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INTERNATIONAL ASSOCIATION FOR STATISTICAL EDUCATION
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1. Address to the General Assembly by IASE President Chris Wild

On taking over the helm of IASE, I see that our outgoing President Carmen Batanero has left it in very good heart. Sure we have some financial hiccups from causes beyond our control. We will have to raise dues to some degree and more actively pursue Institutional members. But much more importantly, we have good teams of volunteers doing great work. Carmen has worked incredibly hard for IASE. I have never met anyone who works harder than Carmen. Of course the great thing about the IASE structure is that Carmen automatically continues on the Executive as Past President for a further two years. She has also taken on the primary leadership role for ICOTS 7 to be held, as you know, in July 2006. You have already put that in your diary!
The two most important things we in IASE are doing are, I think, the ICOTS series of conferences and our new journal SERJ. The ICOTS series has a proud history of success and the journal is gathering momentum. It takes a little while to establish a profile and change a culture where a substantial amount of publishing has been in hard-to-find edited volumes to one where almost all publishing is in key journals that, particularly in SERJ's case, everyone can obtain. A new project that shows a new way forward is the International Statistical Literacy Project (ISLP) with its annotated web pages of resources.

It is an exciting time to be in statistics education. It is a time of ferment and new possibilities. Some of these were vividly shown in our very successful Satellite Conference entitled Statistics and the Internet. In fact the conference ranged much more widely than that. But while exciting possibilities and their implementations are beginning to abound on the internet, or in other words tend to infinity, the time we have left in our days to pursue them is tending to zero. So what we now need from the internet is selection from profusion, guidance to those gold nuggets whose glitter is concealed by all the rest. Over the next few years I would like to see the IASE web pages become the primary source for information and comment about statistics education resources. The model must be, I think, the divide-and-conquer model that we are following with the ISLP web pages, subdivide the landscape into specialties that are small enough for individual volunteers to realistically stay on top of. Nothing else is sustainable.

IASE is a missionary arm of ISI, reaching out to nonstatisticians, but youth in particular, and to bring them into the fold. We are here because we believe that good statistics and creative but disciplined statistical thinking can bring substantial benefits to society and we want to be a part of making that happen. In his opening address, outgoing ISI President Dennis Trewin worried about the greying of ISI.. And if the greying of ISI is due to the greying of the profession, the only solution is the infusion of young blood. This, in turn, results from the recruitment and retention of students through stimulating education programmes with clearly signposted career paths. This is not something to be left just to IASE members. Every member of ISI or any of the ISI sections should be concerned about educational outreach. And by "concerned" I do not mean "worried". Lamentations, the tearing out of hair and the rending of garments helps nobody. I mean actively contributing, feeding their colleagues at the educational coalface with ideas, stories, case studies, data sets and research projects -- with excitement for statistics and what it can do. Our current students, and any more that we might be able to attract, are the future life blood of your profession and your professional organisations so you too need to assist in ensuring that that life blood flows ever more strongly.

And if IASE is falling short in some area that you care about (perhaps, for example, you think it is too fixated on that first university course) then maybe it is because you are not in there leading the charge for another priority. My conception of IASE is very simple -- we will do anything that advances statistics education where we can find a champion to lead and volunteers to help. We need each and every one of you as a champion or a volunteer.

The last thing I want to do is make an announcement. The incoming Executive of the International Association for Statistics Education has voted to confer life membership on Former Presidents Maria-Gabriella Ottaviani and Brian Phillips. They have been volunteers and champions par excellance for IASE providing outstanding leadership of IASE and arduous conference organisation far above and beyond the call of duty for many years. We wish to make them lifetime members to honour them and thank them for those many contributions. Gabriella and Brian would you mind rising and taking a bow.

2. IASE EXECUTIVE 2003-2005

President	Chris Wild	Finance, IASE sessions at ISI-55, Sydney, 2005, IASE editor in International Statistical Review, Associate Editor SERJ
President-Elect	Gilberte Schuyten	Program Chair for IASE at ISI Berlin, Editor IASE Review, Editor IASE Matters in Teaching Statistics
Past-President	Carmen Batanero	Chair IPC for ICOTS-7, Editor of SERJ 2003, Associate Editor of SERJ from 2004.
Vice-Presidents	Carol Joyce Blumberg	Internal Statistical Literacy Project, (ISLP), Coordination of IASE publications
	Lisbeth Cordani	Member of ICOTS-7 LOC, LOC representative in the IPC, Membership
	Chris Reading	Associate and Assitant Editor SERJ
	Susan Starkings	IASE section of ISI Newsletter, Programme Chair for ICOTS-7, Co-ordinating (with Agnes Herzberg) the ISI publication of Short Book Reviews for statistical education books
	Larry Weldon	Joint Chair ISI Satellite, Berlin 2003

3. Honorary Members

IASE statutes give the possibility of nominating honorary members as a way of recognising the work and dedication of some of our members. It was with great pleasure that the IASE Executive Committee approved the nominations of both Maria-Gabriella Ottaviani and Brian Phillips, who were presidents in the period 1997-1999 and 1999-2001 and whose work has contributed significantly to the success and growth of our Association. They join our two other honorary members David Moore and Anne Hawkins.

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4. ICOTS-6 Spin-off in South Africa : ICOTS-6 Continues to deliver and deliver … !!!

Report by Jacky Galpin[1], Delia North[1] and Jackie Scheiber[2], South African Statistical Association (SASA)[1] and Association of Mathematics Educators of South Africa (AMESA)[2]

ICOTS-6 (Cape Town, July 2002) was used to kick-start an outreach to local mathematics school teachers. South Africa (SA) is currently in the process of developing and implementing a new school curriculum, with outcomes-based education as a fundamental building block. This recognizes the cross-curricular need for data handling as an anticipated outcome, resulting in vast amounts of statistical material being included throughout the various phases of the new school curriculum. Historically very little (if any!) statistics was taught at school level with the result that Mathematics teachers, with little or no training in Statistics, would be expected to ensure that school leavers in SA are statistically literate!

Funding was obtained from Statistics SA, the SA Department of Education, and UNESCO for a 5-day local teacher program, which was held as a separate stream throughout ICOTS 6. This sponsorship allowed SASA and AMESA to bring a minimum of 4 Maths teachers and provincial Maths advisors from each of our 9 provinces, to ICOTS, with the intention of developing core groups to run follow up workshops. A number of these delegates also attended the annual AMESA conference, held in the week preceding ICOTS6. Sponsorship required that they present workshops in their home areas, and that they gave up 2 weeks of their vacation at no charge.

The local teacher sessions consisted of various conference talks (selected and grouped in the program so that the teachers could attend), a census@school workshop (the Royal Statistical Society Centre for Statistics Education played a major role!), a set of talks on probability (Delia North, SASA) and on data handling (Jackie Scheiber, AMESA), as well as sessions by the Schools Development Unit of the University of Cape Town. A workshop approach prevailed throughout, with delegates receiving "ICOTS6 Papers for School Teachers", a collection of papers from ICOTS6 selected by the Local Organising Committee, as well as materials and aids to use in the class room. The sessions were captured on video with the aim of distributing the video to provincial teacher libraries.

The program was a resounding success, with over 100 follow-up workshops during the next year, given by the delegates. What really stunned us was that the teachers were so enthusiastic about this, that NOT ONE applied for the available funding for hire of halls, reproduction of material, etc. We are humbled by their enthusiasm and dedication.

A further course is to be presented as a 2-day workshop during SASA's 50th anniversary conference in Nov, 2003, this course also incorporating the newly approved material for grades 10-12. This is the first time school teachers will be part of a SASA conference. We initially expected around 20 participants at this workshop, as it is during exam-time, but have been absolutely stunned by the interest – over 100 delegates to date, who have coaxed or bullied employers, funders, etc. into giving them the time off, and paying for their conference fees.

Plans are under way to set up a system of workshops to be presented in each of the 9 provinces in South Africa from 2004 onwards. These workshops are to cover the entire data handling and probability component

of Curriculum 2005 and will be presented all year round, thus giving teachers all over South Africa the opportunity of upgrading their knowledge in order to achieve statistical literacy of the school leaver in South Africa.

5. IASE Satellite Conference on Statistics Education and the Internet Berlin, Germany, August 11-12, 2003

Report by the Organizer/Chair: Larry Weldon (Australia)

The conference was organised by the International Association for Statistical Education in cooperation with the International Statistical Institute, Stochastics Section of the German Society for Mathematics Education, German Mathematical Association (special interest group on Probability and Statistics), German Statistical Society and the Max-Planck-Institute for Human Development.
It was held August 11-12, 2003, just before the 54th Biennial Meeting of the International Statistical Institute. The venue for the conference was the Max Planck Institute for Human Development in Berlin (MPIHD). The organizers thank the directors of the Institute, Professor Jürgen Baumert and Professor Gerd Gigerenzer, for their generous support.
The **Scientific Program Committee** consisted of Larry Weldon, Chair (Canada), Carmen Batanero (Spain), Joachim Engel (Germany), Brian Phillips (Australia) and Gilberte Schuyten (Belgium). The **Local Organising Committee** consisted of Joachim Engel, (Chair), Rolf Biehler, Laura Martignon and Markus Vogel.

