IASE matters

Spring, 1998

This issue contains a report about the IASE Sessions in Istanbul at the 51st Session of the International Statistical Institute by M. Gabriella Ottaviani, a summary of the activities of the PME Stochastics Working Group by John Truran, and some briefs news and announcements. Complementary information from the ISI 51st Session has been published in the IASE Review (November, 1997) and the 1997 ISI Newsletter, volume 21 (3).

NEW EDITORS FOR *IASE MATTERS*

Carmen Batanero, who is taking over as editor with the help of Michael Glencross, will be very pleased to receive short reports and articles on statistical education, research notes, and announcements of interest to an international readership. Please send your contributions to Carmen Batanero, Departamento de Didáctica de la Matemática, Universidad de Granada, Campus de Cartuja, 18071 Granada, Spain, Fax: 34-58-246359, E-mail: batanero@goliat.ugr.es.

NOTES ON THE IASE SESSIONS IN ISTANBUL AT THE 51ST SESSION OF THE INTERNATIONAL STATISTICAL INSTITUTE, AUGUST 18-26, 1997

M. Gabriella Ottaviani, Dipartimento di Statistica, Probabilità e Statistiche applicate, Università "La Sapienza", P. le A. Moro 5, 00185 Rome, Italy. E.mail: ottavian@pow2.sta.uniroma1.it

During the IASE Sessions of the ISI Conference in Istanbul the core of the present debate and research in teaching statistics was evident. In the past much attention was given to defining the probability and statistics programmes to be introduced in school and university curricula. These issues have been successfully addressed in most countries, either at national or local levels. This has been done within an international framework developed and facilitated by ISI and IASE.

More recently, statisticians and educators have turned their attention to the content and methodology of the teaching and learning of statistics at all levels. This new focus has led to serious reflection about statistics: Its definition, its aims, its tools and techniques, that is, about the foundations of the discipline. In a very simplified way the question arising appears to be: "Could statistics be reduced to mathematical statistics?", or in other words: "When we teach statistics, is mathematical statistics the content of the course?". Unravelling the history of the discipline is not without difficulty and perhaps does not give sufficient attention to the German contributions to the collection and use of official statistics. However, statisticians have turned their attention again to the logical abstract process by which quantitative observation and examination of collective phenomena are carried out.

One important consequence of this new focus is the claim that statistical concepts are better taught and learned when supported by interesting real data. This idea, which explicitly appeared in the *Data centred versus mathematical centred training in statistics* session, crossed over the IASE sessions in Istanbul, with no distinction between invited or contributed paper sessions, and was a leitmotiv for many of them. Thus, in the session on *Research on teaching and learning statistics,* data handling was

shown to be of interest in middle school mathematics curricula. In the session on *Teaching and training in statistics through sampling and sample surveys* the use of real data from existing data archives is claimed to enrich the teaching of statistics, especially in beginners courses. Also, in the *Bayesian methods in statistics education* session the necessity surfaced not to limit assessing probabilities to questions about coins and dice, but to widen the field of interest towards the practice of assessing the probability of real events, while in the *Research on teaching and learning statistics* session it was suggested that more attention should be paid to the various possible interpretations of randomness.

The rediscovered identity of statistics and its interdisciplinary nature also requires statisticians to be more sensitive to the needs and attitudes of students and scholars of other disciplines for which statistics plays an instrumental role. This emerged clearly in the session on *Research and teaching of probability and statistics in the physical sciences*. Another point, which was raised in the session on *Data centred versus mathematical centred training in statistics*, was the question of the specific needs of all those students who do not require a degree in statistics, but who have realised they need to be better equipped statistically.

School teachers are not always prepared to face this different approach to teaching statistics, and some may not have a background in statistics. One possible way to overcome this situation is to enlist the support of teacher education specialists in schools of education, who can show the usefulness and scope of the subject to future teachers. This emerged in the *Assessment and measurement in education* session. New technologies also provide new opportunities for teaching statistics in more efficient ways, something which was made evident in the *Technology in teaching statistics* session. When we pay more attention to "customers" needs and satisfaction the quality of teaching is also to be assessed, as the session on *Assessment and measurement in education* showed clearly. This theme, which is of great importance for society as a whole, is starting to emerge and might reach high relevance in the next future within teaching statistics.

The short texts of the papers presented in the Istanbul Conference have been published in the *Proceedings of the 51st ISI Session, Bulletin of the ISI,* Tome LVII, Book 1, pages 409-462 and in the *Contributed Papers of the 51st ISI Session, Bulletin of the ISI,* Tome LVII, Book 1, pages 317-352. The organisation and development of the sessions required the effective action of many persons, among whom there were many IASE members and for which the Association is very grateful.

