles, and relationships between techniques and topics, but very firmly within formal education processes.

Three years ago I was a guest editor for a special edition of SERJ on statistical literacy (Volume 16.1) and in the editorial (Ridgway & Nicholson, 2017) you can see that I viewed statistical literacy as an extremely important aspect of life for ordinary citizens, many of whom left the world of formal education a long time ago, and most of whom never studied statistics formally, yet daily they are bombarded by messages with a quantitative component which (almost) always are provided by someone with an agenda – often political or commercial. At that point the world was already struggling with 'fake news' but no-one had heard of Coronavirus Covid-19.

In three short months I think I have seen and heard more discussion about matters which belong to the realm of statistical literacy than probably in the three year period before, and it is obvious how difficult people, even well-respected journalists, have found it to understand the uncertainty associated with a global pandemic where there is no bank of scientific knowledge about the disease, how it is transmitted, who is most at risk of contracting it, how it will affect different people, and how to treat it.

When the world returns to some semblance of normality, I believe there will be a greater willingness to engage in thinking about the uncertainties which are all around us, even when the immediate danger of the pandemic has receded. There will be an interest in, and a need for good materials to support understanding of, things like modelling which have been very much the preserve of experts up until now, but are entering the public consciousness now. I hope the ISLP will be able to contribute in helping to shape the brave new world which will arise from the current crisis.

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The ISLP Poster Competition

James Nicholson*

The ISLP has run a poster competition for many years as an outreach activity to help improve statistical literacy at school level, and for the first time the 2018-19 competition included a section for undergraduates as well as sections for junior and senior secondary school age-groups. Here I want to try to offer some suggestions about how to go about constructing a good statistical poster.

A poster is a visual communication medium. It will normally be displayed in a space where it competes for attention – sometimes with other posters, sometimes with other information – so it somehow needs to attract attention. Having caught the eye, it then needs to keep the attention for long enough to get over the message you want. As technology has developed with social networking the norm in very many cultures among young people, the attention span is decreasing, so you need to let readers know quickly why you have something important for them to look at, and make it easy for them to follow. One criticism I have of many of the posters I see is there is too much detail, and these are all country winners so they are good posters,

If you go to the ISLP website there is a competitions page with links to all the competitions run so far, and all the prize winners posters can be seen. In addition, for 2016-17 and 2018-19 you can access all the winning country posters in each section. A lot of these posters have been created electronically, but this is not a requirement as we seek to encourage participation whatever resources are available locally – I will return to this later. Posters can be submitted to the national

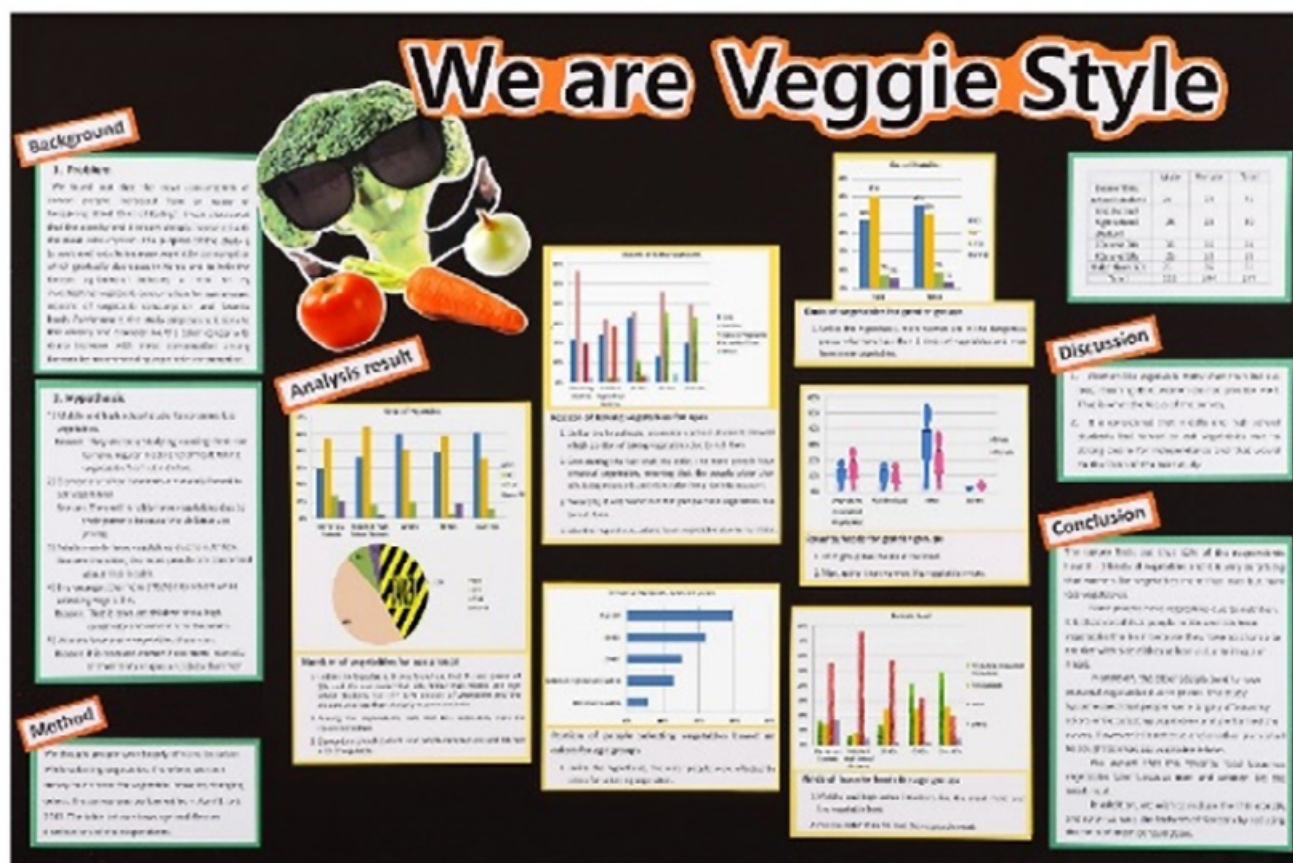


Fig 1. An example of a poster



Fig 2. The ISLP poster display in the WSC2019

competitions in whatever languages they allow – where the winning country poster is not in English, the judges are provided with a translation along with the original, so we see the visual communication aspect in the original but can also evaluate the content. Where posters are produced physically, it is a photograph or scanned image that the judges use.

The poster below was the winner of the 2012-13 younger section competition, from South Korea. It illustrates a number of the things I have touched on already – the black background with the colourful vegetables looking like a head will attract attention, and the layout is clear to follow with the headings leading you through what they want to say. The text is not too small and dense – it is often not easy to get very close to a poster so it needs to be able to be read from 2-3 feet away. It states what the question of interest is for them – and the reader – what their hypothesis was and how they plan to investigate, and then they move on to showing some data and analysis of their findings before stating their conclusions.

You need to realise that you can not present everything you consider during the project – so there will be important, and often difficult, choices to make. It is tempting to feel – *this is important, and so is this, and this, and this and I could use them all if I used a smaller font, and single spacing*. However, if you do that very few people will read anything at all. There are some important principles to remember. Sources of data need to be referenced if you have not collected them yourself. Graphs need to have clear labels. It is much more important that graphs are appropriate than that they are ‘clever’ or artistic. Generally, 3D graphs are poor at

accurate communication and should be avoided. Titles can be simply factual, but if you can come up with a title which fits and is also attention grabbing that is even better. It is important that when the reader gets to the end of poster they know what you want them to take away so a clear conclusion, or sometimes a recommendation, is needed.

I mentioned the use of technology earlier. The judges understand that not everyone has access to technology and try to focus on the content, irrespective of whether technology is used. The ISLP is very grateful to JMP for their sponsorship of the prizes for the poster competitions and also for their offer for any students and their teachers to download and use the student version of JMP, and their website provides user support to help people get started in using the software. An access code is available on request from country coordinators which will provide a software licence.

The winning posters are displayed at each WSC – this was the display during the workshop about the poster competition in Kuala Lumpur at the IASE Satellite, and the display was then moved to the main exhibition hall for the WSC. The next poster competition winners will be displayed at the Hague in 2021

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AUSTRALIA

The ISLP publishes a series of articles under the theme “Statistics in My Life”. This time we asked Helen MacGillivray, an Australian statistician and statistics educator, what role statistics have played in her life.



Statistics: Connecting, Questioning, Initiating, Bringing Together

Helen MacGillivray*

Like many, and most in my generation, I didn’t set out to be a statistician. There was no statistics in my school curricula, and my favourite subjects were English, Maths and Physics, with ambitions to be a physicist, despite targeted efforts more than 50 years ago to attract girls to engineering. But at university, in the pre-honours stream in maths and physics, after finding the assumptions and analogies in advanced physics increasingly uncomfortable, I took up statistics instead to combine with the maths; there was no computer science or paths to combine with courses in other programs. Although the

first statement in this new subject was the rather scary “We are in an unknown situation and have to make a decision”, I was quickly captivated by its conceptual structures, judgement, real-world problem-solving, data investigating and universality. And clearly and fully stated assumptions were, and are, of core importance in statistics. Between third and honours year, as the first vacation scholar in statistics at the Australian National University (ANU), I was lucky enough to interact with leading and inspiring statisticians including Pat Moran and Ted Hannan, and many postgraduate students.

I had also started casual tutoring as early as my second university year, fast becoming fascinated by the challenges in helping others learn, although would not have then predicted my passion for teaching and where it would take me. This early introduction also included some of the interesting challenges of teaching statistics in other disciplines and in rapidly changing technology. Our data analysis was on electro-mechanical machines, with our final data analysis exam taking 7 hours. My honours year casual tutoring included a class of approximately 50 agricultural students of my own age who discovered that dividing by zero on these machines produced mechanical whirrings which could only be stopped physically; each week the students had a different pre-arranged signal to all divide by zero together. Statistics has always been both a user and driver of computing technology since the first computer occupied a whole basement, as beautifully described to us by John Nelder. Statistics is the science of uncertainty, variation and data; data science is the science of data. Big data, data availability and massive computer power have brought data science ‘out from the back room’ and have both driven, and been driven by, statistics and data science. The technological explosion over the past 50 years has contributed to massive developments in, and applications of, statistics in all areas of modelling and data, but the statistical thinking of pioneers is as relevant today. As my teaching grew, I found that statistics majors can greatly benefit in exploring how forerunners tackled significant and substantial real-world problems.

In the five years after honours graduation, I worked at two universities as a tutor, senior tutor and study skills counsellor in the ANU Counselling Services, before being appointed as a lecturer at the University of Queensland. I did my PhD part-time, writing it up while lecturing large (200+) introductory classes, and submitting it six weeks before the birth of my first child. My PhD was on statistical questions about properties in industrial crystallisation processes in chemical engineering, which led to questioning often-held assumptions about distributional shape representations, and ongoing interest and research into understanding and applying measures of distributional shape and the creation of new distributions with statistical uses from ranking to inferential methods to Bayesian analysis, and applications ranging from weather to finance. Associated research included

hazard rates and normal approximations. A number of my postgraduate students in the area have gone on to work in health, finance, biometrics, computational statistics as well as continuing direct work on distributions. The extent of citations of these papers over the past decade or so has been fascinating, with many in diverse areas of physics, finance, and even management. Other areas of statistical research interest came mainly from helping colleagues in other disciplines, particularly engineering, including signal processing and built environment. Years after I helped a civil engineering colleague in analysing testing of large concrete pipes, he informed me that the work had led to new Australian standards.

Why teaching?