Eighteen invited speakers presented talks relating to the theme "Statistics Education and the Internet" – these talks were presented to the plenary sessions of approximately 60 registrants. In addition, a two-hour time slot was reserved for 15 poster sessions also directed to this same topic. Most of the invited papers were accepted as refereed papers by a review of at least two peers. A CD of the proceedings was produced containing all the invited papers, abstracts of the contributed poster sessions and a list of registrants.
Our host, Professor Gerd Gigerenzer of the Max Planck Institute, opened the conference. He explained the structure and work of the MPIHD and the consequent resonance of its work with that of the IASE. The necessity of numeracy and an appreciation of risk are essential foci of MPIHD research.
Six main themes emerged from the 18 invited papers addressing "Statistics Education and the Internet". In this summary contributions are mentioned in the briefest way to encourage you to explore them more completely through the link http://www.ph-ludwigsburg.de/iase/ The invited author's name is used in referring to the articles since that is the way they are displayed on the web page linked to the articles. Some papers were actually presented by more than one author.

1. ***The internet as an information resource for statistics education.***
   The first session was introduced by Brian Phillips (Australia) who provided a select list of URLs of resources of particular interest to statistics educators.
   A talk by Gabriella Belli (USA) provided the novel idea of using a comparison of the internet search engines themselves as a source of data for statistics instruction.
2. ***Initiatives with online statistics courses.***
   Lea Bregar (Slovenia) discussed the use of official statistics in the development of an online course in econometrics.
   Joe Wisenbaker (USA) related his experiences over two iterations of an online statistics course, with advice on how to avoid problems.
   Irena Ograjensek (Slovenia) reported the varying student acceptance of internet-based statistics instruction.
3. ***Use of the internet to support lecture courses in statistics.***
   Rolf Biehler (Germany) described the role of FATHOM software in supporting statistics modules usable on the internet as well as the classroom - he emphasized the versatile nature of FATHOM in adapting to the instructor's particular style.
   Andrej Blejec (Slovenia) emphasized the utility of web-based applets involving simulation - he pointed out the important advantage of having tools capable of use across all computer platforms.
   Paul Darius (Belgium) demonstrated some very effective teaching tools that are freely available from his website - these include tools for simulating the very practical needs of a real-life industrial experiment.
   http://www.kuleuven.ac.be/ucs/virtex/ and http://www.kuleuven.ac.be/ucs/java/

Wolfgang Hårdle (Germany) described his system of supplying statistical software from a centralized site for statistics education.
Udo Kamps (Germany) described a German government-sponsored multimedia resource for statistics education.
Martin Podehl (Canada) described the efforts of Statistics Canada to supplement their main data-provision mandate with teaching modules based on important social issues.
Chris Wild (Australia) explained how the internet was used in his university to organize and enhance statistics instruction to the thousands of students enrolled each year.

4. ***Psychology of learning statistics via internet tools.***
   Tim Dunne (South Africa) described the role of the internet in approaching the problem of teaching statistics to students with a very heterogeneous degree of academic background.
   Jean-Claude Regnier's (France) paper discussed some psychological aspects of learning statistics via the internet
   Kay Lipson (Australia) described the psychology of learning certain difficult statistical concepts via internet-based tools.
5. ***Educational theory in use of internet instruction in statistics.***
   Juan Godino (Spain) described the educational theory underlying some internet-based tools for elementary statistics instruction - and warned of possible misunderstandings that can arise.
   Andreas Eichler (Germany) emphasized the interactive aspect of internet instruction in statistics.
6. ***Use of the internet to promote public recognition of the discipline of statistics.***
   Steve Clarke (Australia) described his very successful internet-based sport-statistics website. He was able to attract the attention of the masses by providing forecasts of future sports events, and incidentally spreading the word about the high value of the statistics discipline.

The papers from the conference are available electronically from the Publications page of the IASE website http://www.stat.auckland.ac.nz/~iase/.
See also the original conference site at http://www.ph-ludwigsburg.de/iase/proceedings.

The website also contains short descriptions of the many contributed poster sessions - a list of the primary authors follows: Félicien Accrombessy (Benin), Kazlauskiene Ausra (Lithuania), Joachim Engel (Germany), Kamel Esseghairi (Tunisia), Henryk Kolacz (Canada), Gerhard König (Germany), Kang Sup Lee (Korea), Ana Lopez Menendez (Spain), Maria Pannone (Italy), María Isabel Parra (Spain), E.L. Sanjuan (Spain), Gilbert Saporta (France), Maria Sundefeld (Brazil) and Larry Weldon (Canada).

6. IASE Activities at the 54th Session of the International Statistical Institute

Report by the programme Chair: Gilberte Schuyten (Belgium)

IASE organised a wide and varied list of topics at the 54th Session of the International Statistical Institute for Invited Paper Meetings, both those organised by the IASE alone and in conjunction with other ISI Sections and Committees and guest societies.
Below are the summaries of the Invited Paper Meetings with organisers, papers and discussants.
For information in general about the 54th Session in Berlin see: http://www.isi-2003.de/

IPM 44. Teaching Probability with a Modelling Approach

Report by the Organiser/Chair: Michel Henry (France)

The aim of this session was to discuss the possibility of coordinating the teaching of statistics with probabilistic knowledge at secondary level an in pre-service teacher's training. It is essential that statistical education becomes a real part of scientific education together with other experimental sciences. The students should be helped to move progressively from perceptual comprehension of randomness to a more theoretical understanding of probability. This would enable them to manage different real situations where chance is present: random sampling, random experiments …
Describing such situations, gathering of data and analyzing the data to make decisions, involves the students in a modelling approach where probability is the most suitable mathematical tool. A more theoretical teaching of probability, based on the Laplacian or the axiomatic definition, can satisfy the mathematicians. However, the students would not be involved in real experimental conditions. The abstract concept of probability cannot make sense if it is not interpreted in concrete situations.

We had four invited papers, which took into account the questions of a modelling approach to teach probability and statistics from various viewpoints:

- Juan D. Godino and M. Jesús Cañizares (Spain)*: Teaching Probability to Pre-service Primary School Teachers through Simulation*
- Ernesto Sanchez and Gabriel Yáñez (Mexico): *Computational Simulation and Conditional Probability Problem Solving*
- Bernard Parzysz (France): *From frequency to probability. Some questions posed by the French new curricula*
- Talma Leviatan (Israel): *Conceptual, Computational and Didactical Aspects of Teachers' Training in Probability & Statistics.*

Numerous questions were posed, notably: How to overcome misconceptions of future teachers? Which building of relevant models to achieve simulations on computers, using different software (as Fathom)? Which didactical management of a curriculum centred on numerical simulations? How to introduce minimal theoretical knowledge for teachers to master modelling situations?
A rich discussion was presented by Lionel Pereira-Mendoza (Singapore), asking if it is very necessary to start from real situations to introduce stochastic models.

IPM 45. Statistician as Consultant or Collaborator

Report by the Organiser/Chair: Gabriella Belli (USA)

Statisticians are often called upon to provide consultation on projects ranging from individual research to major grants. Sometimes such consultations evolve into true collaboration and sometimes a statistician is invited to participate with content area specialists in a collaborative effort from the onset of the research. The papers in this session discussed issues related to collaboration in different fields of research and provided a forum for discussing parameters for the roles of statistical consultant versus collaborator.

One role in a consulting relationship is to teach. In their paper, *"The use of statistics in the workplace: A survey of research graduates in diverse disciplines,"* John Harraway and Richard Barker from New Zealand very nicely extended the consulting relationship to a logical beginning – thinking about changing course content to better prepare future researchers. Responses from almost 1,000 working graduates from the biological sciences, psychology, economics, finance, marketing, and other areas showed that each group had needs for select topics, which they listed. By doing what they suggest, perhaps we can help avoid some of the problems Elisabeth Svensson from Sweden talked about in her paper, "*Statistical consulting, a matter of breaking tradition in applied research*." One problem is that of different members on a team misusing statistics or being resistant to novel methods that they don't understand. Ordered categorical data are a common result in data collection, as is the mishandling of such data. Svensson showed us that it is possible to successfully introduce a novel, but more appropriate, technique in a consultancy. She also mentioned a downside, but let's not focus on that now. Instead, I want to draw attention to the fact that her statistical method for categorical data was improved thanks to the collaboration of a research group.

This fact brings us to a suggestion in the paper *"Communication, Collaboration, and Consulting*" by Flavia Jollife from the United Kingdom, which is to communicate our successful collaboration stories and thereby help "sell statistics." She also talked about the importance of communication to help educate clients, to set boundaries and focus expectations, as well as to help a client communicate better by asking the right questions. While Harraway and Baker want to know what was missing in the statistical education of working researchers in order to improve the education, Jolliffe wants to encourage students in research methods courses to "consult with statisticians when they have reached the limits of their knowledge." Both are admirable goals. Like Svensson, Jolliffe also touches on novel methods – but she suggested that collaboration could be enhanced if statisticians "embrace some of the newer methods" that certain researchers need. As part of communication, she also suggested that statisticians should help editors of applied journals see the need for statisticians as reviewers.