All the sessions, including that of Saturday morning on *Statistical Literacy II*, had interested and participative audiences, whose members provided stimulating discussions from the floor, and which provided presenters with the satisfaction of having a big audience. This also showed the growing interest of statisticians towards the themes IASE is devoted to developing.

THE STOCHASTICS WORKING GROUP AT CONFERENCES ON THE PSYCHOLOGY OF MATHEMATICS EDUCATION (PME)

John Truran, Graduate School of Education, University of Adelaide, Australia 5005.
E.mail: jtruran@arts.adelaide.edu.au

For the last twenty years people with an interest in the Psychology of Mathematics Education have met each year to discuss aspects of mutual interest. As many as 400 people may attend an individual conference, usually known as "PME". Over the last five years there has been an increasing number of papers at PME conferences concerned with the teaching and learning of probability, statistics and combinatorics, "stochastics", to use the European generic term.

This increasing interest reflects two important changes in educational practice. One is the common trend towards teaching probability and statistics in primary and secondary schools, the other is the large growth of "in service" statistics courses at tertiary institutions. On top of these curriculum changes there is now also the opportunity for teaching methods to change significantly by using of increasingly available electronic aids. All of these changes have highlighted limitations in our understanding of good pedagogic practice and of the sense which students actually make of the courses which they study. There is an very important need for further research into the psychology of stochastics education.

So at the 1996 PME Meeting a Working Group on the Teaching and Learning of

Stochastics was established by John Truran (University of Adelaide), Kath Truran (University of South Australia), and Carmen Batanero (University of Granada) with the aim of preparing material which would assist in disseminating research findings and encouraging more research in the field. It was specifically intended that the Group would not be restricted to regular attenders at PME Conferences, nor to people who were fluent in English. To further these ends an electronic circulation list has been set up, currently with about 40 members.

Electronic discussions were held during 1996/97 and the Group met again at Lahti, Finland in July 1997. After substantial discussion, it was decided that we would proceed by planning to prepare a general book containing a review of research done on the teaching and learning of stochastics. This would be directed at researchers, statistical educators and teachers at all levels, and would address pedagogic issues from a psychological research background. It is planned that this book will be assembled in the traditional way of calling for offers of chapters, and co-ordinating the chapters into a meaningful form. Most work will be done through e-mail communication. Some preliminary thinking about structure and critical issues was done within the Lahti meetings, and the co-ordinators are currently preparing a draft outline, together with a general set of guidelines for authors. These will be circulated within the group for initial response. Once agreement has been reached on the basic structure, then there will be a general call for chapter authors and a publisher will be sought.

During the discussions another proposal was also put up to establish a data base in the form of a critical analysis of key works in the literature. It was considered that this was not feasible, at least in the short term, and was probably not suitable for book form. However, it was felt that there was a real need for such a data base which would probably best be established on the Web. Plans are currently being developed for establishing this and it is hoped to finalised them during 1998. PME also supports a Working Group on Advanced Mathematical Thinking which has plans to develop a book the teaching and learning of calculus and post-calculus mathematics. It is anticipated that some members of the Stochastics Working Group will contribute to this publication as well.

Forthcoming conferences of PME are scheduled for July or August in South Africa (1998), Israel (1999) and Japan (2000). Since this will be the first time that PME has met in Africa, we are making special efforts to build up links with local people and to encourage them to undertake work in stochastics research. These links are being co-ordinated by Michael Glencross at the University of Transkei, South Africa (glencross@getafix.utr.ac.za).

However, attendance at PME oscillate significantly, and this makes it difficult to ensure continuity of group membership. But there are several other international groups and publications with an interest in stochastics education. So the Group will develop its plans using these facilities as well. There is an informally organised *International Study Group for Research on Learning Probability and Statistics* of over 200 members. Carmen Batanero currently produces a very informative quarterly newsletter which is a great help in keeping members up-to-date. A full report on all stochastics work at PME will be given in this Newsletter and also information on Lahti Conference was given in the Research section of this journal. Some members of the group will also meet to develop the book during the next *International Conference on the Teaching of Statistics* in Singapore in June 1998.

We encourage interested individuals to become involved in our activities. We are reasonably multi-lingual, so please do not let lack of strong English be an obstacle. People who wish to receive the Newsletters of the *PME Working Group* or of the *International Study Group* (or both) should contact Carmen Batanero (batanero@goliat.ugr.es). Membership is free and communication is by e-mail, but hard copies can be send to people in situations where e-mail is not available. Those who are interested in the development of our projects should contact *John Truran, Graduate School of Education, University of Adelaide, Australia 5005, jtruran@arts.adelaide.edu.au*

NEWS AND ANNOUNCEMENTS

The Fifth International Conference on Teaching Statistics, ICOTS-5, Singapore, June 21 - 26, 1998.

