Editorial Address: *Gilberte Schuyten, Department of Data Analysis, Faculty of Psychology and Educational Sciences, University of Ghent, B-9000 Gent, Belgium, Fax 32-9-2646487, E-mail gilberte.schuyten@ugent.be*

The SRTL Forums
International Research Forums on Statistical Reasoning, Thinking, and Literacy
Dani Ben-Zvi (University of Haifa, Israel) and Joan Garfield (University of Minnesota, USA)

Over the past decade there has been an increasingly strong call for statistics education to focus more on statistical literacy, reasoning, and thinking. One of the main arguments presented is that traditional approaches to teaching statistics focus on skills, procedures, and computations, which do not lead students to reason or think statistically. The *SRTL* Forums began in 1999 to foster current and innovative research studies that examine the nature and development of statistical literacy, reasoning, and thinking, and to explore the challenge posed to educators at all levels— to develop these desired learning goals for students.

The SRTL Forums, co-chaired by Joan Garfield and Dani Ben-Zvi, offer scientific gatherings every two years and related publications. The SRTL Forums have unique features: small size that allows plenty of time for interaction and discussion; the use of videos of classroom work or interviews with students, as a way to present, discuss and argue about research related to these topics; and a stimulating and enriching format that facilitates the acquaintance with key researchers in this area and viewing their work in progress.

In the First International Research Forum on Statistical Reasoning, Thinking and Literacy (SRTL-1, Israel, 1999) sixteen statistics educators from six countries met to discuss research on the interrelated and often poorly defined and overlapping topics of statistical literacy, reasoning, and thinking. Some preliminary definitions and distinctions for these terms were offered. In the Second Forum (SRTL-2, Australia, 2001) twenty researchers from six countries focused on the challenges in describing, teaching, and assessing *statistical reasoning*. The Forum included also a discussion of the implications of the research presented. The Third Forum (SRTL-3, 2003), was held at the University of Lincoln-Nebraska, USA. It focused on *reasoning about variability*. Eighteen researchers in statistics education from six countries shared their work, discussed important issues, and initiated collaborative projects. A wide range of research projects were presented aiming at advancing the understanding of the richness and depth of reasoning about variability, a key focus of statistics education. These studies spanning learners of all ages, as well as teachers, demonstrated an interesting diversity in research methods, theoretical approaches and points of view.

The Fourth Forum will be hosted by the Department of Statistics, The University of Auckland, New Zealand, July 2–7, 2005, http://www.stat.auckland.ac.nz/srtl4. The focus of this gathering on *reasoning about distribution* has naturally emerged from the previous three conferences. Distribution is a key concept in statistics, and yet statisticians and educators may not be aware of how difficult it is for students to develop a deep understanding of this concept. When students are given tasks involving comparing distributions or making inferences, they often fail to utilize relevant information contained in the underlying distributions. Curricular materials often focus on construction and identification of distributions, but not on what these distributions mean to students and how they interpret them. Realizing the importance and complexity involved in understanding this concept, SRTL-4 will focus on the challenge of developing students' reasoning about distributions. We welcome presentations of research at SRTL-4 that address such questions.

The SRTL Forums proved to be very productive. Several types of scientific publications were produced including a CD-ROM of the proceedings, papers in refereed journals, and a special issue of the *Statistics Education Research Journal* on reasoning about variability, expected by the end of 2004. *Reasoning about Variability: A Collection of Current Research Studies* is a unique CD that contains research papers on reasoning about variability that were presented at SRTL-3. Many of these papers (which are all written in English) contain video segments (in English or with English subtitles), of student interviews or teaching experiments in classrooms. These video segments and research studies provide a rich resource for researchers and teachers. An additional result of the SRTL Forums is the soon to be published book: *The Challenge of Developing Statistical Literacy, Reasoning, and Thinking* (Kluwer Academic Publishers). This book collects, presents, and synthesizes cutting edge research on different aspects of statistical reasoning and applies this research to the teaching of statistics to students at all educational levels. These will all serve as a rich resource for statistics educators and researchers

For further information on any SRTL related issue please contact Joan Garfield (jbg@umn.edu) and Dani Ben-Zvi (dbenzvi@univ.haifa.ac.il).

FORTHCOMING IASE –RELATED ACTIVITIES

IASE Satellite Conference on Statistics Education and the Communication of Statistics, Sydney, Australia, April 4-5, 2005
Information about this conference was given in the Summer Issue. For more information on abstracts, papers, fees, accommodation and social program see
http://www.stat.auckland.ac.nz/iasesat05/
Submission deadline for Abstracts September 30, 2004

IASE Activities at the 55th Session of the ISI, Sydney, Australia, April 5-12, 2005
Chair: Chris Wild, c.wild@auckland.ac.nz.
These conferences of the International Statistical Institute (ISI) are held every two years. As it does at each major ISI conference, IASE will be organising about 10 statistics education sessions for ISI 55. Here follows the list of meetings with the contacts.
IPM 45: Reasoning about variation. Chris Reading, *creading@metz.une.edu.au*
IPM 46: The use of simulation in statistics education. Andrej Blejec, *Andrej.Blejec@nib.si*
IPM 47: Teaching statistics online. Larry Weldon, *weldon@sfu.ca*