In the last paper in this session, Lisbeth Cordani from Brazil, *"Consultancy can be of service to teaching, research, and extension activities,"* continued the "new strategies" theme, but she referred to new teaching strategies related to "knowledge sharing." In particular, she suggested the use of projects to enhance the teaching/learning experience in statistics classes. She advocates that students "be in touch with the newest procedures" in order to deal with the unusual problems. This brings us back to the first paper – 30% of Harroway and Barker's respondents said that they had no statistical assistance at work. We might both help such working researchers while enhancing student statistical learning by bringing researchers in to present case studies of their problems and let students work in teams to offer solutions. Although these four papers involved different specific issues, they provided useful suggestions for the training of statistical consultants and collaborators in the essential consultancy relationship.

IPM 46. Research in statistics education and international cooperation

Report by the Organiser/Chair: Lisbeth Cordani (Brazil)

Statistics as a field of knowledge is present in people's daily lives through news, predictions, feelings, as well as quantitative or qualitative analyses of information coming from experiments or observation studies. Knowing how to analyse such information is fundamental to understand all the facts, whether natural, social or economic. Education has a broad reach, which goes beyond the classroom and even the school boundaries. Accessing basic literacy under both linguistic and numeric points of view is everyone's right and in this context we should include statistical reasoning. These are the basic elements to develop citizenship. It is essential for citizens to have contact with statistics from their very first day at school, when they start to learn how to read and write. Primary and secondary school is not performing this role appropriately, and we can see very naïve students starting university, as regards to the very basic ideas of statistics, including the most important of them, which is the notion of variability. In fact, they come with very deterministic reasoning, which is not consistent with the randomness associated with real world phenomena. In several South American countries some isolated actions to search for ideal solutions have been taken. In theoretical statistics, several South American researchers are permanently working together. However, in the field of teaching and learning statistics, there are very few links, and there is no tradition in doing research at any level in Statistical Education. For this reason, there has not been an exchange of experiences either in teaching and learning statistics inside a country, nor among different countries.
This session presented some research in this field that is being done in South America and suggested some kind of international cooperation. A communication net should be created about every level of teaching and learning statistics, with emphasis on the pre-university level.

The following speakers and discussant addressed these problems:

- Jorge Luis Romeu (USA): *The Juarez Lincoln Martí Project: a practical example of international co-operation in statistics education and research*.
- Shrikant I. Bangdiwala (USA): *International co-operation in research: An opportunity to educate collaborators*
- Clarice G.B. Demétrio (Brazil:. *International cooperation: a Brazilian example of academic exchange*

Discussant: Carmen Batanero (Spain)

IPM47 Mathematics teachers teaching statistics

Report by the Organizer/Chair: Susan Starkings (UK)

This session was looking at research into teaching statistics at the school level and how this influences the way we teach it. Examples of 'good practice' were elucidated by the following speakers;

- Ann Lee Wang (Malaysia) and Song-How Kon (Malaysia): *Should stochastic processes be taught by mathematics teachers?*
- James Nicholson (UK) and Catherine Darnton (Ireland): *Mathematics teachers teaching statistics: What are the challenges for the classroom teacher?*
- Henrik Dahl (Norway): *Mathematicians have problems teaching model assumptions in statistics*

Discussant**:** Andrej Blejec (Slovenia)

The papers were well received by the audience, with a great deal of humour taking place during Henrik's presentation. James gave a thought provoking presentation which in turn provided plenty of fuel for questions in the discussion time and Ann Lee described how difficult it was to present Markov processes without formal mathematics. A lively discussion took place at the end and the discussion continued long after the session had finished which is indicative of the interest in this area of teaching.

IPM-48: Statistics education for media reports

Report by the Organizer/Chair: Maxine Pfannkuch (New Zealand)

Statistical literacy describes people's ability to interpret and critically evaluate statistically-based information appearing in the media and to discuss and communicate reasoned opinions on such information. Such a definition requires both the reader and writer of media reports to be statistically literate. This session focused on the educational processes needed to develop statistical literacy amongst media people and statistics students. Research on students' or media people's understanding, interpretation, comprehension, and critical evaluation of statistically-based information, as well as the communication of their opinions regarding such information, was sought from both statistics educators and statistics practitioners. In order to provide an overall perspective on statistical literacy, presenters and discussants were drawn from people who assess media reports, from journalists who write media reports, from statistics educators who teach people to critique statistically-based information in the media, and from statistics education researchers who seek to understand the educational processes involved in students' development of statistical literacy. The session aimed to focus on the educational processes needed to develop statistical literacy amongst media people and statistics students.

The first presentation, *Functional demands of statistical literacy: Ability to read press releases from statistical agencies*, by Iddo Gal, University of Haifa, Israel, argued that the development of students' statistical literacy should involve exposure to press releases and the resultant media articles as they can illustrate to students how statistics get reported to the media. The second presentation, *Statistics for journalists*, by Martin Podehl, Statistics Canada, described the steps the National Statistical Office in Canada has taken to collaborate and communicate effectively with journalists. In the third presentation, *A course called Chance,* Laurie Snell, Dartmouth College, USA, illustrated via the web an array of teaching ideas he uses to develop students' statistical literacy.

The discussants for the session were Chris Wild, The University of Auckland, New Zealand and Jane Watson, University of Tasmania, Australia, whose paper was read by Chris Wild. The discussion highlighted the need for students to generate, analyse, and evaluate examples of good statistical reporting as well as being exposed to a range of press releases including comparing press releases on the same study.

IPM-49: Teaching and Learning Approaches aimed at Developing Statistical Reasoning, Thinking, and Literacy

Report by the Organizers: Joan Garfield (USA) and Dani Ben-Zvi (Israel)

Invited Paper Meeting 49 focused on *Teaching and learning approaches aimed at developing statistical reasoning, thinking, and literacy*, and was co-organized by Joan Garfield (University of Minnesota, USA) and Dani Ben-Zvi (University of Haifa, Israel). In the absence of the co-chairs, Susan Starkings (South Bank University, UK) served as acting chair.

Recognizing the growing body of research in human reasoning, as well as recent interest in the nature of statistical reasoning, and its relationship to statistical literacy and thinking, this session focused on teaching approaches aimed at developing these three different but related cognitive outcomes of statistics instruction.

The first presentation, *Asymmetric fairness and unfairness: Reinventing distribution with a computer game*, by Efi Paparistodemou (University of Cyprus, Cyprus) and Richard Noss (University of London, UK) focused on how young children constructed the idea of distribution in a computer game, which offered children the opportunity to manipulate the sample space and distribution in order to solve problematic situations of fairness and unfairness. The paper described children's expressions and constructions of asymmetric fairness and unfairness as well as how the game mediated children's probabilistic understandings.

The second presentation was *Statistical thinking: how can we develop it?,* authored by Maxine Pfannkuch and Chris Wild (The University of Auckland, New Zealand). A four-dimensional framework for statistical thinking in empirical enquiry was briefly outlined together with its theoretical implications. A preliminary case study of a school that intends to implement a statistical thinking focus into its Year 11 teaching programme was discussed in terms of the framework.

The third presentation, *Statistical literacy at the school level: what should students know and do?* was written by Jane Watson (University of Tasmania, Australia) and presented by Maxine Pfannkuch. This paper surveyed the background for the need to consider statistical literacy as a component of the school curriculum, including recent moves in some countries to focus on "essential learnings" across traditional curriculum areas. Then a model was presented that suggests a progression in understanding of statistical literacy to be expected over the years of schooling.

The session closed with a discussion by Iddo Gal (University of Haifa, Israel). The discussion first analysed differences in scope and methodology of the three studies. Then, the discussion highlighted that despite their diverse characteristics, all three papers show that both instructional planning and scholarly knowledge can benefit from the further development of conceptual models of statistical reasoning, statistical thinking, and statistical literacy, and argued that such models should be systematically implemented in research in these areas.

IPM50 Statistics Teaching in the Internet Age

Report by the Organizer/Chair: Wolfgang Haerdle (Germany)

The preceding development of computer technology did not only create a boom in computer-based statistical routines and statistical programs, but also the internet as a platform for information exchange. This is a development, statistical education has to keep up with. In the beginning the internet made it possible to provide students and others with chat rooms for discussions and printable lecture notes. Nowadays, the interactive features of the internet offer even wider perspectives of learning and teaching. A modern statistical education requires interactive lecture notes and there even exist "virtual university" approaches. The talks in this session presented a number of rather different approaches. The discussant was Jung Jin Lee (Korea).

Yuichi Mori (Japan) et al. presented a data-oriented learning system over the Internet called DoLStat@*d* (Data-oriented Learning system of Statistics based on analysis scenario/story). This system provides multiple courses. Each course includes real data sets and their analysis scenarios/stories. The data sets used in a course are selected from a database (DoDStat@*d*, Data-oriented Database of Statistics based on analysis scenario/story) and are educationally ordered according to the purpose of the course. An online analysis, based on the story, can be performed on the data set (DoAStat@*d*, Data-oriented Analysis system of Statistics based on analysis scenario/story).