From 1977 to 1990 at the University of Queensland (UQ), I lectured a wide variety of courses in statistics, including many courses to students in science, pharmacy, biological sciences, town planning, and all areas of engineering. I was the first female at UQ to teach into the mainstream of engineering, that is, the compulsory engineering program. To mathematics and statistics majors, as well as introductory courses, I taught courses in estimation and inference, distributions, linear models, stochastic processes, experimental design, non-parametrics, multivariate, and advanced courses in probability, martingales and inference. In the 1980's, I was in charge of tutor selection and allocation and examination coordination in the Department of Mathematics, and increasingly was a member of university committees on student matters, from study programs to examinations to disciplinary. I was also a first year faculty student advisor, and re-established and became the unofficial mentor of the Maths Students Society.

These years began shaping my teaching philosophy. My teaching values include connectivity, coherence, communication, constructivism, completeness, commitment and caring. For me, the fascinations and challenges of teaching statistics lie in building learning pathways for many and diverse students, no matter how large the class, to develop and own their thinking for immediate and future needs. This begets a constructivist approach, helping to connect students with themselves, each other and in owning their learning. Statisticians should constantly strive for teaching strategies which reflect the practice of statistics and embody enquiry oriented learning whether in data or modelling. These principles grow statistical thinking for immediate use and transferability to other disciplines, apply equally to the education of future statisticians, and are also fundamental in mentoring and training of tutors and staff. My vision is one of interconnected learning communities of students, teachers, practitioners, researchers and users of statistics. My passion is to continue to build such communities.

For large (200-600) introductory classes and 'service' teaching (whether at undergraduate or postgraduate level), what I'd learnt from tutoring, counselling and mentoring continued to develop through observing, listening, communicating with students and tutors, experimenting and reflecting. Such classes are important opportunities to grow statistical understanding and confidence, to connect future users, producers and creators of statistics, to collaborate authentically with other disciplines, and to share in extensive learn-



Fig 1. Egg strength experiment; crash testing stubbies experiment; human curiosity study



ing communities. In the 1980's computer laboratory infrastructure started to grow, but availability tended to govern priorities. I was determined to bring access to the large 'service' classes – a steep planning and logistical learning curve from which much was learnt by students and staff.

In 1990, I moved to the Queensland University of Technology (QUT), became an associate professor (reader), and into a wide range of opportunities in teaching, university and professional work, and leadership, community outreach and school support.

Experiential, enquiry-oriented learning of statistical investigation

In 1994, I trialled an enquiry-oriented group project in data investigation for first year mathematics and statistics students. Students proposed their own topic of interest, planned and implemented their data collection, explored their data and presented their exploration in a report and an oral presentation. No matter how real the context, issues and data collection, the lecturer telling the story is no substitute for students' experiencing these for themselves. This initiative was so popular even in its trial version, that I trialled it in 1995 with the large engineering statistics class of 600 students. The engineering students identified so much with 'their' data and 'their' questions that they were not content to just explore their data, but wanted to analyse it using statistical techniques and technology as they met them during the semester.

From there, the strategy developed into a semester-long, free-choice, full data investigation as an integral part of large introductory statistics courses in all of QUT's engineering, science and mainstream mathematics and statistics programs. It is almost impossible to measure how much we learnt through this innovation as it grew. Progress evolved based on feedback from students; observation and analysis of student work; ongoing collaboration with tutors, lecturers and external peers; best use of statistical technology; and, with grant support, evaluation and building of resources, models and pedagogies. The impact was extraordinarily far-reaching, feeding directly or indirectly into major initiatives in curricula, assessment, resources, staff development. For students, it provided opportunity for all capabilities, and a genuine team experience. The ownership and discovery sustained student engagement, increased deep learning as well as improving assessment outcomes, enabled staff to have clearer insight into students' needs and capabilities, and contributed to developing mentoring and tutor training programs. I made significant changes in long-standing curricula norms to enable smoother and faster student-centred learning of statistical thinking, the power of statistics,

and communicating statistically. Past engineering and science students often introduced themselves as *"I was in the group that did the project on"*.

The reforms were not without opposition, including wanting to keep to traditional curricula, concern that students 'be taught to be correct' or to ensure students do 'useful' case studies. It was interesting that the most able students often chose topics most removed from their discipline – issues of everyday life or general curiosity – but whatever students choose to investigate, the creativity, commitment and, most importantly, authentic statistical learning demonstrated by many thousands of students over many years were as inspirational as they were rewarding. And my colleagues and I had many thousands of datasets and student-chosen contexts. Another concern was workload, but again my colleagues and I were able to demonstrate that judicious adjustment of other assessment types, and use of our criteria, exemplars, resources and processes, lead to better workload and assessment outcomes for both students and staff.

Future statisticians

As advocated by professional statisticians, statistics majors should experience the same learning environment in introductory data analysis as for other disciplines. Statistical graduates, whether they proceed to non-academic or academic workplaces, have described this approach as:

- *the best foundation for learning to think statistically*
- *a wonderful foundation for learning to conduct statistical research.*

For statistics majors, the success of this strategy lead to development of smaller projects in free-choice, with advice, data investigations in possible Poisson processes, and explorations and presentations of how important stochastic advances came about. For future statisticians, all areas of statistics need integration of data and modelling, and authentic experience of tackling problems in a mutually supportive environment free of fear of 'making mistakes'. They need cogent and coherent evolution of methodology to see how important results come to be invented, cultivated, matured and applied. New challenges now include balancing strategies that work for students with the variety of emerging advocacies from educators and researchers on training for bigger and more complex data.

Program options providing options for combining with other disciplines without sacrificing statistical training are also now more important than ever. In the 1990's, the double degrees I developed and coordinated with

information technology, engineering, business, education, science, and even law, were invaluable for students - and society. The flexibility of choice of continuing with the double program, or focussing on one, had both immediate and long-term benefits.

There is increasing recent emphasis on communicating statistically, and renowned professional statisticians have long drawn parallels between teaching and statistical collaboration and consulting. A program of volunteer peer learning facilitators for the QUT Maths Access Centre (see below) with associated training became a mentored program in learning to listen, communicate, and hence to teach, with participants progressing to sessional teaching and on to the workplace or to further study. Examples of feedback on evaluations are *"Fantastic! Love it!"* *"brilliant for learning"* *"love being able to help with no pressures"* *"learnt how to communicate"* *"1-1 conversations to learn ways of explaining"*. Gradu-

ates who progressed to academic positions have given feedback such as: *"Can't imagine how to lecture without this experience"*, *"Even interactive lectures do not substitute for 1-1 for teacher learning"*, *"I took it for granted that people tutor before lecturing"*, *"maddest thing to let researchers loose on lecturing"*. The far-reaching impact of this program has come from statistical graduates in the workplace with feedback such as *"Could not have done [my job] without this program and experience - but had to be tutoring in right kind of statistics courses"*.

Benefits of teaching grants, awards and fellowships

Although the availability of these varies over the years with political and research competition pressures, their value is great in progressing both the teaching and promotion of statistics. I encourage all in the statistical community to consider applying for them, no matter



Fig 2. Delegates OZCOTS 2008

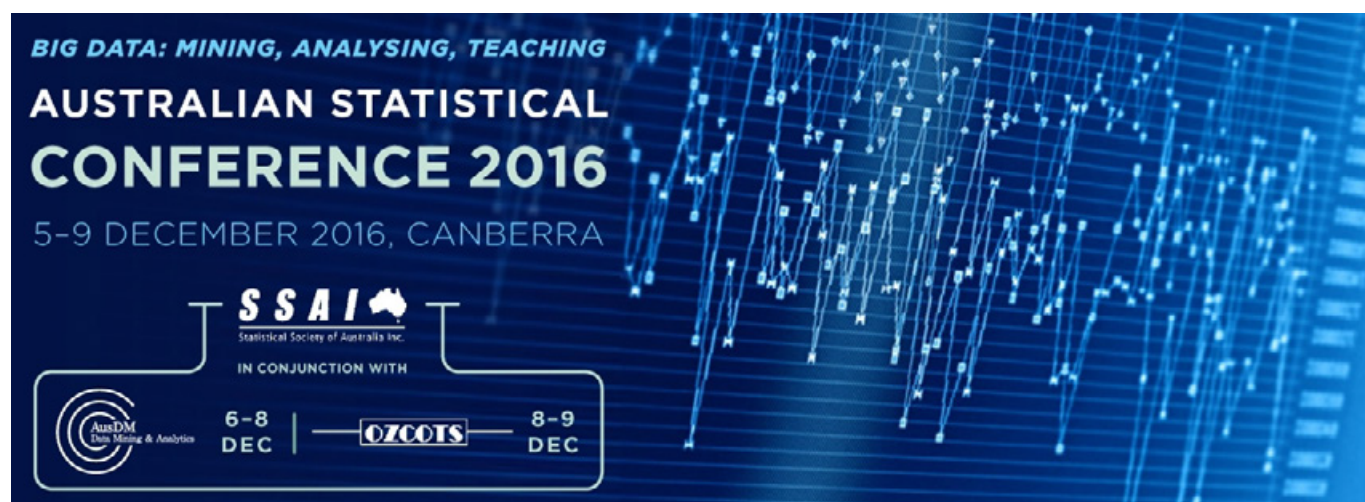


Fig 3. Logo ASC and OZCOTS 2016

how minor, and all senior statisticians to promote them and encourage and mentor potential applicants and awardees. The enquiry-oriented and other strategies above led to, and were supported by: a national grant *Practical Development of Statistical Understanding: a project based approach*; two university grants to collaborate with engineering and produce and evaluate criteria-based assessment; and secondment and then a visiting fellowship to the UK's Royal Statistical Society's Centre for Statistical Education. Establishing a university-wide learning support facility in maths and statistics, the QUTMAC, in 2004, led to a national leadership grant *Quantitative diversity: disciplinary and cross-disciplinary mathematics and statistics support in Australian universities*, and a visiting fellowship and collaboration with a UK's Centre for Excellence in Teaching and Learning, at Loughborough University.

Although a number of my awards and citations for teaching and resources gave some visibility to statistics, the most telling was being awarded one of the first three Australian National Teaching Fellowships in 2007. These fellowships funded and demanded a fulltime program for a year involving national and international collaboration. In the fellowship series, with a mixture of national and smaller fellowships, and over 100 fellows in ten years, my fellowship program, titled *The Teaching and Assessment of Statistical Thinking within and across Disciplines*, was the only one in statistics.

A fellowship highpoint was the innovation of an Australian Conference on Teaching Statistics (OZCOTS) held as a satellite conference to the Australian Statistical Conference (ASC) with a one day overlap. Such bringing together of statistics academics, researchers, practitioners and educators was ground-breaking. It was an outstanding success, and has, at the request of ASC, continued in this form. Fig 2 shows some of the delegates on the first day of OZCOTS 2008, and Fig 3 is the logo for 2016.

Professional work

The statistical sciences are inextricably linked to all endeavours involving data, variation and uncertainty across disciplines, business, industry, government and society. Statistics both serves and leads developments in all other disciplines, including mathematics and data science, and, in its turn, is served and led by the needs of other disciplines. This inherent diversity and diffusion are simultaneously the heart of the strength and vulnerability of the statistical sciences. For all disciplines and professions, professional work and societies are important, but even more so for the statistical community because of this natural diversity. Professional work includes belonging and participating in professional societies, organising conferences, editing and reviewing, taking representative positions, and supporting endeavours in parts of the statistical community (statistical areas, geographic...) other than one's own. And yes,

simply belonging contributes to the strength, standing and influence of a statistics professional society.

