IASE matters

Summer, 1996

This issue contains a review of the Proceedings of the First Scientific Meeting of IASE by Peter Wilder, a report on the Computers in Teaching Initiative by Stuart Young and a complete listing of the Program Committee for ICOTS 5.

PROCEEDINGS OF THE FIRST SCIENTIFIC MEETING OF THE INTERNATIONAL ASSOCIATION FOR STATISTICAL EDUCATION

University of Perugia, 23-24 August, 1993
Edited by Lina Brunelli and Giuseepe Cicchitelli

A review by Peter Wilder, Mathematics Education, De Montfort University, Bedford, England

For anyone with an interest in the teaching of statistics and probability, whether at school or university level, there will be some value in this volume. Of course, as a collection of conference proceedings, it is somewhat eclectic, and the reader has to work hard to discern a '"storyline" or to find developing arguments from one paper to the next. However, the editors have tried to group the papers together under appropriate topic headings:

- Statistical Education at School Level;
- Teaching Probability and Statistics at University Level;
- Computers, Video and Other Tools in Teaching of Probability and Statistics;
- Education Programmers and Training in Statistics;
- Issues in Teaching of Probability and Statistics;
- The IASE and Problems of Statistical Education in Developing Countries;
- Updating Teaching Methods in Probability and Statistics.

These section headings helped me to find my way around the book, but most sections contain papers on a wide variety of topics. In all there are fifty papers and abstracts of about a dozen poster sessions. It would be impossible in a review of this kind to discuss all the interesting papers, so I have selected a few that were of particular interest to me. Of course this selection may say more about the reviewer than about the book, but I hope it will give readers a flavour of the whole.

It is important for teachers of statistics to be aware of research in statistical education as part of their own professional development; in this volume the accounts of developments and new practices in other countries may provide readers with fresh ideas for their own teaching. One area in which many teachers want to keep abreast of new developments is the growing use of new technology in teaching probability and statistics. An interesting analysis of software for learning statistics is given in a paper by Biehler. He draws on his review of the educational potential for commercially available statistical software, and a project to develop a prototype of a software tool for teaching and learning data analysis, to provide an idea of what is desirable and what might be possible. Biehler considers a variety of significant features offered by current packages and by software still in development and offers a vision of what he sees as an ideal software tool for learning and doing statistics. He emphasizes the importance he sees for learners to be able to define computer experiments, and to build and explore statistical models.

A paper from Konold looks more closely at the technique of resampling to build understanding of probability and statistical inference. Konold describes how school students have worked with two software tools developed by his team for use in schools. This is work in progress, and although it contains many interesting ideas for teachers, it also leaves many questions unanswered. In particular, it is not at all clear, from the research reported here, that a resampling approach leads to improved understanding of the nature of probability.

A slightly different approach to statistical inference is described in a paper by Jones, Lipson and Phillips, using computer intensive methods. In an example given in the paper, the difference between the means of two samples is shown to be unusually large compared with an empirical distribution obtained by repeatedly dividing the combined set of observations into two samples at random and calculating the difference between the sample means. The authors suggest several possible advantages arising from introducing students to such computer intensive methods. One that I found interesting was that long term exposure to computer intensive methods may lead to enhanced understanding of statistical inference, but the authors acknowledge that much more research is needed into this idea. Another suggestion is that the skills of devising and implementing these methods may be much more generally applicable than the methods of classical inference. The use of video and multimedia tools in teaching statistics is reviewed in a paper by David Moore. This paper says more about the role of video in education generally than its specific role in teaching statistics; however the issues are illustrated with reference to statistics.

All the papers discussed so far have come from one section of the proceedings: on the use of computer, video and other tools. Elsewhere in the book is a section on statistical education at school level. This opens with a paper by Peter Holmes surveying statistics teaching at school level in various European countries. Holmes suggests that in some countries there is a very broad view of statistics, which sees statistics as part of society. In this countries, statistics teaching is mainly the responsibility of mathematics teachers, but there is a cross-curricular emphasis also, and statistics is also taught in other subjects. Other countries have a narrower view of statistics as mathematical statistics or stochastics. In these countries there is a greater emphasis on theoretical models and probability. While Germany and France come into the second category, the UK and Italy and Spain come into the first. I found it surprising that there was so much difference between the approaches of different nations. Particularly interesting was the observation that in 1982 the statistics teaching content in the UK was amongst the most varied in Europe, but now it appears to be the most standardized and centrally controlled!

From the United States come two papers reporting on projects that seek to address the requirements of the NCTM Standards for the teaching of statistics in the mathematics curriculum. Both projects claim to build on the earlier work of the Quantitative Literacy Project. Richard Scheaffer gives a progress report on the Data Driven Curriculum Project, where the skills of data analysis are seen not only as important for industry, but they also help students to see the value of applying mathematics to problems in other parts of the school curriculum and in the world beyond the classroom. Statistical topics and ideas are introduced as the motivation for other mathematical topics through real applications. Mike Perry reports on another project, STAT-MAPS (Statistical Materials and Activities for Problem Solving). This project appears to focus more directly on the development of a coherent statistical curriculum through carefully selected problem solving activities. Both of these projects were scheduled to complete in 1994; I shall be interested to see the materials they have produced.