Paul L. Darius (Belgium) et al. explored an additional tool for gaining design experience: computer based virtual experiments. "Virtual experiments" are software environments, which mimic a real situation of interest, and invite the user to collect data to answer a research question. The data are generated by an underlying realistic stochastic model, invisible to the user. Once the data are collected, they can be transferred to a standard statistical package. The user can develop their design skills by relating the quality of the statistical results obtained to the data collection strategy used. A number of such environments have been implemented. The collection is called VIRTEX (VIRTual EXperiments), and is a companion to the VESTAC collection, previously developed for other statistical purposes (Darius et al. 2000). The environments are all realized in the form of JAVA applets, and are freely available on the web at http://www.kuleuven.ac.be/ucs/virtex/ . They can be run on any computer with a web browser that supports JAVA (the vaccine applet needs the SUN virtual machine). Due to the safety requirements of applets, they cannot read or write data from or to the user's hard disk. Yet data can be exchanged with other programs through cut and paste. The applets show that current computer technology allows the creation of special purpose, accessible and rich environments that have, in the area of data collection and analysis, the potential to give learning experiences well beyond those of traditional textbook exercises.

Erhard Cramer (Germany) et al. presented "e-stat", an e-learning platform which guarantees through its standard conforming architecture not only universal and efficient use, but also high reusability and a long lifetime of the contents. A main reason for this completely new platform is that the existing systems do not support standards like XML and MathML, which ensure universal usability of content in the long term. In addition," e-stat" serves as an intelligent statistical encyclopaedia which covers more than the basic elements of statistics. It is more flexible than other systems since it allows self-directed learning as well as guided learning. Teachers can design their own statistics courses from the available material and are not restricted to a prescribed sequence and selection of learning modules.

IPM68 Assessment of Literacy, Numeracy and other Life Skills

Organizer/Chair: Denise Lievesley (UK)

Speakers:

- Juan Enrique Froemel (Chile): *Recent assessments of Numeracy and Literacy and their proxies, in Latin America: some highlights*.
- Bénédicte Terryn (Canada): *Measuring literacy in developing countries from an international perspective*.
- Siobhan Carey (UK): *Respondent variability in their approach to literacy surveys - some cross national comparisons*

Discussant: Nancy Gordon (USA)

IPM69 Impact of the Developments in Information Systems on Statistics Education (joint IASE/IASC)

Report by the Organizer/Chair: Annie Morin (France)

The changes in technology for information systems such as large database storage and high speed computing facilities should affect the method of teaching statistics and the content of the courses. We focused on the following points: How can we improve the teaching of surveys using large real datasets and on the other hand on how can the use of survey sampling results improve the estimation of the error in a decision tree process? Is it worth it to keep on teaching inferential statistics when you have huge data files (several Gg)? What about the use of our classical statistical packages in the classroom in this context of data mining? Do we have to introduce new courses, focus on new requirements or develop new skills in the training of our students?

The following speakers and discussant dealt with these problems:

- John Maindonald (Australia): *Statistics for Budding Data Miners*
- Jean-Hugues Chauchat (France): *Enseigner la statistique par tirages d'échantillons répétés dans une grande base de données réelles.(Teaching Statistical Inference Using Many Samples from a Real Large Dataset)*
- Gilbert Ritschard (Switzerland): *Testing Hypotheses with Induction Trees (Tests d'hypothèses à l'aide des arbres d'induction)*

Discussant: Yong-Goo Lee (Republic of Korea)

IPM70 Teaching Biostatistics (Joint IASE/Guest Society: International Biometrics Society).

Report by the Organizer/Chair: Elisabeth Svensson (Sweden) and Els Goetghebeur (Belgium)

There is a need for biostatisticians with an interest in collaborative research, not only for the improvement of the applied research, but also for the development of the biostatistical science. All biostatisticians should have experience in collaborating with different research groups in clinical, pharmaceutical and health sciences. There is not only a need for statistical knowledge, but also a need to be able to listen, to show interest in applied problem solving and to be able to transform abstract statistical descriptions into an understandable applied context. These properties offer extraordinary educational challenges. How can the students be trained in handling various types of applied problem solving and in inter-disciplinary communication?

The invited session IPM-70, Teaching Biostatistics, presented three different views of this broad topic. Two very contrasting examples of teaching approaches were given by Masashi Goto (Japan) and by Deborah Nolan **(**USA). Masashi Goto talked about his experiences in teaching biostatistics in the pharmaceutical industry and at Osaka University and described the hierarchical structure of the teaching and learning process, which also involved ethics and good manners. Deborah Nolan talked about case studies and computing: broadening the scope of statistical education. The students take the responsibility of learning by problem solving by using computers. The third speaker, Charles Rodhe (USA), gave an example of how to teach the likelihood paradigm; an approach that could be applied to any applied field. Discussant Jane Hutton (UK) ended the meeting, but still there were participants interested in the topic.

IPM 71 Educational Implications of Statistical Method and Modelling Developments in Psychometry. (Joint IASE/ Guest Society: European Mathematical Psychology Group)

Organizers/Chair: Helena Bacelar-Nicolau (Portugal) and Francesca Cristante (Italy)

Speakers:

- Luc Delbeke (Belgium):
  The psychology of mathematics and statistics for psychologists
- Hans-Christof Micko (Germany):
  Statistical Data: (Empirical) Facts or (Theoretical) Fictions
- Fernando Costa Nicolau and Helena Bacelar-Nicolau (Portugal):
  Teaching and learning hierarchical clustering probabilistic models for categorical data
- Luca Stefanutti (Austria) and Francesca Cristante (Italy):
  Construction of an intelligent assessment/tutoring system on Psychometrics

Discussants: James Townsend and Gilbert Saporta (France)

7. IASE Activities at other Conferences in 2003 and 2004

July 23-28, 2003, The Third International Research Forum on Statistical Reasoning, Thinking, and Literacy (SRTL-3): Reasoning about Variability, University of Nebraska-Lincoln, USA.

Report by the Organizers: Dani Ben-Zvi (Israel) and Joan Garfield (USA)

The growing interest in research on the interrelated and often poorly defined topics of Statistical Reasoning, Statistical Thinking, and Statistical Literacy, has led to emergence of a series of international research forums focusing on these themes. The first research forum was held in 1999 in Israel and the second was held in Australia in 2001.

One unique feature of these research forums is 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. In addition, the small size of the forums allows for plenty of time for interaction and discussion. One outcome of the first two forums is a book on "The Challenge of Developing Statistical Literacy, Reasoning, and Thinking", edited by Dani Ben-Zvi and Joan Garfield, which will be published by Kluwer in 2003.

The topic of the third forum was **Reasoning about Variability**. A few of the questions investigated were: Why is variability important? When and how do children begin to develop the preliminary idea of variability? How does reasoning about variability develop? What are instructional tasks and technological tools that promote the understanding of variability? What are the common misconceptions regarding variability? What are ways to assess understanding of variability? This gathering offered an opportunity for a small, interdisciplinary group of researchers from around the world to meet for a few days to share their work, discuss important issues, and initiate collaborative projects. One outcome of the third forum will be the publication of a proceedings book summarizing the work presented, discussions conducted, and issues emerging from this gathering. Bill Mickelson (University of Nebraska-Lincoln, USA) and Chris Reading (University of New England, Australia) organized and coordinated SRTL-3.

The research forums were initiated by and are co-chaired by Joan Garfield (University of Minnesota, USA) and Dani Ben-Zvi (University of Haifa, Israel). Various academic institutions and statistics education associations, including the International Association for Statistical Education (IASE), supported the SRTL research forums. The SRTL-3 Forum website is: http://tc.unl.edu/srtl

IASE-sponsored invited sessions during the Joint Statistical Meetings
Report by the Organizer/Chair Carol Joyce Blumberg (USA)

For the first two times in its history, the IASE submitted proposals to the competition for Invited Sessions from Outside Societies to be presented during the Joint Statistical Meetings of the American Statistical Association (ASA), The International Biometric Society (ENAR and WNAR), the Institute of Mathematical Statistics (IMS), and the Statistical Society of Canada (SSC). IASE was successful in winning one of the six slots for Outside Societies for both 2003 and 2004.