The rewards of belonging and participating in professional societies are manifold, especially in statistics because of its natural diversity and interlinking across so many disciplines, workplaces and other professions. In surveys of members of the International Statistical Institute (ISI) and its seven Associations, belonging and networking come through as of prime importance. A professional society is its people – its members both individuals and organisations. The most important aspects for me are the people. I have met, interacted and worked with, so many talented, dedicated, enthusiastic and wonderful people across the statistical community and the world – in person or electronically. Genuine electronic communication takes effort but it's worth it. I have often apologised for speaking only English, but the statistical communication brings us all together. I wish I could have met even more, but it is the memories of people which will always stay with me.

I organised the first Australian Statistics Conference (ASC) in Queensland in 1984; we had so many delegates that the sponsor providing the nametags grew tired of being asked for more and gave us double. I made sure extra funds from registrations were put back into the conference to ensure a memorable conference. After being president of the Queensland branch and national secretary, I became the first female president of the Statistical Society of Australia (SSA) in 1995. At the time of being asked, I was coming to the end of a term on the Australian Research Council and being asked to stay on; I was also asked to be a deputy Dean of faculty. These last two would have tended to lead me into university leadership away from teaching and statistics. I chose the teaching and professional route. My term on the ARC included chairing reviews of Special Research Centres and Key Centres – excellent experience in chairing and reviewing activities and budgets. I later chaired or participated in reviews of university programs in Australia, UK and New Zealand, analysing information and situations and provide suggestions and recommendations for strategies and policies, appropriate for local conditions, to deliver high quality teaching and support of students and staff.

As SSA President, I helped establish the Young Statisticians' Section, the Pitman prize for young statisticians, accreditation for statisticians, bringing together the Australian and New Zealand journals with a commercial publisher, and incorporation of the Society. In 2004 I was the first female to be awarded SSA's honorary life membership. In 1997-2009, I was involved in organising, editing and speaking at the International Conferences on Teaching Statistics (ICOTS), Australasian Engineering Education Conference (AaeE), Southern Hemisphere Conference on Undergraduate Mathematics and Statistics Teaching and Learning (Delta), International Association for Statistical Education (IASE) satellites



Fig 4. Website for ICOTS 8, 2010

to ISI World Statistics Conferences (ISI WSC), and IASE strands of ISI WSC. ICOTS are some of the best and most collegial of conferences. Fig 4 shows the landing page for ICOTS 8, <http://icots.info/8/>.

From 2009-2011, as President of IASE, I worked to bring together professional and research statisticians, statistics educators and teachers, and educational researchers. I established the structure for the International Statistical Literacy Project (ISLP), prizes for early career authors, policies for support of delegates from developing countries, and greater awareness of statistical education across the whole ISI family.

The ISI is an international professional organisation with influence over its 130-year history with governments, business, academia and organisations including the UN. In 2011 I was elected to a vice-presidency of ISI, re-elected in 2013, and appointed president-elect in 2015, serving as ISI President 2017-2019, only the second female and second Australian to hold that position. The ISI is an international professional organisation with influence over its 135-year history with governments, business, academia and organisations including the UN, and its work is extensive, including its biennial World Statistics Conferences, and its new Regional Statistics Conferences. I sought to broaden and strengthen the community through all its committees and special interest groups, increase sense and awareness of family, and increase collaboration globally, including with other societies, and across all Associations and interest groups, including the ISI Committee on Women in Statistics,



Fig 5. Delegates ISI WSC Kuala Lumpur 2019

<https://cw-isi.org/>. Collaboration amongst statistical societies has increased, as exemplified by joint work of ISI, American Statistical Association (ASA) and RSS, and the International Prize in Statistics (IPS) awarded jointly by ISI, ASA, RSS, IBS (International Biometric Society) and IMS (Institute of Mathematical Statistics). The culmination of my presidency was at the 62nd ISI WSC in Kuala Lumpur with over 2,500 delegates (Fig 5). A proud moment in the history of the WSC's was to have five female presidents from ISI, ASA, RSS, IBS and IMS presenting the second IPS and papers on leading vital developments, as well as the Presidential invited speaker being female. Fig 6 is of these six plus the chair of the IPS Foundation, immediately following the presentation of the IPS to Brad Efron by virtual link.

At the United Nations Statistical Commission in 2018, I was asked to chair the newly established UN Global Network of Institutions for Statistical Training (UN GIST) <https://unstats.un.org/GIST>, on training in official statistics with particular reference to the UN SDG's. I was asked to continue chairing GIST, and am currently helping in particular with e-learning, a new global course and statistical literacy.

After co-editing the journal *Teaching Statistics* with Paul Hewson, I became editor in 2017, and continue to enjoy the demanding but rewarding work of supporting authors and influencing the teaching of statistics through this important international journal.

Outreach and school education support

My first teaching grant was in 1991 from the National Agenda for Women's Grant Program to develop and deliver enrichment workshops in mathematics and statistics for girls from years 7 to 12. The success of these led to a community grant to take the workshops to regional



Fig 6. Leading women 2019. (L to R) Karen Kafadar (President ASA), Louise Ryan (IBS), Deborah Ashby (RSS), Helen MacGillivray (ISI), Susan Ellenberg (Chair, IPS Foundation), Jessica Utts (President's Invited Speaker), Susan Murphy (President IMS).



Fig 7. Sth African teachers investigating the stretchiness of jelly snakes in 2007

centres. At the same time I had started the more than 100 workshops on statistics to teachers I was asked to give during the 1990's. This motivated me to create and lead a team to deliver *MathX*, an extension and enrichment program in mathematics and statistics for year 11 students. This had enormous impact, with more than 130 high schools in SE Queensland sending over 1200 participants to MathX in its 10 years of operation. Students often described themselves as '*MathX-ers*' for years after their participation.

I also created and coordinated 'Mathematics Futures', a one-day program in which presenters are young graduates from a range of workplaces or projects, demonstrating the versatility and power of mathematical and statistical training as a foundation of a diversity of careers. This ran until 2011 and led to a wider, well-funded QUT program called 'Science Futures'.

For thirty years I have been involved in school education, on committees for curricula, assessment, scaling and quality evaluation, and have worked with teachers and statistical colleagues on developing curricula and writing resources, both text books and virtual. Such work is of vital importance for statistics and the future of statistics. It is also rewarding to meet and work with so many dedicated and able teachers across all levels of education. My workshops for teachers on statistical investigations were taken to regions and other countries, including many enthusiastic teachers in South Africa (Fig 7).

Conclusion

Statistics is the science of variation, uncertainty and data: of learning from data; of interpreting and criti-

cally evaluating data-based information; of modelling data, variation and uncertainty and critiquing models. Statistics covers the full gamut of data-driven research and processes: from the design, collection, sourcing, handling, and preparation of data, right through to the communication of information and critiquing which lead to further researching in the broadest sense. It has been described (Rodriguez, 2013) as the "most unselfish of sciences"; and that "Statistics improves human welfare not by its own ends, but by its contributions in all fields."

Statistics and the statistical community are also some of the richest and most satisfying spheres in which to work, build careers, influence the world and develop impact and leadership. Whether in the practice of statistics, research, teaching, professional work, leadership or community outreach, being a member of the whole statistical community enables you to work and interact with an extraordinary diversity of wonderful colleagues and students, and an amazing variety of interesting real-world contexts.

Rodriguez, R. (2013). Building the big tent for statistics. *J. Amer. Statist. Assoc*, 108, 1-6.

* Helen MacGillivray is an Australian statistician and statistics educator. She is the former president of the International Statistical Institute, the International Association for Statistical Education, and the Statistical Society of Australia, and chair of the United Nations Global Network of Institutions for Statistical Training.)

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ARGENTINA

Trabajos Colaborativos en I Jornadas Argentinas de Educación Estadística

Liliana Tauber*

El 1 y 2 de noviembre de 2019, se realizaron en la Facultad de Humanidades y Ciencias (FHUC) de la Universidad Nacional del Litoral (UNL), en la ciudad de Santa Fe (Argentina), **las I Jornadas Argentinas de Educación Estadística (JAEI).**

Dichas Jornadas han sido un espacio de intercambio de propuestas didácticas y divulgación e investigación de la Educación Estadística entre investigadores, profesores y estudiantes de distintos niveles educativos. En las mismas se propició el intercambio de experiencias entre estudiantes que han desarrollado proyectos estadísticos con profesores de educación primaria, secundaria y superior.

En las Jornadas se desarrollaron conferencias y foro de discusión con invitados internacionales en modalidad virtual. Así participaron: Dra. Carmen Batanero (España), Dr. Armando Albert (México), Dr. Hugo Alvarado (Chile) y Dra. Claudia Vásquez (Chile), también participaron especialistas argentinos que desarrollaron 4 cursos y 5 talleres destinados a la formación de profesores.

Las temáticas de las conferencias y foros fueron:

- Conectando la probabilidad a la vida cotidiana.
- La Estadística no es sólo análisis de los datos.
- Observación de clases de probabilidad en el aula de Educación Primaria: Una herramienta para fortalecer la formación inicial docente.
- La Red Latinoamericana de Investigación en Educación Estadística: Una comunidad de práctica que fomenta la Educación Estadística en Latinoamérica.



Figuras 1 y 2. Equipo organizador de I JAE (FHUC-UNL) y especialistas nacionales invitados

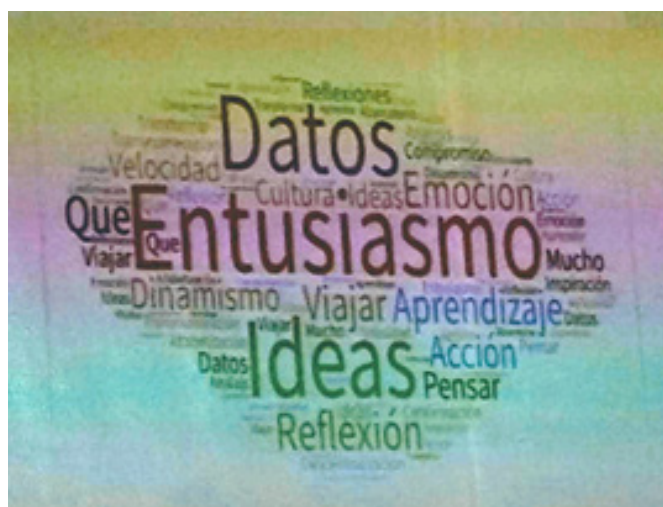


Figura 3. Nube de ideas y sensaciones expresadas por los asistentes en el cierre de las Jornadas



Figuras 4 a 10. Participantes del Workshop "Los estudiantes nos cuentan sus experiencias estocásticas"





Figura 11. Estudiantes universitarios que recibieron la mención honorífica en la Competencia Internacional de Alfabetización Estadística

El evento más importante para esta jornada fue el Workshop: *“Los estudiantes nos cuentan sus experiencias estocásticas”*, que se realizó durante toda la tarde del 2 de noviembre, en la que los ponentes fueron los estudiantes. Para participar del Workshop, los grupos debían enviar previamente un video de 5 minutos, en el que realizaron un spot publicitario con el cual presentaban el trabajo estadístico que habían realizado en sus escuelas.

En la jornada, los asistentes pudieron ver esos videos y a continuación, cada dos grupos, hubo un intercambio donde los profesores planteaban sus interrogantes a los estudiantes. Esta sesión fue una experiencia de intercambio sumamente rica, tanto desde lo estadístico como desde las vivencias que los estudiantes narraron. Fue muy interesante conocer los distintos momentos que debieron atravesar los estudiantes (junto al profesor a cargo) para poder obtener los datos, pensar cómo analizarlos y sacar conclusiones. Pero lo más importante de todos los trabajos es que casi todos ellos tuvieron la posibilidad de acercar sus conclusiones a distintos organismos gubernamentales y, actualmente, están desarrollando un trabajo conjunto para mejorar distintos aspectos de su propio entorno social o medioambiental.