IPM 48: Statistics for life: what are the statistical ideas or skills that matter most and why? Chris Wild, *c.wild@auckland.ac.nz*
IPM 49: Research in statistics education. Kay Lipson, *klipson@swin.edu.au*, MariaGabriella Ottaviani, *Mariagabriella.ottaviani@uniroma1.it*
IPM 50: Quality assurance In statistics education. Matthew Regan, *m.regan@auckland.ac.nz*
IPM 51: Promotion of statistical literacy among students. Pilar Guzman, *pilar.guzman@uam.es* (IASE & IAOS)
IPM 52: Using history of statistics to enhance the teaching of statistics. Carol Blumberg, *cblumberg@winona.edu* (IASE & ISI History of Statistics Committee)
IPM 63: Educating the media on how best to report statistics. Jacob Ryten, (IASS, IASE, IAOS)
IPM 81: Ethical Standards in statistics education. Mary Gray, *mgray@american.edu* (IASE & Ethics)
IPM 82: Bayesian statistics. Murray Aitkin, *Murray.Aitkin@newcastle.ac.uk* (Bernoulli & IASE)
IPM 83: Challenges in the teaching of survey sampling. Wilton de Oliveira Bussab, *bussab@fgvsp.br* (IASS & IASE)
For more information about ISI 55 and the IASE ISI 55 page, see the websites at
http://www.tourhosts.com.au/isi2005/ and
http://www.stat.auckland.ac.nz/iase55

SRTL-4: The Fourth International Research Forum on Statistical Reasoning, Thinking, and Literacy, Auckland, New Zealand, July 2-7, 2005.
Maxine Pfannkuch, m.pfannkuch@auckland.ac.nz
The SRTL series has been an extremely successful format for advancing statistics education research. The topic of the fourth Forum is "Reasoning about Distribution". If you are interested in finding out more, see the SRTL-4 web site at
http://www.stat.auckland.ac.nz/srtl4

ICOTS-7, Working Cooperatively in Statistics Education, Salvador (Bahia), Brazil, July 2-7, 2006
Plans are in place for the next exciting ICOTS. More information is available from the web page at
http://www.maths.otago.ac.nz/icots7 and from *Carmen Batanero (batanero@ugr.es).*

REPORT ON IASE ACTIVITIES

IASE 2004 Research Round Table on Curricular Development in Statistics Education, Lund, Sweden, June 28 - July 3, 2004
Report by Gail Burrill, Chair, burrill@msu.edu
About 18 papers by authors from nine countries addressed issues and concerns related to the

curriculum at the elementary, secondary, and tertiary levels, along with a strong research strand.

Details can be found on the conference website:
http://hobbes.lite.msu.edu/~IASE_2004_Roundtable/

The messages about statistics education given by the Program Committee are that statistics education can be vastly more fun than what it has been, that curriculum needs careful structuring, and that statistics education is vital in a world where social policy, technology and environment all depend strongly on careful design of investigations and analysis of data.

The end product is a summary of the key issues in the teaching of statistics around the world that were raised in the discussions and the solutions people find to meet them. This includes the things we think we know from research about statistics education and the curriculum we have, the things on which the statistics education community is divided, and the important issues that we have little to no knowledge about. The summary includes discussion of the politics involved with the design and implementation of curriculum, how the curriculum comes into being in different countries and how choices for topics are made, how we decide what is important to learn at which age, the ways of teaching statistical topics and the difficulties in doing so, the links between teachers and researchers in education and how researchers can work together internationally. We expect to have the final papers from the Roundtable available from the IASE website by about the end of September.

ICME-10, Denmark, July 4-11, 2004

Besides the statistics education presentations in Topic Study Group 11 Teaching and Learning of Probability and Statistics (see summer issue), ICME-10 also had the following regular lecturers in Statistical education: Carmen Batanero (Statistics Education as a Field for Research and Practice), Rolf Biehler (Variation, co-variation, and statistical group comparison. Some results from epistemological and empirical research on technology supported statistics education), Margarida César (Come away with me: Statistics learning through collaborative work) and Jane M. Watson (Assessment in Statistics Education: Obstacle or Opportunity?)

For more information see the conference website http://www.icme-10.dk/.

IASE PUBLICATIONS

SERJ Statistics Education Research Journal
http://www.stat.auckland.ac.nz/serj

SERJ is an electronic peer-reviewed research journal of the International Association for Statistical Education (IASE), and is jointly published with the International Statistics Institute (ISI). The editorial board of the Statistics Education Research Journal (SERJ) is pleased to announce the publication of the May 2004 issue of the Statistics Education Research Journal (SERJ, Vol. 3, No.1, May 2004). This new issue, as well as archives of older issues, can be found on the SERJ web page (see above for url). The entire issue can be downloaded as a single PDF (less than 400K), and individual papers can be downloaded separately. Access to issues of SERJ is free. The refereed papers in May 2004 issue are:

Jose Carmona Márquez.(Paper in Spanish, English Abstract) *Una Revisión de las Evidencias de Fiabilidad y Validez de los Cuestionarios de Actitudes y Ansiedad Hacia la Estadística / A Review of Evidence Regarding Reliability and Validity of Instruments for Measuring Attitudes and Anxiety Towards Statistics.*

Sonia Kafoussi. *Can Kindergarten Children be successfully involved in Probabilistic Tasks?*

Sue Gordon. *Understanding Students' Experiences of Statistics in a Service Course*

María Virginia López, María del Carmen Fabrizio, María Cristina Plencovich and Hernan Giorgini. *Some Issues about the Status of Statistics Teaching in Agricultural Colleges in Argentina*

Paula R. Williamson and Gillian A. Lancaster. *Statistical Education for PhD Students in UK Medical Schools*

Papers on Statistical Education Presented at ICME-9, Tokyo, Japan, July 31-August 6 2000

Editor: Susan Starkings, South Bank University London, UK, starkisa@sbu.ac.uk

On behalf of the International Association for Statistical Education (IASE) Topic Group 4 (TSG4) entitled 'Teaching and Learning Statistics' sessions were held at the Ninth International Congress on Mathematical Education. The aim of this topic group was to elucidate problems, with potential solutions, involved in the teaching and learning of statistics at all levels of education. IASE collected the 12 presentations of Topic Group 4 in a publication.

The papers are available from the IASE website at http://www.stat.auckland.ac.nz/icme

NEWS FROM AROUND THE WORLD

Herman Callaert Leadership Award in Biostatistical Education and Dissemination

This award was conferred to **Alan Agresti** at Limburgs Universitair Centrum Diepenbeek, Belgium on 19 May 2004. In his acceptance speech "Learning by educating" Alan Agresti, the author of one of the most successful textbooks on categorical data analysis, stressed the following issues:

Academia has numerous awards, but most recognize research and few recognize statistical education. We who work in the statistics profession in academia should remember that statistics is still taught in very diverse settings, with relatively few courses taught by professional statisticians within statistics and biostatistics programs. This is one reason (but not the only one) that, sadly, our profession continues to have a poor reputation for the quality of its teaching. Given the increasing numbers of students who take basic statistics courses, and given the ubiquity of quantitative analyses conducted in the "real world," insufficient numbers of students are receiving advanced degrees in statistics. Partly this is due to the lack of visibility of statistics as a profession in high schools and universities. The modernization of the mathematics curriculum at the secondary level to include statistics (as well as related developments such as the recent addition of the statistics Advanced Placement exam in the U.S.) should help with this. But it would also help if there were more undergraduate programs with statistics degrees, especially at large state universities. Finally, in academia the ever-increasing research and funding pressures have the unfortunate result that we faculty tend to direct much of our attention toward increasingly narrow areas. By contrast, a reward that results from teaching and from related academic activities such as writing textbooks and survey articles for other disciplines is the impetus to develop a broader perspective of a subject and its foundations.

ARTIST Online Assessment Resource Tools for Improving Statistical Thinking

Communicated by Joan Garfield and Bob delMas, University of Minnesota, Beth Chance, Cal Poly, San Luis Obispo

One of the biggest challenges to teachers of statistics is how to develop and use high quality assessments that measure student understanding and provide insight as to what students have actually learned in a class. Despite increased uses of technology, activities, and other aspects of "reform" courses, most course assessment does not look very different from traditional assessments that emphasize computation and formulas rather than a focus on important ideas and statistical thinking. Different types of assessments are also needed for research purposes such as evaluating the impact of particular courses, activities, and types of technology. The Assessment Resource Tools for Improving Statistical Thinking (ARTIST) project is addressing these needs in several ways, including:

(1) Development of a collection of high quality assessment items and tasks aimed at the introductory level course, coded according to course topic and type of cognitive outcome (e.g., literacy, reasoning, or thinking). This includes a variety of item formats including enhanced objective-format questions and longer, written assignments such as performance tasks, projects, portfolios, and journals. The ARTIST online database currently contains over 1,000 items which can be accessed online and can be downloaded into individual quizzes and exams.

(2) Web access to a wide collection of articles, project examples, presentations, scoring guidelines, and other resources on assessment.

(3) A series of faculty development activities to facilitate instructor use of such resources and further discussion among statistics instructors on assessment related issues.

(4) A comprehensive test measuring important outcomes of a first course in statistics that may be used to evaluate a variety of courses, and will allow for comparisons of outcomes across different types of courses (e.g., traditional, lecture-based courses, on-line courses, small interactive classes, etc.).

Please visit the ARTIST website **http://www.gen.umn.edu/artist/**.

IASE WEBSITE NEWS
Would you mind sending us your dissertation?

IASE is beginning to build a comprehensive archive of doctoral dissertations in Statistics Education at the webpage **http://www.stat.auckland.ac.nz/iasedissert**
We would like the actual dissertation, if possible, and not just the abstract because we think it is good for PhD students, particularly when they are just starting and again at write up stage, to be able to look at full dissertations that other people in the area have done. If you or one of your students, have recently completed a doctorate with a dissertation in statistics education, please get in contact with **Joan Garfield (jbg@umn.edu)** so that the details can be added there.