2003 Invited Session on "Using the History of Statistics to improve the Teaching of Statistics"
This session was held on August 7, 2003 during the Joint Statistical Meetings in San Francisco, California, USA. The co-sponsors of the session were ASA (American Statistical Association) Section on Statistical Education, the ISI (International Statistical Institute), and the ASA Section on Teaching of Statistics in the Health Sciences. The session included three paper presentations and remarks by Jeff Witmer (Oberlin College, USA) and Jay Devore (California Polytechnic State University, USA) as the discussants.
Summaries of the three presentations are given below. The complete papers from the talks and some other materials (including a bibliography of the major books written about the history of statistics) are at http://course1.winona.edu/cblumberg/jsm2003.htm.
"The History of Statistics in the Classroom", Herbert A. David, Iowa State University, USA
Herb David strongly believes that statistics classes at any level can be enlivened by highlighting colourful contributors to our field. Outlines of some of their research should be supplemented by historical, biographical, and anecdotal material. Laplace (1749-1827) provides a good example. Famous as a theoretical astronomer and mathematician, he is now probably best known to statisticians as originator of the central limit theorem. But apparently independently of the publication of Bayes's theorem ten years earlier, he proposed that (in modern language) posterior density $\propto$ likelihood. Thus maximizing the posterior means maximizing the likelihood, an idea that had many followers including Gauss. Laplace's book *Théorie analytique des probabilités*, was extremely influential throughout the 19th century. Laplace lived in turbulent times in France. He examined the young Napoleon for the officer exam, but lasted only six weeks in Napoleon's cabinet for bringing "the spirit of the infinitesimal into administration." However, he became Chancellor of the Senate and later was raised to Marquis by Louis XVIII. In the talk similar introductions were also given (but in less detail) about Gauss and R. A. Fisher. The talk concluded with personal comments about Fisher.
"Statistical Ideas in the Classroom – Lessons from History", David Bellhouse, University of Western Ontario, Canada
Almost any introductory statistics textbook is a compendium of the history of probability and statistics since the Middle Ages. Almost always the methods and techniques are given without the historical references. Instead, the focus is on "relevant" applications of the material presented. Generally this is a good thing. Many students are not interested in historical examples, which by their very nature are outdated - they want something more "relevant". The down side to this approach is that the textbook often becomes a cookbook with applied exercises that help you learn how to cook. When examining how the history of probability and statistics can be useful in the classroom, it is first useful to examine the styles in which the history of the subjects is written. These styles may be divided into internalist (those working within the area) and externalist (those outside the area) approaches. It is natural for teachers of probability and statistics to follow an internalist approach for classroom discussion. In order to discover what principles apply in transferring the lessons of history to the classroom, the work of William Sealy Gosset (Student) was discussed as a case study. What followed from this case study is that the most important historical lesson to convey is the motivation for an individual's work. This lesson was illustrated further in discussions of the solution to the problem of points or division of stakes and of the Fisher-Neyman dispute over their approaches to statistical inference.
"Learning from the Coercive Power of Numerical Evidence: Three Classical Examples", Fred L. Bookstein, University of Michigan, USA
This talk reviewed the way in which three all-time classics of science muster quantitative evidence in a way that leave their readers no choice except to agree. The sources for the talk were John Snow (1855) on the mode of communication of cholera, Jean Perrin (1911) on the existence of atoms, and Stanley Milgram (1974) on the social context of obedience. For many years the speaker has begun his sophomore seminar "Numbers and Reasons" with a review of these three arguments, which, taken together, encompass most of

the valid ways in which statistics can persuade anybody of anything. The talk sketched the pedagogy involved and the way in which these themes can shape additional teaching in elementary courses about "where numbers come from."

2004 Invited Session on "Training of Government Statisticians"

This session will be held in August, 2004 during the Joint Statistical Meetings in Toronto, Ontario, Canada. The co-sponsors of the session are ASA (American Statistical Association) Section on Statistical Education, the ISI (International Statistical Institute), and the ASA Section on Government Statistics. The session will include three paper presentations and remarks by Ivan Fellegi (Chief Statistician, Statistics Canada) and Luigi Biggeri (President, Italian National Statistics Institute (ISTAT)) as the discussants. Summaries of the three presentations are given below.

The first paper will be by Patrick Murphy (University College Dublin (UCD), Ireland) and is titled "A European Undergraduate Degree Course in Government Statistics". His paper will outline the development of a course in Government Statistics at UCD. The paper will describe the environment in which the course was delivered, the development of the course, the course which resulted, how students were assessed, students' views on the course, how some students fared in finding jobs in Government Statistics, and some changes which were made when teaching the course for the second and third times. Since courses in government statistics are generally not be found in university statistics' departments, the experience in UCD may help others decide that such courses deserve a position alongside the more traditional academic statistics courses.

The second paper will be by Cynthia Z. F. Clark (U.S. Census Bureau) and Roger Tourangeau (University of Maryland and The University of Michigan, USA) and is titled "The Joint Program in Survey Methodology and its Impact on the Federal Statistical System Workforce". The paper will begin with a brief discussion of the history and structure of the program. The paper will then focus on how the program has contributed to work of the federal agencies through students and graduates and has improved the caliber of the work among the statisticians and survey methodologists at the Census Bureau and other agencies. A few short case studies on course projects and how they have contributed to agency work and on how individuals have used the program in their jobs will also be included.

The third paper will be by Ellen Bastiaens-Krabbe (Statistics Netherlands, which is abbreviated as CBS in Dutch) and is titled "Towards a Team of Trainers Within Statistics Netherlands". The paper will describe the structure of the CBS Academy, the types of courses and other training offered to employees with qualifications that vary from high school graduate to Ph.D.'s in statistics. It will then discuss the recent efforts of the CBS Academy to assure that the instructors of courses and other training are properly trained to provide high-quality instruction.

Statistical activities at The 10th International Congress on Mathematics Education, Copenhagen, Denmark, July 4-11, 2004

As a part of the 10th International Congress on Mathematical Education to be held in Copenhagen, Denmark July 4-11, a set of sessions have been set aside to address issues related to research and development in the teaching and learning of probability and statistics and are titled as Topic Study Group 11: Research and Development in the Teaching and Learning of Probability and Statistics. Jun Li of the Department of Mathematics at East China Normal University (China) and Joe Wisenbaker of the Department of Educational Psychology at the University of Georgia (USA) are co-chairs. Team Members are Dani Ben-Zvi (Israel), Manfred Borovcnik (Austria) and Maxine Pfannkuch (New Zealand). They all encourage submissions across a wide range of issues including but not limited to:

- the use of technology to enhance student learning;
- efforts to understand how students learn about statistics and probability;
- developing teachers' statistical knowledge;
- distance education;
- assessment strategies as a means of promoting learning;
- efforts to introduce younger students to statistics and probability; and
- developing statistical reasoning, thinking and literacy.

Initial proposals for papers should be submitted to either of the co-chairs no later than November 30. Links to more details concerning submission requirements can be found at http://www.icme-organisers.dk/tsg11/.

The ICME-10 venue will be the Technical University of Denmark, located in a northern suburb of Copenhagen. The Chair of the International Programme Committee is Mogens Niss (ICME10-IPC@ruc.dk). The Chair of the Local Organising Committee is Morten Blomhøj (ICME10-LOC@ruc.dk). Further details about the overall conference including the full list of topics included in the program, advance registration, housing, etc. can be found at http://www.icme-10.dk/.

8. IASE 2004 Research Round Table on Curricular Development in Statistics Education, Lund, Sweden, June 28 - July 3, 2004

The Round Table dates coordinate with those of the Tenth International Congress on Mathematical Education, which takes place in Copenhagen, Denmark 4-11 July 2004. Lena Zetterqvist (lena@maths.lth.se) and Ulla Holt will be local organizers. Those interested can contact Gail Burrill, Division of Science and Mathematics Education, College of Natural Science, Michigan State University, 116 North Kedzie, East Lansing MI 48824, USA, E-mail: (burrill@msu.edu).
The International Association for Statistical Education (IASE) and the International Statistical Institute (ISI) are organizing the 2004 Roundtable on Curricular Development in Statistics Education, which will be held at Lund Institute of Technology at Lund University in Lund, Sweden from 28 June to 3 July 2004. The Roundtable will bring together a small number of experts, representing as many different countries as possible, to discuss one another's views and approaches to curriculum for teaching statistics. The Roundtable Conference will provide opportunities for developing better mutual understanding of common problems and for making recommendations concerning the statistics curriculum. A main outcome of the Roundtable will be a monograph containing a set of papers, which have been prepared for and discussed during the conference. The monograph will present a global overview of the conference that can serve as starting point for further research on issues related to the statistics curriculum.

The need for processing the increasing amount of data people receive in the course of their work and lives has made it imperative that students leave elementary and secondary schools prepared to make reasoned decisions based on sound statistical thinking. Countries and communities have approached this problem in different ways. The Roundtable will provide the opportunity for sharing what works and to highlight the challenges and potential solutions researchers have faced as they design and implement curricula to produce statistically literate citizens. The Roundtable will be held immediately prior to the Tenth International Congress on Mathematical Education to be held in Copenhagen, Denmark in 2004, July 4-11.

The IASE Scientific Program Committee will prepare the program and schedule for the Roundtable. The Committee has agreed on a list of topics that will form the basis of the discussions and invites those interested to send in a three-page summary of their proposed paper. The major topics to be addressed at the primary, secondary, tertiary, or in-service levels are: Relationship between curriculum and assessment; Role of research in shaping curriculum; Impact of technology on the statistic and probability curriculum; Innovative curricular practices; Teacher preparation and Statistical literacy.