Los temas de los trabajos presentados fueron:

- Pedaleando x = derechos
- Estadística en la electromecánica
- Contaminación del ferrocarril
- Uso de las tecnologías
- El respeto: ¿valor principal en la vida cotidiana?
- Educación vial
- Siguiendo la Huella



Figura 12. Profesores participando de los cursos y talleres de formación

No describiremos todos los trabajos por cuestiones de espacio, pero a continuación resumimos algunos de ellos.

En el caso del trabajo *“Pedaleando por iguales derechos”*, fue el único presentado por la profesora a cargo de una escuela primaria rural ya que fue muy complejo poder trasladar a los alumnos. Este trabajo aportó muchas enseñanzas para todos porque se centró en el uso de la estadística con el fin de indagar sobre los medios de transporte que utilizaban sus alumnos para acercarse a la escuela. El problema que motivó el mismo se debió a que la escuela está situada en una zona rural donde los caminos son de tierra y por lo tanto, los días de lluvia eran muy pocos los alumnos que podían ir a clases. A partir de esta exploración, pudieron identificar que uno de los mayores problemas era no disponer de un medio de locomoción que les permitiera llegar cuando había barro en el camino. De esta forma surgió la idea conseguir bicicletas en desuso y, con la ayuda de los padres, lograron construir nuevas bicicletas para los alumnos que se encontraban más alejados de la escuela. De esta manera se logró disminuir el ausentismo en días de lluvia.

En el caso del trabajo, *“Contaminación del ferrocarril”*, se pudieron aportar datos al municipio de la ciudad para buscar formas de intervenir el espacio cercano al ferrocarril y reducir la contaminación producida en el mismo.



Figura 13. Grupo de Investigación en Educación Estadística “Estocastic@s” (Equipo organizados de las I JAAE)

De izquierda a derecha: Yanina Redondo, Liliana Tauber, Silvana Santellán y Mariela Cravero. Facultad de Humanidades y Ciencias (FHUC). Universidad Nacional del Litoral. Santa Fe. Argentina.

En el caso del trabajo, “*Uso de las tecnologías*”, los alumnos indagaron sobre los peligros de la sobreexposición en las redes sociales así como los peligros del uso desmedido de las pantallas y de la exposición a la luz azul. Todo ello permitió que los estudiantes que realizaron el trabajo pudieran realizar una campaña de concientización con sus compañeros en la institución en la que estudian.

En el caso del trabajo, “*Siguiendo la Huella*”, los estudiantes realizaron una medición de la huella de carbono en la manzana en la que se encuentra ubicada su escuela. De esta manera, identificaron que en la ciudad de Santa Fe no hay mediciones de la huella de carbono y tuvieron oportunidad de presentar los datos obtenidos a funcionarios de la ciudad.

El trabajo “*Educación Vial*”, permitió conocer las costumbres de la comunidad escolar respecto del cumplimiento de las normas de tránsito y también, indagar sobre los motivos por los que se producen accidentes en la esquina de la escuela. De esta forma, los estudiantes realizaron una campaña de concientización para mejorar el cumplimiento de las normas de tránsito, también aportaron datos al municipio y lograron que hubiera mayor control en la zona de la institución.

Cabe aclarar que los trabajos presentados fueron de instituciones provenientes de distintos lugares de las provincias de Santa Fe y Córdoba. Así, participaron instituciones de las siguientes localidades: Progreso Sur, San Guillermo, Reconquista y Santa Fe capital, dentro de las localidades santafesinas y de Villa del Rosario en la provincia de Córdoba.

Luego del Workshop hubo un espacio final para los estudiantes en el que se realizó la entrega de la mención honorífica otorgada por ISLP al grupo de estudiantes universitarios que fue seleccionado en la Competencia Internacional de Alfabetización Estadística. En esa instancia los estudiantes premiados tuvieron la oportunidad de exponer su trabajo y responder consultas de los asistentes.

Asistieron a las Jornadas alrededor de 200 profesores de 8 de las 24 provincias argentinas y 100 estudiantes, 35 de los cuales fueron ponentes del Workshop y los restantes eran estudiantes de profesorado de Matemática de distintos lugares de Argentina.

En el cierre de las Jornadas pedimos a los asistentes que, a través de un formulario on-line, expresaran con una sola palabra una sensación que haya resultado de la experiencia. Así construimos una nube de ideas que compartimos en el cierre y que se puede ver en la Figura 3, en la que quedaron resaltadas las siguientes ideas o sensaciones: Datos, entusiasmo, reflexión, pensar, dinamismo, imaginación, cultura estadística, entre otras.

Preveamos realizar de manera anual estas jornadas y pretendemos mantener dos espacios: uno para la formación y actualización de los profesores y el más importante que es el espacio destinado a los estudiantes porque consideramos que son los principales promotores de la Educación Estadística y ellos son los que inspiran a los profesores. En nuestra página: <https://estocasticos.weebly.com/> encontrarán información de nuestro Grupo de investigación en Educación Estadística.

¡Desde este espacio agradecemos a todos los que nos apoyaron y a todos los que participaron!

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Collaborative Work at the 1st Argentine Conference on Statistical Education

Liliana Tauber*

On November 1 and 2, 2019, the First Argentine Conference on Statistical Education (JAEE) was held at the Faculty of Humanities and Sciences (FHUC) of the Universidad Nacional del Litoral (UNL), at the Santa Fe City (Argentina).

This Conference has been a space for the exchange of didactic proposals and the dissemination and investigation of Statistical Education among researchers, teachers and students of different educational levels. In them, the exchange of experiences between students who have developed statistical projects with primary, secondary and higher education teachers was promoted.

Conferences and discussion forum were held with international guests in virtual mode. Thus participated: Dra. Carmen Batanero (Spain), Dr. Armando Albert (Mexico), Dr. Hugo Alvarado (Chile) and Dra. Claudia Vásquez (Chile), Argentine specialists who developed 4 courses and 5 workshops for training of teachers also participated.

The themes of the conferences and forums were:

- Connecting probability to everyday life.
- Statistics is not just analysis of the data.
- Observation of probability classes in the Primary Education classroom: A tool to strengthen initial teacher training.
- The Latin American Network for Research in Statistical Education: A community of practice that promotes Statistical Education in Latin America.

The most important event for this day was the Workshop: *"The students tell us about their stochastic experiences"*, which was held throughout the afternoon of November 2, in which the students were the speakers. To participate in the Workshop, the groups had to send a 5-minute video beforehand, in which they made an advertising spot with which they presented the statistical work they had done in their schools.

On the day, attendees were able to watch those videos and then, every two groups, there was an exchange where the teachers posed their questions to the students. This session was an extremely rich exchange ex-

perience, both statistically and from the experiences that the students narrated. It was very interesting to learn about the different moments that the students had to go through (together with the teacher in charge) in order to obtain the data, think about how to analyze it and draw conclusions. But the most important of all the works is that almost all of them had the possibility of bringing their conclusions to different government agencies and, currently, they are developing a joint work to improve different aspects of their own social or environmental environment. The topics of the works presented were:

- Pedaling x = rights
- Statistics in electromechanics
- Railroad contamination
- Use of technologies
- Respect: main value in everyday life?
- Vial education
- Following the Footprint

After the Workshop there was a final event for the students in which the honorary mention given by ISLP to the group of university students that was selected in the **International Statistical Literacy Competition** was made. In this instance, the awarded students had the opportunity to present their work and answer queries from attendees.

The Conference was attended by around 200 teachers from 8 of the 24 Argentine provinces and 100 students, 35 of whom were speakers at the Workshop and the rest were students of Mathematics teachers from different parts of Argentina.

At the end of the Conference, we asked the attendees to express- through an on-line form- with a single word, a feeling that has resulted from the experience. Thus we built a cloud of ideas that we shared in the closing and that can be seen in Figure 3, in which the following ideas or sensations were highlighted: Data, enthusiasm, reflection, thinking, dynamism, imagination, statistical culture, among others.

We plan to carry out these sessions on an annual basis and we intend to maintain two spaces: one for the training and updating of teachers and the most important being the space for students because we consider that they are the main promoters of Statistical Education and they are the ones who inspire teachers. On our page: <https://estocasticos.weebly.com/> you will find information about our Research Group in Statistical Education.

¡From this space we thank everyone who supported us and everyone who participated!

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COMPETENCIA LATINOAMERICANA DE POSTER

Adriana D'Amelio*



En el 2018 surgió la idea desde el ISLP de lanzar el Concurso Latinoamericano de póster con la necesidad de aumentar la participación de los países de América del Sur y el Caribe. El motivo principal fue unificar las fechas de los calendarios académicos de cada país ya que los mismos varían de un país a otro en los diferentes emisferios.

En el trabajo previo se incorporaron nuevos coordinadores como Liliana Mendoza de Colombia, Hugo Alvarado Martínez de Chile: nuevos países como Bolivia con Alvaro Chirino Gutierrez como Coordinador, Venezuela con Audy Salcedo como Coordinador, Panamá con Elisa Mendoza como Coordinadora. Gracias al gran esfuerzo de todos los países participantes se logró de un total de participación de en el concurso 2016-2017 de menos de 100 participantes a casi 1000 en el concurso 2018-2019. Además de agregar la categoría de estudiantes universitarios en dónde se tuvo gran participación.

Además de la participación se obtuvieron muy buenos resultados ya que el poster de la categoría universitaria de Argentina recibió mención especial y Brasil obtuvo el premio a Mejor Proyecto de Cooperación Internacional. Estos premios muestran la calidad y dedicación del trabajo de estos países.

Es por ello que este año pese a la pandemia Internacional es que insto a seguir participando y aunque las metas y las expectativas son muchas pero nunca debemos decaer el ánimo y las ganas de que nuestros países estén representados promoviendo la Alfabetización Estadística.



¡Ánimo y mucha suerte!

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XLVII Coloquio Argentino de estadística

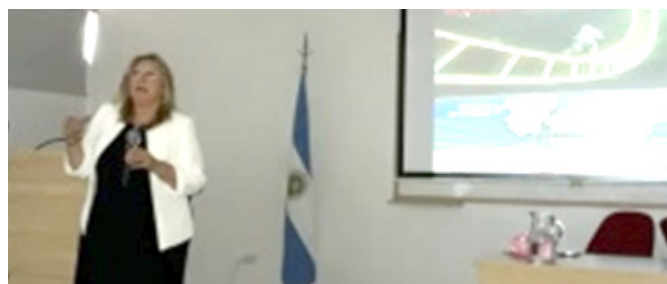
V jornada de education

V JORNADA DE EDUCACIÓN ESTADÍSTICA «MARTHA DE ALIAGA»

El día 15 de octubre se desarrolló en la Universidad Nacional de Tucumán el XLVII en el marco del Coloquio Argentino de Estadística la **V Jornada de Educación Estadística** que lleva el nombre de Martha Aliaga en homenaje a ella por todo lo que aportó a la Educación Estadística en el mundo y en especial en los países Latinoamericanos, siendo ella nacida en Argentina es que se hizo este reconocimiento.

Las actividades que se desarrollaron fue en colaboración con el Ministerio de Educación de la Provincia de Tucumán y la participación del Ministro de Educación.