Chair IPC: Brian Phillips, phillips@swin.edu.au
Chair LOC: Teck-Wong Soon, SOON_Teck_Wong@singstat.gov.sg
Singapore contact: Lionel Pereira-Mendoza, pereiraml@am.nie.ac.sg

ICOTS meetings are organised by the International Association for Statistical Education. These are the most important international conferences on the teaching of statistics and are held in different locations around the world once every four years. They bring together several hundred statistics educators and practitioners, including those from schools, colleges and universities, industries and governments.

Final papers must be submitted by February 15, 1998. The deadline for applications for accommodation is May 20, 1998. The 2nd announcement can be obtained from the ICOTS-5 Secretariat, ctmapl@singnet.com.sg or fax: +65 299 8983. This contains all the conference and registration details. Information can also be found on the Web at http://www.nie.ac.sg:8000/~wwwmath/icots.html

Statistics Education Topics and organisers at the 52th Session of the International Statistical Institute Helsinki, Finland, August 10-18, 1999

There are seven sessions planned for ISI-52, one of them co-organised with IAOS. Anyone interested in taking part in these sessions should contact the organisers listed below.

1. *Statistical Education and the Significance Tests Controversy*. C. Batanero, batanero@goliat.ugr.es
2. *Teaching and Training Multivariate Data Analysis*. H. Bacelar-Nicolau, ulfphelb@cc.fc.ul.pt
3. *Statistical Education Using Flexible Learning Approaches*. A. Di Ciacio, diciaccio@econ.uniurb.it
4. *Statistical Education for Life*. Organiser: A. Hawkins, ash@maths.nott.ac.uk
5. *Issues Involved in the Assessments and Evaluation of Student Learning of Statistics*. J.B. Garfield, JBG@maroon.tc.umn.edu
6. *Visualisation as an Educational Tool*. L. Weldon, weldon@cs.sfu.ca
7. *Statistical Training for People working in and with Official Statistics*(in co-ordination with IAOS). R. Smulders, and C. J. Blumberg, wncarolj@vax2.winona.msus.edu

Executive Secretariat of the 52nd ISI Session: Ilkka Mellin, Statistics Finland, FIN-00022, Helsinki, Finland, isi99@stat.fi, http://www.stat.fi/isi99

IASE Round-Table 2000

Contacts have been kept with the Statistical Education Committee of Japan Statistical Society to hold the next IASE Round table in Japan in 2000, in connection with ICME - 9. The theme of the round table will be: *Training Researchers in the Use of Statistics*.

New Publications

Research on the Role of Technology in Teaching and Learning Statistics, Proceedings of the 1996 IASE Round Table Conference. Edited by J. Garfield and G. Burrill. Voorburg, The Netherlands: International Statistical Institute. Price: USD 30, including postage. This soft-cover volume contains 21 papers and five summaries of discussions, grouped into the following categories: (1) How technology is changing the teaching of statistics at the secondary level, (2) Developing exemplary software, (3) What we are learning from empirical research, (4) How technology is changing the teaching of statistics at the college level, and (5) Questions to be addressed on the role of technology in statistics education.

Computational Statistics and Statistical Education: Proceedings of the Tartu Conference (Tartu, Estonia, 1996). Edited by E. M. Tiit. IASE/IASC. Contents: (1) Statistical software as an environment of teaching statistics, (2) Statistical education - Where are we going?, and (3) Some computational problems in multivariate applied statistics. For information, contact E. Tiit at E-mail: etiit@ut.ee

The Assessment Challenge in Statistical Education. Edited by I. Gal and J. Garfield, 1997, IOS Press, The Netherlands. ISI and IASE. Price: USD 65. Available from IOS Press at market@iospress.nl, Fax: +31-20-620-3419. This book is divided into four sections: (1) Curricular goals and assessment frameworks, (2) Assessing conceptual understanding of statistical ideas, (3) Innovative models for classroom assessment, and (4) Assessing understanding of probability. *IASE members receive a discount of 20% off the list price*. Anyone who registers to become an IASE member will receive a complimentary copy of the book while supplies last.

Stochastics Education Research Papers from 1997. This is a collection of research papers on stochastics education which were presented at different conferences during 1997 (e.g., PME, MERGA, AERA). For information contact Joan Garfield at E-mail: (JBG@maroon.tc.umn.edu).