- Theoretical papers should include: a) the statement of the problem, b) background or appropriate previous work, c) discussion of main arguments, d) implications for curricular development, e) references.
- Descriptions of experimental research should include: a) the statement of the problem and methodology, b) background or appropriate previous work; c) data analysis and discussion of main results; d) implications for curricular development; e) references.
- Descriptions of curriculum innovations should include a) focus and philosophy of the curriculum, b) background and development process, c) description, d) pilot and implementation results, e) sources and references.

For more information, see the conference site at **http://hobbes.lite.msu.edu/~IASE_2004_Roundtable/.**

9. IASE Activities at the 55th Session of the ISI, Sydney, Australia, April 5-12, 2005

Chris Wild is the IASE representative to the ISI Programme Co-ordinating Committee for ISI-55th Session, to be held in Sydney, Australia, April 5-12, 2005. The Invited Paper Meetings approved for ISI 55 in Sydney that will be sponsored or co-sponsored by IASE are as follows (titles may change slightly). More information will be emailed to IASE members soon and also made available from the Conferences page at the IASE website at http://www.stat.auckland.ac.nz/~iase/.

- Reasoning about Variation.
- The use of Simulation in Statistics Education
- Teaching Statistics Online
- Statistics for Life: What are the Statistical Ideas or Skills that Matter most and why?
- Research in Statistical Education
- Teaching Bayesian Statistics
- Challenges in the Teaching of Survey Sampling
- Using History of Statistics to Enhance the Teaching of Statistics
- Promotion of Statistical Literacy among Students
- Quality Assurance in Statistics Education
- Educating the Media on how best to Report Statistics
- Ethical Standards in Statistics Education

10. ICOTS-7, Working Cooperatively in Statistics Education, Salvador (Bahia), Brazil, July 2-7, 2006

The International Association for Statistical Education (IASE) and the International Statistical Institute (ISI) are organizing the Seventh International Conference on Teaching Statistics (ICOTS-7) which will be hosted by the Brazilian Statistical Association (ABE) in Salvador (Bahia), Brazil, July 2-7, 2006.

The major aim of ICOTS-7 is to provide the opportunity for people from around the world who are involved in statistics education to exchange ideas and experiences, to discuss the latest developments in teaching statistics and to expand their network of statistical educators. The conference theme emphases the idea of *cooperation,* which is natural and beneficial for those involved in the different aspects of statistics education at all levels. Some examples are given below.

1. *Cooperative learning in statistics education*. Recent trends in educational psychology emphasize the role of student activity and social interaction in learning. These developments are particularly important in the case of statistics where students are taking a more active role in working on cooperative projects and studies.
2. *Cooperation between statistics teachers and researchers*. Real life applications generated by working with a researcher in another area help motivate the teaching of statistics. The subject is more enjoyable for students when a teacher can call on such real applications. At the same time, teachers are an essential part of a research team in statistics education, since they collaborate both in collecting data from the students and in helping with the design and evaluation of action-research programmes.
3. *Cooperation between statistical agencies and statistics educators*. Statistical agencies need the cooperation of the population at large when collecting their data. They are also interested in improving the statistical literacy of their citizens. Consequently, the agencies are communicating statistical ideas to their populace as well as providing official data for research on different topics, including teaching.

Statistical offices and educators collaborate in the development of teaching resources based on official data and set up workshops and conferences on the teaching of statistics.

4. *Interdisciplinary cooperation for research*. Interdisciplinary research is natural both in applied statistics and statistics education. Many central statistical concepts and procedures arose from research problems in other subjects. At the same time the researcher, whatever subject he or she is working in, benefits by having problems actually solved. Statistics education is based on many different disciplines, such as psychology, pedagogy, statistics and sociology, which all contribute in their own unique way to the study and solution of teaching problems.
5. *International cooperation in statistics education*. Global communication and increasing interest and respect for complementarity in education are leading to an increasing number of successful international research or educational programmes at different levels: e.g., Large scale statistical literacy comparative studies; Regional, National or International funded projects; International statistical education centres; and International training programmes or conferences in statistics education.
6. *Globalization and diversity in statistics education*. Cooperation requires both global and local approaches to research and teaching. There is a contrast and a complementarity of global and local approaches in statistics education; e.g., large sample, quantitative studies versus qualitative and ethnographic research; the need to recognize global tendencies, and at the same time being sensitive to specific difficulties or talents of special and gifted students, minorities, etc.

The Conference will include keynote speakers, invited speakers, contributed papers, workshops and forums, demonstration lessons, roundtable sessions, poster sessions, and book and software displays. People interested in organizing a session or in presenting a paper are encouraged to contact the appropriate Topic Convener. More information is available from the conference site at http://www.maths.otago.ac.nz/icots7 and from Carmen Batanero (batanero@ugr.es).

Local organisers: Pedro Alberto Morettin, (Chair; pam@ime.usp.br); Lisbeth K. Cordani (lisbeth@maua.br), Pedro Silva (pedrosilva@ibge.gov.br), Clélia Maria C. Toloi (clelia@ime.usp.br), Wilton de Oliveira Bussab (bussab@fgvsp.br)

IPC Executive: Carmen Batanero (Chair, batanero@ugr.es), Susan Starkings (Programme Chair, starkisa@lsbu.ac.uk), Allan Rossman and Beth Chance (Editors of Proceedings; arossman@calpoly.edu; bchance@calpoly.edu), John Harraway (Scientific Secretary: jharraway@maths.otago.ac.nz), Lisbeth Cordani (Local organizers' representative; lisbeth@maua.br).

Topic and Topic Conveners

Topic 1. Working cooperatively in statistics education: Lisbeth Cordani, lisbeth@maua.br and Mike Shaughnessy, mike@mth.pdx.edu

Topic 2. Statistics Education at the School Level. Dani Ben-Zvi, dbenzvi@univ.haifa.ac.il and Lionel Pereira, lpereira@nie.edu.sg

Topic 3. Statistics Education at the Post Secondary Level. Martha Aliaga, martha@amstat.org and Elisabeth Svensson, elisabeth.svensson@esi.oru.se

Topic 4. Statistics Education/Training and the Workplace. Pedro Silva, pedrosilva@ibge.gov.br and Pilar Martín, pilar.guzman@uam.es

Topic 5. Statistics Education and the Wider Society. Brian Phillips, BPhillips@groupwise.swin.edu.au and Philip Boland, Philip.J.Boland@ucd.ie

Topic 6. Research in Statistics Education. Chris Reading, creading@metz.une.edu.au and Maxine Pfannkuch, m.pfannkuch@auckland.ac.nz

Topic 7. Technology in Statistics Education. Andrej Blejec, andrej.blejec@uni-lj.si and Cliff Konold, konold@srri.umass.edu

Topic 8. Other Determinants and Developments in Statistics Education. Theodore Chadjipadelis, chadji@polsci.auth.gr and Beverley Carlson, bcarlson@eclac.cl

Topic 9. An International Perspective on Statistics Education. Delia North, delian@icon.co.za and Ana Silvia Haedo, haedo@qb.fcen.uba.ar

Topic 10. Contributed Papers. Joachim Engel, Engel_Joachim@ph-ludwigsburg.de and Alan McLean, alan.mclean@buseco.monash.edu.au

Topic 11. Posters. Celi Espasandín López, celilopes@directnet.com.br

11. Statistics Education Research Journal (SERJ)

Publications page of the IASE website http://www.stat.auckland.ac.nz/~iase/. or http://fehps.une.edu.au/serj/

The *Statistics Education Research Journal* (SERJ) was developed by the IASE to encourage research in statistics education, advance our knowledge about students' attitudes, conceptions and errors as regards stochastic knowledge, and to improve the teaching of statistics at all educational levels. It a peer-reviewed journal published electronically twice a year is one of the ISI-sponsored journals and is freely accessible via the Internet.

Current editorial board members are: Carmen Batanero and Flavia R. Jolliffe editors; Christine Reading (assistant editor), Iddo Gal, Joan Garfield, David Green, Annie Morin, M. Gabriella Ottaviani, Richard Scheaffer and Chris Wild (associate editors). Iddo Gal will replace Carmen as editor at the end of November 2003.

Contents of Volume 2, Number 1, 2003:

- Iddo Gal. *Expanding Conceptions of Statistical Literacy: An Analysis of Products from Statistics Agencies*
- Joan B. Garfield. *Assessing Statistical Reasoning*
- Peter Petocz and Anna Reid. *Relationships between Students' Experience of Learning Statistics and Teaching Statistics*
- Antonio Estepa and Francisco Tomás Sánchez-Cobo. *Evaluación de la Comprensión de la Correlación y Regresión a partir de la Resolución de Problemas*

Contents of Volume 2, Number 2, 2003:

- Jane Watson and Rosemary Callingham. *Statistical Literacy: A Complex Hierarchical Construct*
- Flavia Jolliffe: *Towards a Database of Research in Statistical Education*
- James Mills *SPSS Books*: *A Review for Teachers*

Both issues also contain information about recent publications and dissertations, past and future IASE conferences and short announcements of other future conferences with a statistical education research strand.