En la jornada se dio la Conferencia **“En dónde estamos y hacia dónde vamos en Educación Estadística”** a cargo de la Mg Adriana G. D’Amelio y talleres de especialistas locales, para docentes del nivel primario y medio.



Taller 1. Módulo A: **“Una campana que suena en todas partes”**. Dra. Ana María Sfer y Mg. Lorena Naidicz

Taller 2 **“El Sistema Estadístico Provincial (SEP) y su utilización en el aula”**. Mg. Antonio Raúl García; Mg. María Angélica Pérez y Mg. Andrea Luccioni (Dirección de Estadística de la Provincia de Tucumán)

Taller 3. **“Investigando en el aula ¿cómo usamos la estadística?”**. Mg. María Cristina Leguizamón y Cra. Luciana Raquel Castillo.

Taller 4. Módulo D : **“Gamificación y enseñanza de la Estadística: Cómo emplear juegos y videojuegos para el desarrollo de Competencias y Cultura Estadística”**. Dr. Blas de Haro Barbás; Prof. María Belén Parra y Lic. Matteo Tarquini (Italia)

XLVII COLOQUIO ARGENTINO DE ESTADISTICA

Entre el 16 y el 18 de octubre se desarrolló en la Universidad Nacional de Tucumán el XLVII Coloquio Argentino de Estadística con el objetivo de disponer un espacio para el intercambio de conocimientos y experiencias del saber y el saber hacer con Estadística.

El encuentro es co-organizado por la Facultad de Ciencias Económicas y la Sociedad Argentina de Estadística y se destina a investigadores, docentes, profesionales y estudiantes de las diversas disciplinas que desarrollan teorías y construyen o utilizan estadísticas para comunicar el resultado de su trabajo. Las actividades a desarrollarse en el coloquio incluyen cursos, talleres y conferencias de especialistas locales, nacionales y extranjeros.

Conferencias

- **Machine learning and statistical fight.** Mentz, Graciela Ph.D. en Estadística (Michigan)
- **Random changepoint segmented regression with smooth transition: an example with lateral amyotrophic sclerosis data»** Singer, Julio Ph.D. en Estadística (Chapel Hill, 1983)
- **Agendas estadísticas oficiales: actores, temas, brechas”.** Quintsrl, Marcia D. Magister en Ciencias de la Información
- **Determinación de los factores de expansión y el cálculo de los errores muestrales en las encuestas.** Mitas, Gerardo Director Nacional de Metodología Estadística – INDEC

Cursos

- **El efecto de propensity score matching en estudios retrospectivos.** Mentz, Graciela Ph.D. en Estadística (Michigan)
- **Estimación y análisis de datos en muestras complejas.** Marí, Gonzalo Master of Science in Mathematics (Carleton University, 2000).
- **Temas y gobernanza para agendas estadísticas: indicaciones y recomendaciones internacionales.** Quintsrl Marcia Magister en Ciencias de la Información

Building Future Generations of Statisticians – Who Cares?

Peter Howley*



A/Prof Ayse Bilgin (President-Elect of IASE) and I were Guest Editors for a [Special Issue of the Statistics Education Research Journal published 29 Feb 2020, entitled 'Building Future Generations of Statisticians'](#), led by Editor Prof Manfred Borovcnik.

Following on from collaborative Statistical Society of Australia initiatives such as [STEMS2016 'Putting Statistics into STEM in the Age of Data'](#) and similar international initiatives, as I noted in the SERJ Editorial [pp 8-10](#), for many, the theme of this Special Issue has been a perennial focus, discussed at national and international fora but perhaps lacking a consolidated emphasis in the literature.

The aim for this Special Issue was to provide such a platform for sharing the many and varied international 'outreach' initiatives, experiences, resources and supporting mechanisms for increasing the number engaging with the field of statistics.

Before you view the articles perhaps you may like to consider why you were drawn to statistics, whether the work you are performing is as you'd expected it to be when you began your studies and how we may best inform school students of the enriching life of a statistician.

Wishing the world safety, consideration and tolerance,

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STATISTICS EDUCATION RESEARCH JOURNAL: ARCHIVES

ISSN: 1570-1824

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VOLUME 19, NUMBER 1, FEBRUARY 2020

SPECIAL ISSUE: BUILDING FUTURE GENERATIONS OF STATISTICIANS

Manfred Borovcnik (Special Issues Editor), Ayse Bilgin (Guest Editor), Peter Howley (Guest Editor)

SERJ Website- Special Issue 'Building Future Generations of Statisticians'



Screenshot of NSPC Website

National Schools Poster Competition – Australia

Peter Howley*

A new year, a fresh new Statistical Society of Australia (SSA) National Schools Poster Competition (NSPC) on-line look and vibe.

Thanks to support from the Australian Bureau of Statistics (ABS), a fresh and engaging [SSA NSPC website](http://www.ssapostercomp.info) (www.ssapostercomp.info) with additional supporting resources has been created – please have a look and let me know your thoughts.

With the current environment, to help school students keep connected and engaged, online activities become more important.

The Australian [NSPC](http://www.ssapostercomp.info) provides an opportunity for Stage 2 to 6** students to work in teams and undertake and report upon an investigation in poster format via technology.

Much like workplaces do all around the world, **collaborating across technologies is a valuable skill to develop.**

I have encouraged teachers to consider establishing teams (2-5 students) and advising of practices for working together online, or at least informing Australian students, parents, families and friends of this activity.

Submissions are due online by 10 November annually, with prizes for both winning teams and the schools they represent.

The NSPC is in its 6th year as a national activity following its 2014 pilot and continues to engage new partak-

ers among its approximately 1,000 participants annually from primary and secondary schools.

The site also connects viewers to the following free resources:

- 13 animated 4-minute introductory statistics videos and practice questions www.statstuneup.com.au
- Several 4-minute videos of professionals from Qantas, Hunter Valley Coal Chain, NSW Health, and more speaking of how statistics is used in practice
- A few 1- to 4-minute videos providing an overview of the activity, rationale, how to run and testimonials.
- iNZight software created by Prof Chris Wild and introductory one- to four-pager worksheets

Please feel free to use the resources internationally and inform friends, family and local schools in Australia of this enjoyable and educational activity which engages teams of students with statistics via investigations and aligns with and supports national curriculum outcomes.

Does the NSPC have a positive impact on students and teachers? Please view the [SERJ 2020 article by Howley and Roberts](#) to view a unique collaboration involving the NSPC and Environmental Science & Sustainability and the results of such.

** Stages 2 to 6 in Australia represent Grades 3 to 12 (latter is final year) and encompasses those aged 7 – 18.

Wishing the world safety, consideration and tolerance,

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COLOMBIA



Concurso de posters de estadística en Colombia 2018-2019

Liliana Adriana Mendoza Saboya*

Colombia participa en el Proyecto de Alfabetización Estadística ISLP del ISI desde 2011, año en el que se nombra el primer coordinador para dicho proyecto en el país. Durante los primeros años Colombia trabajó en la producción y distribución de material de alfabetización para estudiantes universitarios de postgrado. Ello con el objetivo de que la estadística se constituyera en una herramienta fácil de usar en los procesos de toma de decisiones a nivel empresarial. Como complemento del trabajo, y gracias a esta experiencia que se tuvo a nivel universitario, la coordinación para Colombia vio la oportunidad de hacer alfabetización a más temprana edad, es decir, en las etapas de formación escolar básica.

La misión del proyecto en Colombia es promover el uso de la estadística en el contexto vivencial del alumno, con el fin de que den un giro en la forma de abordar su entorno. La visión que se tiene del proyecto es tener una cobertura del 50% del país con una participación cercana a los 2500 estudiantes al 2030.

Desde 2018, Colombia está trabajando con el objetivo de dar a conocer el Programa de alfabetización en las Instituciones de Educación públicas y privadas que trabajan con estudiantes de grados primaria (1ro a 5to) y secundaria (6to a 11o). Para lo cual ese mismo año, se lanzó la estrategia de alfabetización escolar, y como parte de sus actividades se realizó el Concurso Nacional de Posters de Estadística 2018-2019.

Dentro de los resultados se alcanzó una participación de 516 estudiantes con una cobertura departamental del 25% nacional, con presencia rural del 43%, 56% de los mismos matriculados en instituciones públicas. En particular, se contó con la participación de la INSTITUCION



Trabajo en el poster de la INSTITUCION EDUCATIVA INDIGENA LA UNION

EDUCATIVA INDIGENA LA UNION, que trabajó el tema “La paz en Colombia”, tema que se presenta en los años en los que el país Firmó el proceso de paz, una de las razones por las que el mandatario Colombiano le fuera otorgado el Premio Nobel de paz.

Dentro de las herramientas que el Concurso Nacional y la participación en los concursos internacionales, se planten entregar de forma física un certificado de participación ello con el propósito de impacto emocional positivo del alumno al ver que su nombre se encuentra en un certificado, acompañado de la institucionalidad nacional e internacional que lo organiza.

A continuación, se mencionan los ganadores del Concurso Nacional de Postes de Estadística 2018-2019; así como los autores de los posters quienes representaron a Colombia en el Concurso internacional de Postes de Estadística 2018-2019.

La coordinación para Colombia aprovecha este espacio para agradecer en primera instancia a los alumnos por su interés y entusiasmo con el que trabajaron, hicieron un excelente trabajo; así como a los profesores de las instituciones que lo hicieron posible.

Desde la Coordinación seguimos trabajando pese a las eventualidades por las que el mundo atraviesa.

A todos mil gracias. Y buena salud.

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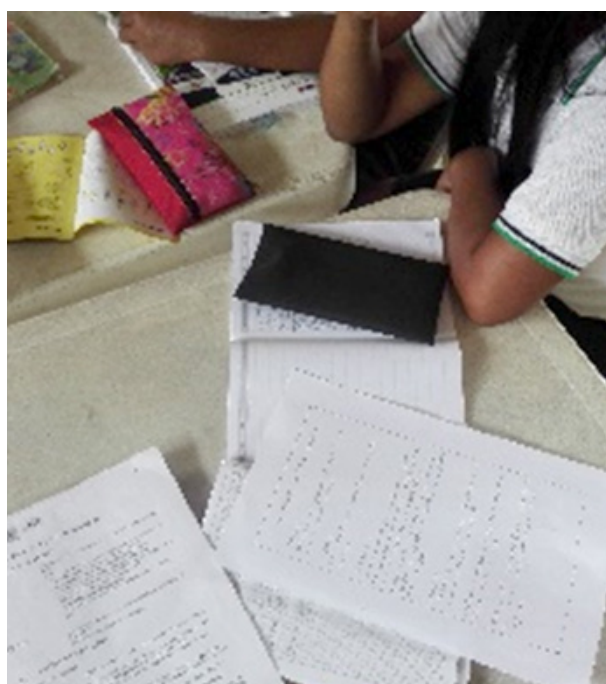
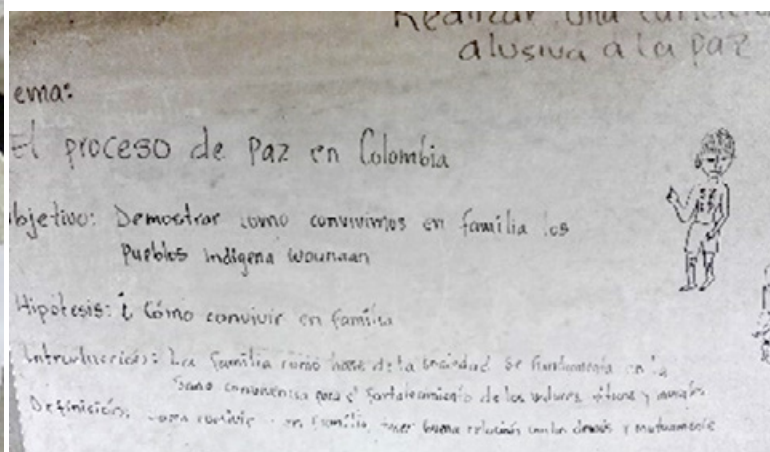


Ilustración 1: Ganadores categoría Mayores

Ranking	Institucion Educativa	Nombre del poster	Estudiantes
Primero	Institución Educativa Heracio Uribe Uribe	La televisión y los adolescentes	Alejandra Pescador Arias, Isabella Jaramillo López, Valeria Florez Paz, Maria Isabel Espinosa Marín y Juan David Moncayo Urrego.
Segundo	Instituto Rafael Pombo	Las redes sociales	Karen Sofia Niño Santamaria, Julián Rodríguez, Cesar Camilo Roberto Lizarazo y Sharon Catherine Jaimes Sanabria.
Tercero	Institución Educativa Jesus Rey	Realidades en el entorno educativo	Paulina Montoya Hernández, Valentina Osorio Cheverry y Daniel Amaya Arango.