A **special issue of SERJ** is planned for the second issue in 2004. This will be on statistical reasoning about variability and will be based on papers presented at the third Research Forum on Statistical Reasoning, Thinking and Literacy (STRL-3) held in 2003. The authors of the papers presented in this forum have been invited to submit their papers to SERJ for refereeing. Joan Garfield and Dani Ben-Zvi will be guest editors for this issue. The Editorial Board of SERJ is pleased to be co-operating with the SRTL-3 organisers in this way.

The members of the Editorial Board are most grateful to all the referees who have helped them in revising papers and in contributing comments to improve the quality of SERJ and, of course, to all the authors who have submitted their papers to make the SERJ project a reality.

Inquiries and submissions should be sent to co-editor Flavia R. Jolliffe (UK) at: <F.Jolliffe@kent.ac.uk>. Guidelines for authors and referees, a template for authors, and a copyright form, as well as prior and current issues of the journal itself can be downloaded from the SERJ web page at http://fehps.une.edu.au/serj.

12. Other IASE Publications

In the last year, besides two issues of the Statistics Education Research Journal, IASE and ISI have published several items related to statistics education. The IASE Publications web pages have also been updated and expanded. They can be found at http://course1.winona.edu/cblumberg/pubshomepage.htm . Over the next several months information from these web pages will be transferred to the new IASE Publications webpage at http://www.stat.auckland.ac.nz/~iase/publications.php.

The major change in terms of publications during the past year was to make this issue of IASE Review into an electronic publication, instead of sending it via the mail to all IASE members. Doing so has saved IASE approximately 1000 Euros.

IASE has produced a CD of the proceedings of the "Satellite Conference on Statistics Education and the Internet". For details on the conference and on the contents of the CD, see part 4 of this IASE Review. Since only a few copies of the CD remain, the proceedings have been made available on the Internet at the Publications page of the IASE website http://www.stat.auckland.ac.nz/~iase/.
See also the original conference site at
http://www.ph-ludwigsburg.de/iase/proceedings.

Copies of most of the papers from The 54th Biennial Session of the ISI that are described in part 5 of this IASE Review are available on the Internet at http://www.stat.auckland.ac.nz/~iase/publications.php. Copies of the statistics education papers, plus most of the other papers presented at the 54th Biennial Session, are in the Proceedings contained in the Bulletin of the International Statistical Institute which can be purchased in either CD-format or book format from the ISI Permanent Office. See http://www.cbs.nl/isi/bulletin.htm for details.

The IASE Executive Committee recently decided to make the written papers in the Proceedings from The International Conference on Teaching Statistics (ICOTS)-6 available for free on the Internet at http://www.stat.auckland.ac.nz/~iase/publications.php. Other details relating to ICOTS-6 remain on the ICOTS-6 website at http://icots6.haifa.ac.il/icots6.html. Those not able to access the Internet copy of the papers may request (for the cost of postage) a copy of the Proceedings CD from Brian Phillips at bphillips@swin.edu.au.

In addition, Susan Starkings prepared the IASE component for three issues of the ISI Newsletter. A copy of the latest ISI Newsletter, including the IASE Component is available at http://www.cbs.nl/isi/newsletter.htm . Further, Gilberte Schuyten prepared three issues of IASE Matters, which appears as an insert to the journal Teaching Statistics. Blackwell's, the publisher of Teaching Statistics, have graciously granted permission to IASE to put copies of all of the issues of IASE Matters since Spring 2000 on the Internet at http://course1.winona.edu/cblumberg/matters.htm.

The ISI has been involved in the recent publication of two books that might be of interest to the membership of IASE. Statisticians of the Centuries was edited by C. C. Heyde and E. Seneta and published by Springer-Verlag. It contains short biographies of 103 statisticians from the 16th through 20th centuries. The Oxford Dictionary of Statistical Terms was edited by Yadolah Dodge and published by Oxford University Press. IASE is grateful to Yadolah Dodge for including statistics education terms in the Dictionary. Ordering information for both books is at http://www.cbs.nl/isi/other.htm.

13. Update on the International Statistical Literacy Project (ISLP)

Report by Carol Joyce Blumberg (USA)

The International Statistical Literacy Project (ISLP) is a project of the IASE. The mission of the ISLP is to provide information and resources to aid in the development of statistical literacy around the world. It replaces the earlier World Numeracy Project of the ISI (International Statistical Institute).

The major project at this time has been to develop a website on resources to enhance the development of statistical literacy. This website is now fully operational. The best way to begin to access it is to go to **http://course1.winona.edu/cblumberg/islplist.htm**, which gives a listing of the web pages contained within the site. You can then choose the topics that interest you. A copy of this list is also at the end of this portion of the IASE Review.

Most of the entries have 3 to 5 sentence summaries. Whenever possible, urls and direct links to the materials described in an entry are given. The emphasis is on materials that can be obtained for free over the Internet or via other means. However, some excellent materials that must be purchased at a cost are also included. The website is maintained at Winona State University by Carol Joyce Blumberg and Nicole Machacek (a fourth year undergraduate student in Communication Studies at Winona State).

The ISLP has an Advisory Committee to guide the project over the next few years. The members of the Advisory Committee are Carol Joyce Blumberg (USA, Chair), Beverley Carlson (USA/Chile), Iddo Gal (Israel), Orhan Güvenan (Turkey), John Harraway (New Zealand), Peter Holmes (UK), Maria A. Pannone (Italy), René Padieu (France) and René Smulders (The Netherlands). Ex-Officio members of the Committee are: Chris Wild (New Zealand, IASE President), Gilberte Schuyten (Belgium, IASE President-Elect) and Daniel Berze (Director, ISI Permanent Office). The Advisory Committee had its second meeting during the ISI Biennial Session in Berlin, Germany. At that meeting numerous suggestions regarding the website and future directions for the ISLP were given. Several of the website suggestions (including a search engine) have already been implemented.

We are also beginning the process of translating the ISLP pages and appropriate entries on the pages into various languages. If you are willing to help with the translation process, please contact Carol Blumberg.

If you have an item that you feel is appropriate for inclusion on the website, please send it to the appropriate list coordinators (see list below) or contact Carol Joyce Blumberg at cblumberg@winona.edu or at Department of Mathematics & Statistics, Winona State University, Winona MN 55987-5838. Tel: +1-507-457-5589; Fax: +1-507-457-5376. Also, please contact Carol Blumberg if you have any suggestions or comments on the ISLP in general.

List of webpages within the ISLP website

International Statistical Literacy Project Homepage at http://course1.winona.edu/cblumberg/islphome.htm

Index to Webpages Within the ISLP Website at http://course1.winona.edu/cblumberg/islplist.htm

Definitions of Statistical Literacy at http://course1.winona.edu/cblumberg/islpdef.htm coordinated by Carol Blumberg cblumberg@winona.edu

General Resources on Statistical Literacy at http://course1.winona.edu/cblumberg/islpgen.htm coordinated by Ken Shimabukuro kens@scbbs-bo.com and Carol Blumberg cblumberg@winona.edu

Resources for Primary/Elementary School Teachers to Use in Their Classrooms at http://course1.winona.edu/cblumberg/islppriclass.htm coordinated by Judith Zawojewski judiz@iit.edu , Guadalupe Carmona lupitacarmona@purdue.edu and Helen Chick h.chick@unimelb.edu.au

Resources for Primary/Elementary School Teachers to Use to Improve Their Knowledge of Statistics and Probability at http://course1.winona.edu/cblumberg/islppriteach.htm coordinated by Judith Zawojewski judiz@iit.edu, Guadalupe Carmona lupitacarmona@purdue.edu and Helen Chick h.chick@unimelb.edu.au

Resources for Secondary School Teachers to Use in Their Classrooms at http://course1.winona.edu/cblumberg/islpsecclass.htm coordinated by Philip Boland philip.j.boland@ucd.ie and Jerry Moreno moreno@jcu.edu.

Resources for Secondary School Teachers to Use to Improve Their Knowledge of Statistics and Probability at http://course1.winona.edu/cblumberg/islpsecteach.htm coordinated by Philip Boland philip.j.boland@ucd.ie and Jerry Moreno moreno@jcu.edu

Resources for Those Training Teachers (Both Future Teachers and Those Already Teaching) at http://course1.winona.edu/cblumberg/islpteachtra.htm coordinated by Mike Perry perrylm@appstate.edu and Gary Kader kadergd@math.appstate.edu

Descriptions and Links to Training Programs and Learning Materials Sponsored by National and International Statistical Offices at http://course1.winona.edu/cblumberg/islpoff.htm coordinated by Reija Helenius reija.helenius@stat.fi. Note: This page includes a variety of learning programs and materials for both official statisticians and the general public (from the primary school level upwards).