Ganadores categoría Mayores

Ranking	Institucion Educativa	Nombre del poster	Estudiantes
Primero	Institución Educativa Jesus Rey	Un receso sano	José David Cueto Palacio, Nilton Cesar Calle Zapata, Valentina Sierra Durango y Juan Sebastián Domínguez Villadiego
Segundo	Colegio San Ignacio De Loyola	Prototipo de ventilador para captura CO2	Andrés Grimaldos Echavarría, José Manuel Duque Duque, Sebastián Gómez Machado, Mauricio Mery Agudelo y Esteban Choperena Bedoya.
Tercero	Institución Educativa Jesus Rey	¿Qué relación hay entre las condiciones de vida de los jóvenes y la carrera que eligen	Brayan Herrera Ramírez, Alejandro Herrera Arango, Valeria Puerta Tamayo, Catalina García Escobar y Camilo Pérez Montoya.





Introduction of the New Coordinator of Indonesia

Achmad Badrun Kurnia*

I have been a mathematics lecturer since 2009 at the Institute of Teacher Training and Education (*STKIP PGRI Jombang*) in Indonesia. I graduated from *STKIP PGRI Jombang* with a BEd in Mathematics Education and from the University of Sriwijaya (Indonesia) in collaboration with Utrecht University (The Netherlands) with an MSc in Mathematics Education. My major during my master degree was a *Realistic Mathematics Education* (RME) as well as its Indonesian adaptation version Pendidikan Matematika Realistik Indonesia (PMRI) which are a special approach for teaching mathematics. Learning this approach has brought me to an understanding that context plays a critical function in teaching and learning mathematics. As part of my Masters thesis I developed an instructional theory to support students, helping them to construct and analyse graphs using their height as context.

Realising that graphical interpretation is one component that contributes to students' statistical literacy has developed my interest in statistical education. My interest was further driven by the PISA and TIMSS results, that report students from many developing countries, including Indonesia, under perform solving data-related problems. These results motivated me to do further research in this field.

Currently, I am a PhD candidate at the University of Canberra researching Indonesian high school students' statistical literacy. In this study, I am working on developing an assessment framework to investigate Indonesian high school students' statistical literacy levels and the strategies they utilise when responding to data-based information. Furthermore, this study is a cross-sectional study examining three components contributing to students' statistical literacy levels as well as the process they are going through while solving the problems. This includes students' engagement with context. I expect my findings will be beneficial for education stakeholders in Indonesia, particularly for mathematics teachers choosing appropriate problems to teach and assess students' appreciation of the problems related to data.

Finally, as an early researcher and mathematics lecturer for pre-service mathematics teachers, my goal as country coordinator for Indonesia is to share as well as to gain. Sharing to the world about the current issues of school students' statistical literacy in Indonesia and keep updating the recent issues regarding students' statistical literacy from around the world and pass it to my Indonesian counterparts. By joining International Statistical Literacy Project (ISLP) as country coordinator of Indonesia, I am sure more opportunities to help Indonesian students to be statistically literate will emerge. As an early career researcher, I need guidance from other more experienced researchers in the field, many of whom are in the ISLP. After completing my PhD I will be back teaching my students, where I must support them to have a critical appreciation of statistical knowledge, both as data producers and consumers. This will help them to be better informed citizens and mathematics teachers, who in turn can create improved critical statistical learning environments for their students.

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The CSO Plays a Key Role in Advancing Statistical Literacy in Ireland

Olivia Lucey*

The Central Statistics Office (CSO) is Ireland's national statistical office and our purpose is to impartially collect, analyse and make available statistics about Ireland's people, society and economy.

The CSO also plays a significant role in advancing statistical literacy in Ireland. One of the ways we do this is by making statistical sources easily accessible and more relevant, by improving our use of infographics, video and interactive tools, and by developing new statistical products. In January 2018 the CSO unveiled its new visual identity. The development of this new visual identity was an extension of the strategic objective which centres on turning data into knowledge and insight for all.

For several years now, we have been expanding our role in educational outreach. We do this through competitions and awards, and by attending events and seminars, as a way of engaging with students.

By far, our biggest event of the year is the BT Young Scientist and Technology Exhibition, which takes place in Dublin every January. This event, now in its 57th year, is attended by over 60,000 people—students, parents and teachers—and is an excellent forum for us to showcase our products and to inform people of our competitions. The CSO also sponsors an Award at this event: "Award for Best Use of CSO Open Data". The winner this year was Ciarán Meers, with his entry "An Investigation into the Susceptibility of Areas in Urban Regions to Processes of Gentrification".

Our best known and longest running competition is the John Hooper Medal for Statistics Poster Competition. This competition is annual, and feeds into the ISLP poster competition every second year. Now in its tenth year, the competition has gone from strength to strength, growing in numbers each year. The beauty of this competition is that the subject can be about any subject under the sun. If you are interested in biology, chemistry, physics, or the social sciences, you can participate in this competition. Taking part encourages students to work as a team, investigate real questions using data, use their analytical and graphical skills and develop skills in written communication. This year we received over 220 entries,

As mentioned above, the winners of the John Hooper Poster competition go on to enter the ISLP Competition. We are very proud to say that we have had quite a few winners in the ISLP! In 2015, Rachael Ní Dhonnachadha and Shannon Ní Dhonnachadha represented Ireland in the category “students born in 1996 and younger” and won first prize. Last year, Ireland came first in both the senior and junior categories – a first in the 11 years of the ISLP competition! Aisling Barry and Katrin Birk won with their poster “A Statistical Analysis of the Accuracy of 5-Day Forecasts in Predicting Hot vs Cold Temperatures”, and Kate Bagnall and Bobbie Beattie with “The Changing use of Language in Irish”.

<https://www.cso.ie/en/media/csoie/newsevents/documents/johnhooperresults2015/15roadtorio.pdf>

https://www.cso.ie/en/media/csoie/newsevents/documents/johnhoopercomp2019/133_A_Statistical_Analysis_of_the_Accuracy_of_5-Day_Forecasts_in_Predicting_Hot_vs_Cold_Temper.pdf

https://www.cso.ie/en/media/csoie/newsevents/documents/johnhoopercomp2019/1_Changing_use_of_language_in_Irish.pdf

Running the poster competition this year is not without its challenges, due to Covid-19. Some internal judges need to re-prioritise their work, and our external judges cannot visit the CSO building as usual. But of course, there is always a solution, and the judges will instead judge remotely and speak to each other via Skype.

2019 saw us launch the inaugural Alice Perry Open Data Hackathon. The CSO partners with the Centre for Data Analytics in the National University of Galway to run it. The competition is open to third level students in Ireland, the goal of the competition being to identify and code new app concepts using data from data.gov.ie and other data portals. The concepts should provide a societal benefit and have a positive impact on citizens. Each year will have a different theme – last years was ‘Climate Action and Circular Economy.’

During Maths Week in October every year, we host an awards ceremony in Ireland’s National Concert Hall in

Dublin, for those students who won and achieved order of Merit in John Hooper, and also other award winners. Students, teachers, parents and friends are invited to attend the celebration and the students are given the opportunity to present their research on the day. It is a lovely day out and a wonderful way of celebrating the students’ achievements.

With all our competitions and awards, our aim is to encourage students to engage with statistics, to improve their abilities to describe their environment with the help of statistics and to use statistics as a tool for making sense of daily life.

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**An
Phríomh-Oifig
Staidrimh**

**Central
Statistics
Office**



Country Report: Italy 2019-2020

Francesco Michele Mortati*

Relaunched with new momentum, starting in May 2018, the promotion and development of statistical literacy has continued – both through existing activities and new projects, and both as a central structure and in collaboration with other structures, in particular with Istat Territorial Network for the development of statistical culture and with Istat Directorate of Communication.

Currently, the activities specifically intended for schools are: the participation in competitions and prizes, activities in partnership with projects already underway and study visits of school groups to Istat headquarters.

One of our main activities are the **Statistical Olympic games**. They are organized by Istat and the Italian Statistical Society (Sis), which started them 10 years ago in It-

aly. In the 2020 edition, a sharp increase in participation was registered both for schools and students- increasing from 101 participating schools in 2019 to 133 in 2020, and to nearly 5,000 enrolled students compared to 3,857 in 2019. In May 2020, the European phase of the Olympics will be launched, coordinated by Eurostat, in which Istat participates together with the other European NSIs. The activity is part of the follow-up to the Digicom Package 4 (Communication and Dissemination) project coordinated by Eurostat.

Another very important activity is the International competition for statistical posters organized as part of the **International Statistical Literacy Project (ISLP)**. The initiative, for students from schools and universities all over the world, is aimed at enhancing the appreciation of official statistics in young people as a tool for understanding everyday reality. The winning poster of the Italian national phase in 2019, won the university category of the international competition. The award was presented at the biennial conference of the International Statistical Organization in Kuala Lumpur in August 2019.

In October 2018, through an Agreement with the Department of Territorial Cohesion of the Presidency of the Council of Ministers, Istat began a collaboration on the civic monitoring project “**A Scuola di OpenCoesione (ASOC)**” (At the School of Open Cohesion), also valid as a teacher training activity. Institutional partners are the Ministry of Education and the European Commission Representation in Italy. The ASOC project started experimentally in the 2013/2014 school year with 7 schools. Since then it has grown and, in the 2019/2020 school year, it has involved 204 schools, 500 teachers and nearly 5,000 students. Once they join the project, the teams of students must choose a project, financed by European social funds, and monitor its progress.

The educational path is divided into 5 lessons, a civic monitoring visit, active participation in the international Open Data Day event and a final public event. The goal of the collaboration for Istat in this project is to encourage the spread of statistical literacy, to provide adequate insight into research methodologies, the construction of synthetic indicators and to enrich student training.

Istat experts joining the ASOC project are from Istat local offices who, for the first year, took part in the project on a voluntary basis. Numbering almost 60 people, they brought official data and statistics to the ASOC teams, and provided assistance on the use of the data, lectures, webinars and participation in the Open Government Week.

During the 2018-2019 edition, the European Commission launched an expression of interest for Member States to begin an experiment starting from 2019-2020 in the Higher Education Institutes based on the ASOC model. Five countries in Europe are now participating in the pilot project “At the School of OpenCohesion”, which

is coordinated by the Italian ASOC Team and the DG Region Communication Unit of the European Commission.

Study visits for students to Istat headquarters in Rome is another activity which is greatly appreciated by students and teachers but also by our colleagues who prepare lessons for them. In 2019 students from 5 different schools and a university course in statistics visited our headquarters, from all over Italy. Approximately 400 students took part in these visits. During these meetings Istat experts spoke with them about several topics concerning official statistics. The visit program is either on demand or as part of a fixed program. The special focus of 2019 was on the 17 Sustainable Development Goals, endorsed by the United Nations General Assembly in 2015, and to be achieved by the year 2030 (UN Resolution 70/1).

Activities at regional level involving Istat local offices is more varied. There are some school visits made on direct request from schools and many agreements are in the process of approval between Istat territorial offices and regional school offices; there are also ludic-didactic activities in primary schools and some teacher training activities at regional level (for example in Veneto). For the first year, the Lazio regional office carries out the "Statistics and citizenship" project, with pilot high schools all over Italy.

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Teaching Effectiveness Colloquium (TEC) for Statistics Educators in Mongolia

James Cochran*

In November of 2015, I engaged in a discussion regarding the state of statistics and operations research education in Mongolia with members of the U.S. Embassy in Ulaanbaatar. The Honorable Piper Campbell, who was at that time the United States' Ambassador to Mongolia, wanted to learn more about the international Teaching Effectiveness Colloquia (TEC) series I had established and maintained for almost two decades. The objectives of these TEC are:

- to increase student engagement in applied mathematics courses (with an emphasis on statistics and operations research);
- and
- to encourage the use of applied mathematics (particularly statistics and operations research) to address societal problems.

These colloquia feature several (usually four to six) 60-90 minute workshops on a wide range of topics. The speaker(s) may address teaching with technology, issues in distance learning, collaborative learning, active learning, writing and teaching with cases, project based learning, teaching modeling skills, consulting with/advising government agencies, identifying societal issues to address, etc. We also work to i) incorporate workshops by members of the host organization and ii) assist the host organization in augmenting its organizational and conference structure to accommodate its members who are concerned with the quality of applied mathematics education.

Ambassador Campbell liked the concept of TEC program, and she asked me to consider bringing this series to Mongolia. I was also already engaged in talks with colleagues in other nations about extending this initiative, but I am always looking for new and promising opportunities for the TEC series. Mongolia was certainly intriguing, so the staff of the US Embassy in Ulaanbaatar and I began working with the National Statistical Office of Mongolia and Mongolia's Ministry of Education,

Culture, Science, and Sports to determine how we could most effectively proceed.

Through these initial efforts, we determined that the organization of a TEC for Mongolia would be premature and inappropriate – the nation's education system offered almost no coverage of statistics or operations research at any level of education. As a result, we decided that the National Statistics Office of Mongolia (NSO) and the National University of Mongolia (NUM) would co-host a series of events under the theme "Applied Statistics: Teaching, Research, and Business Innovation" during the week of May 23, 2016. Professor Edward Kaplan of Yale University, Professor James Rosenberger of Penn State University, and I would travel to Ulaanbaatar to participate in this series of events, which were designed to introduce instructors in Mongolia to basic statistics and operations research and determine how to strengthen Mongolia's statistics and operations research capacities.



Fig 1. From left: Altantsetseg Sodnomtseren, Demberel Ayush, James J. Cochran, Mendsaikhan Sonomtseren, Edward H. Kaplan, Oyunchimeg Dandar, and Ganchimeg Mijiddorj meet at the National Statistics Office of Mongolia

On May 23, Professor Kaplan and I met throughout the day with senior officials of the National Statistical Office of Mongolia and Mongolia's Ministry of Education, Culture, and Science to discuss strategies for achieving Mongolia's goals for its students. Ways that individual members of the U.S. statistics and operations research communities, U.S. universities, the American Statistical Association (ASA), and Institute for Operations Research and the Management Sciences (IFORMS) could help also were considered. The meetings were productive and produced several creative ideas.

On May 24, the one-day workshop "Basic Operations Research for Statisticians" was held at the National University of Mongolia. The workshop was comprised of the two sessions led by Professor Kaplan and me: Deterministic Operations Research Models and Stochastic/Probabilistic Operations Research Models. More than eighty participants from universities and businesses throughout Mongolia participated in this workshop.



Fig 2. Professor Ed Kaplan – Fierce Mongol Warrior

On May 25, Professor Rosenberger and I led a morning workshop on how to introduce statistics into the high-school mathematics curriculum. More than one

hundred secondary school mathematics teachers representing almost every aimag (province) in Mongolia participated in this workshop.

During the afternoon of May 25, I also taught a class on basic statistical concepts—including measures of location, measures of variation, and effective visualization—to thirty 11th-year secondary school students using a case I wrote and have used in my introductory statistics courses. Several high-school mathematics teachers, college mathematics and education instructors, and officials of National Statistical Office of Mongolia and Mongolia's Ministry of Education, Culture, and Science observed this 90-minute session.

After the session, everyone involved – all observers and the students – participated in a group discussion. We talked about the importance of statistics in a high-school curriculum, the experience of learning and teaching using a case, and issues that can arise when implementing the case teaching method into Mongolian high schools. The students were enthusiastic about their experience with the case and the case method—they enjoyed the challenges associated with working on an open-ended problem for which there were several potentially correct answers and the opportunity to discuss and justify their answers. The teachers and instructors were intrigued by the case methodology and appreciated the opportunity to observe the demonstration of a teaching method not common in Mongolia; however, a few did express concern about finding or developing cases and developing the classroom skills needed to teach using the case method.



Fig 3. Professor Cochran talks with high school students in Ulaanbaatar during a break

The events of the week culminated on May 26 with the "International Conference on Applied Statistics: Teaching, Research, and Business Innovation." This conference provided a forum for academics, practitioners, government officials, and researchers to share ideas about recent developments in and applications of statistics, operations research, management science,

and other related disciplines. The conference, which was attended by several diplomats and government officials, also fostered networking among the conference participants in the core areas of statistics, operations management, management science, mathematics, and information & communications technology.

Faculty members and researchers from several universities and colleges—including the National University of Mongolia, Mongolian Education University, State of University of Life Sciences, and Institute of Finance and Economics—participated in the conference. Several representatives of state organizations (e.g., National Statistical Office of Mongolia, Mongol Bank, Mongolia’s Ministry of Finance, Mongolia’s Ministry of Education, Culture, and Science), research organizations, and industry practitioners also presented research at the conference.

Most importantly, during this week of events a plan for the creation of and participation in the two-week *Workshop on Innovative and Technology Based Teaching of Statistics and Operations Research* for a group of Mongolia’s educators and government officials was developed. I would work with National Statistical Office of Mongolia Director Bayanchimeg Chilkhaasuren and her staff to develop the *Workshop on Innovative and Technology Based Teaching of Statistics and Operations Research* program and recruit instructors for this work-

shop, which would be held on the campus of The University of Alabama in Tuscaloosa, AL, USA in May 2017. Ms. Bayanchimeg, her staff, and I worked with highly regarded instructors in the US to create ten 8-hour seminars on how to teach various topics in introductory statistics and operations research. We also worked with several universities in Mongolia, including

- National University of Mongolia
- Mongolian University of Science and Technology
- Mongolian University of Life Sciences
- Khovd University
- Mongolian State University of Education
- University of Finance and Economics
- Mongolian National University of Medical Sciences
- The Ikh Zasag University
- University of the Humanities
- Mongolia International University
- Gurvan Tamir College

to strategically identify potential participants for the *Workshop on Innovative and Technology Based Teaching of Statistics and Operations Research*.

During the weeks of May 8 and May 15, 2017, seventeen statisticians from Mongolia attended the two-week *Workshop on Innovative and Technology Based Teaching of Statistics and Operations Research* in Tuscaloosa, Alabama.



Fig 4. In front of the University of Alabama Culverhouse College of Business’ Bashinsky Computer Center – Roxy Peck, Jim Cochran, and the seventeen May 2017 Workshop on Innovative and Technology Based Teaching of Statistics and Operations Research participants

Speakers represented five leading U.S. universities, and the topics were presented in a wide variety of teaching/presentation styles; this also exposed our colleagues from Mongolia to a wide range of teaching styles that differed dramatically from teaching styles they had previously experienced. The agenda for this workshop follows.

TOPIC	DATE	WORKSHOP LEADERS	SPEAKER AFFILIATIONS
Data Visualization and Descriptive Statistics (with Excel, Tableau, and other software)	5/8/2017	Jef Naidoo, Dwight Lewis, Sarah Miesse	The University of Alabama
Probability for Statistics and Operations Research	5/9/2017	Bruce Barrett	The University of Alabama
Statistical Inference (Classical Inference and Simulation & Randomization Tests)	5/10/2017	Chris Franklin	University of Georgia
Regression Analysis (using SAS, Excel, and R)	5/11/2017	Cali Davis	The University of Alabama
Collecting Data (Design of Experiments and Surveys & Observational Data)	5/12/2017	Roxy Peck	Cal Poly, San Luis Obispo
Mathematical Programming (with Excel Solver)	5/15/2017	Thomas Edwards	Wayne State University
Decision Analysis	5/16/2017	Kenneth Chelst	Wayne State University
Simulation	5/17/2017	Dave Goldsman	Georgia Institute of Technology
Big Data Challenges, Special Approaches to Teaching (Teaching with Cases, Active Learning)	5/18/2017	James J. Cochran	The University of Alabama
Special Technology (Blackboard & MindTap)	5/19/2017	Brad Casselman	The University of Alabama

The speakers (or their universities) funded their own travel, the Mongolian government paid for the expenses for the seventeen participants, and the University of Alabama's Culverhouse College of Business provided the venue and paid for catering and a mid-workshop banquet.



Fig 5. Ken Chelst and Batbuyan Ganbaatar on a break during a Decision Analysis session

Upon returning home, the colleagues from Mongolia who participated in this workshop collaborated with other colleagues in Mongolia under Ms. Bayanchimeg's leadership to cooperatively write and publish *The Handbook on Statistical Methodology: For General Education School Teachers*. In support of these efforts, Cengage Learning also shipped twenty-five copies of its textbooks *Modern Business Statistics* and *An Introduction to Management Science* to our colleagues in Mongolia. Over the course of several months, a draft of *The Handbook on Statistical Methodology: For General Education School Teachers* was produced, reviewed, and revised several times.



Fig 6. Colleagues in an Ulaanbaatar conference room working on Mongolia's *The Handbook on Statistical Methodology: For General Education School Teachers*

The Handbook on Statistical Methodology: For General Education School Teachers was published and released to the public in a national ceremony in Ulaanbaatar in June 2018, and it has been distributed and is now being used nationwide in Mongolia to support the now mandatory coverage of statistics for all of Mongolia's high school students.