Resources for Journalists and Other Members of the Mass Media at http://course1.winona.edu/cblumberg/islpmedia.htm coordinated by Warren Palmer wpalmer@maths.otago.ac.nz

Resources for Adult Learners at http://course1.winona.edu/cblumberg/islpadult.htm coordinated by Iddo Gal iddo@research.haifa.ac.il

Resources for Planning and Conducting a Children's Census or Similar Activity at http://course1.winona.edu/cblumberg/islpcensus.htm coordinated by Neville Davies neville.davies@ntu.ac.uk

Descriptions of Websites of Data Sets That Can be Used When Teaching Statistical Literacy at http://course1.winona.edu/cblumberg/islpdatasets.htm coordinated by Brant Deppa bdeppa@winona.edu and Christopher Malone cmalone@winona.edu

List of Projects and Other Efforts in Statistical Literacy Sponsored by National Statistics Offices, National Statistical Societies and Similar Groups at http://course1.winona.edu/cblumberg/islpproj.htm coordinated by Carol Blumberg cblumberg@winona.edu and Reija Helenius reija.helenius@stat.fi

History of the ISLP at http://course1.winona.edu/cblumberg/islphist.htm

Since the CAUSE group is developing a website of resources for the post-secondary level, it has been decided to not include a list of post-secondary resources on this website. Of course, several of the lists here have many resources relevant to the post-secondary level (especially those on secondary level resources, training teachers, adult learners, and on datasets).

14. National Correspondents

The IASE national correspondents help provide communication between local membership in their countries and the IASE. This includes passing on information about the IASE activities to those concerned with teaching and learning statistics as well as letting the IASE know about activities in their countries. Below is a list of the present national correspondents. If there is no National Correspondent for your country and you feel that you can help us, please contact Brian Phillips at <bphillips@swin.edu.au>.

- Argentina: Teresita Teran, <tteran@arnet.com.ar>
- Australia: Brian Phillips, <bphillips@swin.edu.au>
- Bangladesh: Kazi Saleh Ahmed, <ksahmed@bangla.net>
- Belgium: Herman Callaert, <callaert@luc.ac.be>
- Benin: Félicien Donat Accrombessy, <afdet_accro@yahoo.fr>
- Brazil: Paulo A Dasilva, <estatistica@openlink.com.br>
- Bulgaria: N.T. Tsankova, <nadats@mbox.infotel.bg>
- Canada: Linda Gattuso, <gattuso.linda@uqam.ca> and Larry Weldon, <weldon@sfu.ca>
- Chile: Guido del Pino, <gdelpino@riemann.mat.puc.cl>
- China: Chi Ming Wong, <davy.wong@ust.hk>
- Colombia: David Ospina, <dospina@matematicas.unal.edu.co>
- Croatia: Ante Rozga, <rozga@efst.hr>
- Cuba: Mercedes Delgado, <mdelgado@ind.ispjae.edu.cu>
- Czech Republic: Richard Hindls, <hindls@vse.cz>
- Egypt: Fayez M. Mina, <fmmina@link.com.eg>
- Estonia: Katrin Niglas, <katrin@tpu.ee>
- Fiji: Parul Vera Deoki, <deoki_pv@usp.ac.fj>
- Finland: Simo J. Puntanen, <sjp@uta.fi>
- France: Annie Morin, <annie.morin@irisa.fr>
- Germany: Joachim Engel, <engel_joachim@ph-ludwigsburg.de>
- Greece:Theodore Chadjipadelis, <chadji@polsci.auth.gr>
- Honduras: M. Alejandra Sorto, <sortomar@pilot.msu.edu>
- India, A.C. Ravi Rangaswami, <futnat@rediffmail.com>
- Iran: Abbas Bazargan, <abazarga@chamran.ut.ac.ir>
- Ireland, Philip J. Boland, <philip.j.boland@ucd.ie>
- Israel, Dani Ben-Zvi, <dbenzvi@univ.haifa.ac.il>
- Italy, Enzo Lombardo, <lombardo@scec.eco.uniroma1.it>
- Ivory Coast: Ouagnina Hili, <o_hili@yahoo.fr>
- Japan: Michiko Watanabe, <watanabe_michiko@nifty.comp>
- Kenya: Parinbanu Kurji, parinkurji@yahoo.com
- Korea, Rep. of: Tae Rim Lee, <trlee@av9500.knou.ac.kr>
- Lesotho, Mokaeane V. Polaki, < mv.polaki@nul.ls>
- Luxembourg: Rudolf Teekens, <rteekens@tes-institute.lu>
- Malaysia: Ann-Lee Wang, <j2wang@cc.um.edu.my>
- Mexico: Ernesto Sánchez, <esanchez@mail.cinvestav.mx>
- Morocco: Mohamed Mahmoudi, <mahmoudi@insea.ac.ma>
- New Zealand: Maxine Pfannkuch, <m.pfannkuch@auckland.ac.nz>
- Nigeria: Joseph S. Oke, <jskttoke@infoweb.abs.net>
- Norway: Henrik Dahl, <Henrik.Dahl@hia.no>
- Oman, Sultanate of: Hana Ameen, <hmameen@omantel.net.om>
- Pakistan: Munir Ahmad, <drmunir@brain.net.pk>
- Palestine: Mahmoud K. Okasha, <m.okasha@palnet.com>
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- Portugal: Helena Bacelar Nicolau, <hbacelar@fc.ul.pt>
- Singapore: Lionel Pereira-Mendoza, <lpereira@nie.ac.sg>
- Slovenia: Andrej Blejec, <andrej.blejec@uni-lj.si >
- South Africa: Michael J. Glencross, <glencross@getafix.utr.ac.za>
- Spain: Carmen Batanero, <batanero@ugr.es>
- Sweden: Elisabeth Svensson, <elisabeth.svensson@esi.oru.se>
- Trinidad and Tobago: Linda Hewitt, <linhew@trinidad.net>
- Tanzania: Vitalis E. Muba, <eastc@ud.co.tz>
- The Netherlands: Tjaart Imbos, <tjaart.imbos@stat.unimaas.nl>
- UK: Margaret Rangecroft, <F.M.Rangecroft@shu.ac.uk>
- Ukraine: Ruslan Motoryn, <motoryn@kneu.kiev.ua>
- Uruguay: Ramon Alvarez, <ramon@chaja.edu.uy>
- USA: E.J. Dietz, <dietz@stat.ncsu.edu> and Gail Burrill, <burrill@msu.edu>
- Venezuela: Audy Salcedo, <audysalc@yahoo.com>
- Yugoslavia: Katarina Cobanovic, <katcob@polj.ns.ac.yu>

15. Meetings related to Statistics Education in 2003

June 5-8, 2003, Hawaii International Conference on Statistics and Related fields, Honolulu Hawaii, USA
http://www.hicstatistics.org, *statistics@hicstatistics.org*

July 7-10, 2003 , IASI IX Seminar of Applied Statistics 'Statistics in Education and Education in Statistics', Rio de Janeiro,
For more information contact: *pedrosilva@ibge.gov.br*

July 24-25, 2003, Beyond the Formula statistics Conference: Constantly Improving Introductory Statistics: The Role of Technology , Monroe Community College, Rochester, New York
For more information please visit:
http://www.monroecc.edu/go/beyondtheformula/

August 3 – 9, 2003, International Conference on Creativity in Mathematics Education and the Education of Gifted Students, Rousse, Bulgaria
http://www.cmeegs3.rousse.bg or *http://www.ami.ru.acad.bg/conference2003* or email *conf_orgcom@ami.ru.aced.bg*

September 19-25, 2003, The Mathematics Education into the 21st Century Project, Brno, Czech Republic
For further conference details please contact Alan Rogerson *arogerson@vsg.edu.au*

October 2-3, 2003, Australian Mathematical Sciences Institute Symposium on Statistical Learning, , Sydney, Australia
More information is available at
http://www.maths.unsw.edu.au/~wand/websymp/schedule.html

October 30 – November 2, 2003, Math/Stat TEAMS Conference '**Math/Stat Teacher Education: Assessment, Methods, and Strategies Conference'**.
http://www.amstat.org/education/teams.html

December 1-2, 2003, OZCOTS-5 Australasian Statistical Education, Swinburne University of Technology, Australia,
More information from Brian Phillips, at bphillips@swin.edu.au. Web page:
http://www.swin.edu.au/maths/iase/ozcots5.html.

December 19-23, 2003, Espace Mathématique Francophone, Tozeur, Tunisia
For more information see:
http://www.mathinfo.u-picardie.fr/EMF2003

See the Conferences page of the IASE website http://www.stat.auckland.ac.nz/~iase/ for upcoming conferences.

16. Benefits of Membership in the IASE

The most rewarding aspect of IASE membership is participating in an international community of people who believe in the value of statistics education and wish to advance it. Members also benefit from reduced registration fees at IASE conferences and the main ISI conferences. They receive the *ISI Newsletter* and the *IASE Review*. They may subscribe at a reduced rate to statistical journals, for example the ISI flagship journal, the *International Statistical Review*, *Short Book Reviews*, *Teaching Statistics* (with includes the regular insert *IASE Matters*) and may purchase other IASE and ISI publications at a discounted price. An IASE membership application form is available from the IASE Members page at http://www.stat.auckland.ac.nz/~iase/members.php .