Fig 7. Ms. Ariunzaya Ayush, Chairperson of National Statistics Office of Mongolia presents Professor Cochran with a copy of The Handbook On Statistical Methodology: For General Education School Teachers during its 2018 national ceremonial release in Ulaanbaatar

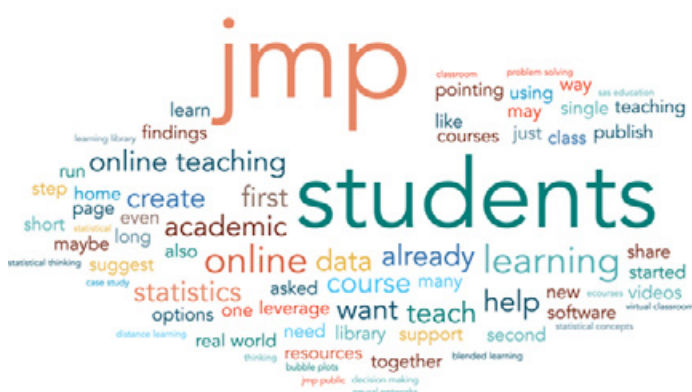
I have worked with colleagues in several nations to organize sixteen of these TEC—in Uruguay, South Africa (twice), Colombia, Tanzania, India, Kenya, Argentina, Fiji, Estonia, Cameroon, Croatia, Nepal, Moldova, Cuba (twice), and Bulgaria. These TEC are a terrific way to share across cultures and establish working relationships and understanding. But the effort in Mongolia represents a deviation from the standard TEC that I have been organizing for over a decade, and I think this is a tremendously positive outcome. Recognition that a nation's education system may lack the coursework in statistics and/or operations research necessary for a TEC to be effective is an important and fundamental step in the expansion of its statistics and/or operations research capacity, and this realization led to the development of a very effective alternative to the TEC for nations at this stage of their capacity development.

I encourage you to contact me at jcochran@cba.ua.edu or 1 205 348 8914 if either of these initiatives is of interest to you. If the statistics and/or operations research capacity of your nation is at a point at which it makes sense to try to increase student engagement in statistics and/or operations research and encourage the use of either of these disciplines to address societal problems, we can discuss the organization of a TEC in your nation. On the other hand, if your nation has not yet reached that point in its statistics and/or operations research capacity development, we can discuss an initiative similar to what we have done in Mongolia (I would be particularly pleased to support the efforts of other nations that want to follow Mongolia's lead and mandate coverage of statistics and/or operations research in their high school mathematics and science curricula).

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GERMANY



Teaching Online and Learning from Home Made Easier with JMP

Volker Kraft*

Whether you were curious how to leverage options for online teaching in your class for a long time already, or if you are now asked (or even forced?) to teach your students from home: [JMP](#) has always been a great choice for Blended Learning, and we are expanding our distance learning support even more to help you with the transition from classroom to online teaching as much as we can.

The aim of this article is to get you started by pointing you to the most useful resources supporting your statistics course. Online teaching can be so much more than just a virtual classroom where you present your slides over the internet. Instead, we want to suggest options to engage your students more and further improve their learning experience, while the lecturer enables and enjoys more active learning rather than delivering one-way presentations.

Here is our roadmap to integrate online support at different levels, which has been already adopted by hundreds of professors worldwide:

First, get your students started with JMP by pointing your students to [“Learn the basics of JMP: Short videos &](#)



Statistical Thinking and Problem Solving

Learn how to map a process, define and scope your project, and determine the data you need to solve your problem.



Exploratory Data Analysis

Learn how to describe data with graphics and use interactive visualizations to find and communicate the story in your data.



Quality Methods

Learn about tools to quantify, control and reduce variation in your product, service or process.



Decision Making With Data

Learn to draw inferences from data, construct statistical intervals, perform hypothesis tests, and understand the relationship between sample size and power.



Correlation and Regression

Learn how to study the linear association between pairs of variables, and how to fit and interpret linear and logistic regression models.



Design of Experiments

Learn the language of design of experiments (DOE) and see how to design, conduct and analyze an experiment in JMP.



Predictive Modeling and Text Mining

Learn how to identify possible relationships, build predictive models and derive value from free-form text.

[step-by-step guides.](#) Nine videos, together less than 30 minutes long, show new users how to get data into JMP, run first analyses or create powerful visualizations and share or publish results. That's it! No software training needed, no book to read first, and most important: You will teach statistical concepts – no need to teach software.

Students using the free ISLP license of JMP Student Edition can also watch [this introductory video](#) on YouTube.

Second, the 100 frequently asked questions will be answered by the [JMP Learning Library](#) – each answer on a single page, and most of them attached with a corresponding short video: “How to create interactive bubble plots?” “How to assess normality?” “How to run a two-sample t-test?” “How to bootstrap?” or “How to create neural networks?” – every how-to guide on a single page.

Third, when it comes to exercises or assignments, students typically can't wait to explore and analyze real-world data sets to solve real-world problems. You will find many engaging examples in our [Case Study Library](#). We also suggest that students get an opportunity to share their findings with the class in a live demo using JMP. Alternatively ask students to publish their findings online on [JMP Public](#).

A perfect match for students using JMP Student Edition are also the [JMP Introductory Lab Activities](#).

Fourth, you may offer your students access to the teaching modules and exams on STIPS, the free online course about “Statistical Thinking for Industrial Problem Solving”. This may help to refresh or consolidate knowledge from previous courses (for example, the module “Correlation and Regression” about basic statistics, or “Decision Making with Data” about statistical intervals and hypothesis tests). Or students can learn more about skills that are also essential in many workplaces today,

like “Design of Experiments” or “Predictive Modeling and Text Mining.”

For exercises and hands-on experience, all users get free access to JMP Pro in the cloud – so no JMP installation is required.

Want to learn more?

Here are some recommended links:

- Read our six-episode blog series [“The bread and butter when teaching with JMP: Introduction to academic resources”](#)
- Watch our recorded webinar about [“Resources for Teaching and Learning JMP”](#)
- Check out our resources collections for your course in our [Course Material Library](#)

Are you interested in an online guest lecture by JMP staff, or in a remote meeting to get you started taking your course online? Please get in touch – the [JMP academic team](#) is here to help.

Teaching online is not just a workaround. We hope that your students will embrace – and that you will prefer – this modern way of teaching and learning statistics.

All the best to you and your classes,

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JMP Academic Team- Europe

Source: <https://community.jmp.com/t5/JMP-Blog/Shifting-to-online-instruction-Teaching-online-made-easier-with/ba-p/253959>



ARGENTINA



Nuevo Coordinador de Argentina

Juan José Sosa*

Enseñé Matemática durante varios años en escuelas de nivel medio, y desde el año 2009 incorporé a mi trayectoria docente la enseñanza de la Probabilidad y la Estadística en una universidad. Por mi formación como profesor de Matemáticas, luego licenciado en Didáctica de la Matemática y posteriormente Magíster en Ciencias especializado en Investigaciones Educativas, tomé conciencia de la necesidad de repensar el proceso de enseñanza y de aprendizaje de estos temas para la formación de ciudadanos en un mundo donde “vive” la cultura de la aleatoriedad. Respecto a la alfabetización, participé como tutor en la asignatura “Enseñanza de la probabilidad y Estadística”, en una especialización para docentes de toda la Argentina que fué muy importante en mi trayectoria. Desde 2016 a la fecha, escribí dos tesis: la primera de maestría donde desarrollé una ingeniería didáctica sobre la noción de probabilidad y su relación con la razón, fracción y decimales, y el vínculo entre las estadísticas, la aleatoriedad (una máquina de azar) y la probabilidad, con alumnos de primer grado de nivel secundario de México (2018); y la segunda

vinculada a los procesos de interpretación y de reconstrucción de situaciones didácticas por los docentes en el marco de ingenierías didácticas (2019). Esto me permitió conocer los múltiples esfuerzos, estudios y desafíos que se presentan a educadores e investigadores desde diferentes perspectivas, para impulsar avances en el conocimiento de los procesos involucrados para el acceso democrático al conocimiento de estos temas. Me interesa participar del proyecto ISLP para contribuir a la mejora del proceso de enseñanza y de aprendizaje de la Estadística presente en las escuelas, en la formación docente y de otras carreras, divulgar la necesidad de su presencia en las trayectorias escolares de los alumnos, y establecer vínculos con otras personas interesadas en promover este cambio cada vez más necesario en la sociedad y el mundo que vivimos.

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STATISTICAL MATERIALS TO USE DURING THE COVID-19 OUTBREAK

The "Resources" section in the ISLP homepage includes lots of valuable material for remote learning of statistics:

- Videos
- Specialised pages for different topics
- Projects and initiatives

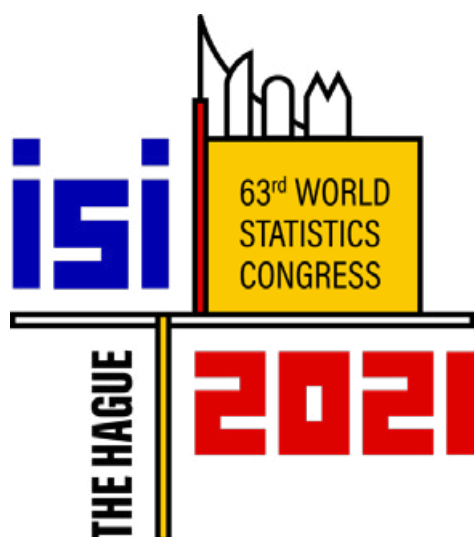
**NEWEST ADDITION: HOW TO SHARE YOUR
HANDWRITTEN NOTES AND SKETCHES IN ZOOM
MEETINGS, BY ANDREJ BLEJEC.**

Statistics Education Research Journal: Archives

**CAN BE FOUND FROM:
[HTTP://IASE-WEB.ORG/](http://iase-web.org/)
-> ARCHIVES.**

**INCLUDING ARTICLE: "ISLP COUNTRY COORDINATORS
AS AMBASSADORS OF STATISTICAL LITERACY AND
INNOVATIONS", BY ISLP EXECUTIVE BOARD**

LATEST ISSUE: VOLUME 19, NUMBER 1, FEBRUARY
2020. PETER HOWLEY FROM ISLP AS GUEST EDITOR.



**11–15 July 2021
THE HAGUE
THE NETHERLANDS**



isi2021.org

- > **2500 participants**
- > **130 countries represented**
- > **1300 paper presentations anticipated**



1st Announcement

ISI WSC 2021 Organiser: International Statistical Institute (ISI)

The 63rd ISI World Statistics Congress, ISI WSC 2021, will present a significant Scientific Programme with emphasis on innovative research in the wider field of statistics and its applications. Follow the ISI news: isi-web.org



NOC Co-Chair: Eric Schulte Nordholt

"World Statistics Congresses are events that statisticians should not miss: they are unforgettable experiences, both scientifically and socially!"



NOC Co-Chair: John Bailer

"The WSCs are a great opportunity to reconnect with old colleagues and to meet new colleagues from around the world. The chance to mix conversations about statistics in new and exciting venues is always a treat."

The National Organising Committee

is co-chaired by Eric Schulte Nordholt, Senior Researcher at Statistics Netherlands, and John Bailer, ISI President-Elect; it includes experts from Statistics Netherlands (CBS), Statistics Flanders, the Association for Statistics and Operations Research (VVS-OR), the Dutch National Bank (DNB), and ISI members from The Netherlands.



The Venue: World Forum The Hague

The venue of the 63rd WSC is the World Forum The Hague, a full service convention centre ideally located between the beach and city centre and only a 30-minute drive from two international airports. It offers the largest auditorium in The Netherlands (the King Willem-Alexander), 35 breakout rooms, and 12,000 square meters exhibition space. There are 765 newly refurbished hotel rooms in the direct area and many more in the city of The Hague. Find out more about the venue: worldforum.nl/en



#isi2021 #isiwsc2021 #statistics #thenetherlands

International Statistical Poster Competition 2019 – 2020

The Poster Competition has started in February 2020. Lower, upper secondary, and bachelor-level university students around the world are invited to create statistical posters in teams. Great prizes included! For more information visit the ISLP website.

The Best Cooperative Project Award

The award in recognition of outstanding, innovative, and influential statistical literacy projects is on. Proposals should be sent to the ISLP Deputy Director, Steve MacFeely by the end of December 2020. The winning project will receive 1000 euros! For more information visit the ISLP website.