As might be expected in the proceedings of a conference held in Italy, there are several papers from Italian writers, as well as many from other European countries. These seem to me to deal with different issues rising out of the Italian and European context. For example an invited paper by Lombardo, Rossi and Zuliani makes a case for replacing the hypothetical deductive scheme through which probability is normally taught in the Italian curriculum with an inductive approach through experiment. I found this paper interesting because although the conclusion reached is familiar, the context of Italian education, from which the discussion begins, is different.

Other papers in the collection looked at the difficulties of training statisticians in various countries in Africa, Asia and Eastern Europe. In the introduction to the proceeding, David Moore, who was President of IASE at the time of the conference, notes that IASE is particularly aware of the problems facing statistical education in such countries, and he draws attention to an essay by David Vere-Jones on "The IASE and Problems of Statistical Education in Developing Countries." This is an analysis of the wider role of IASE in supporting the development of statistical education in those countries where the

training and recruitment of statisticians are most problematic. Vere-Jones notes that statistics is often not politically neutral, and that statistical education has a vital role in developing countries.

There are papers on a variety of other topics such as: secret codes in statistical education; statistical simulations; making statistics teaching memorable; preferred learning types of graduate students; and the goals of statistical education. It is impossible to show here the full variety of the contributions represented at the conference, but the collection will be a valuable addition to your library. IASE are to be congratulated on these proceedings, and I hope that there will be many more such conferences.

These proceedings are still available FREE of charge ($5 postage only required). Contact I.S.I. 428 Prinses Beatrixlaan, P.O. Box 950, 2270, AZ Voorburg, The Netherlands.

CTI STATISTICS

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The CTI ("Computers in Teaching Initiative") aims to promote, support and disseminate information on the use of computers in teaching and learning. CTI Statistics is one of a number of subject-specific Centers in the UK. Based in the Statistics Department of the University of Glasgow, CTI Statistics was launched as an independent center in August 1995, having been set up originally as a joint Centre with Mathematics in 1989. The Centre is staffed by Stuart Young, the Project Manager, with Adrian Bowman as Director, and James Currall as Deputy Director.

In conjunction with CTI Mathematics, the Centre publishes the "Maths&Stats Guide to Software for Teaching". This is currently in its third edition, and lists around 200 statistical software packages. It is available for only five pounds sterling (plus p&p), and information on ordering a copy can be obtained by contacting CTI Statistics.

The Centre also publishes a quarterly newsletter, called "Maths&Stats". In addition to news about the Center, and details of forthcoming events, it carries reviews of statistics packages and courseware, from a teaching perspective. The newsletter is free to academics in UK Higher Education. For those outwith this sector, subscription terms are available on request.

Other activities include organizing workshops, visiting University departments, and answering queries related to the use of computers in teaching statistics.

CTI Statistics also offers a number of on-line services. These include World Wide Web pages, which contain information on forthcoming events, software reviews from the newsletter, and links to statistical resources. The URL is http://www.stats.gla.ac.uk/cti/

NEWS AND ANNOUNCEMENTS

International Study Group for Research on Learning Probability and Statistics

This is an informal network of researchers from more than twenty countries who share a common interest in research on teaching and learning Statistics at all age levels. Members of the Study Group meet at the International Conference on Teaching Statistics, held every four years. The next meeting will be in July, 1998 in Singapore. A newsletter is distributed electronically via e-mail. Request to receive the free newsletter published three times a year, should be sent to Carmen Batanero, University of Granada, Spain [batanero@goliat.ugr.es]

Third Australian Conference on Mathematics and Computers in Sports

The 3-day conference will bring together sports scientists who are interested in mathematical modelling in sports, the use of computers in sports and application of these to improve coaching and individual performance. Papers are invited on any of the following themes:

1. Computers in Sports
2. Statistics in Sports
3. Operations Research in Sport
4. Mathematical Modelling in Sport
5. The interaction between any of these

Conference Venue: Bond University, Gold Coast, Australia

- Dates: 30 September, 1 & 2 October 1996
- For further details and registration circular please contact Dr. Kuldeep Kumar [kumark@bond.edu.au] or Prof. Neville De Mestre [neville_de_mestre@bond.edu.au].

ICOTS 5, June 1998

Now is the time to help set the program for ICOTS 5, to be held in Singapore during June, 1998. Brian Phillips has announced the International Program Committee, which is listed below. Please feel free to make suggestions for the program to any of those listed. The theme for the meeting is Statistical Education-Expanding the Network. The major objective of ICOTS 5 is to provide opportunities for educators throughout the world to expand their network in statistical education and encourage a worldwide exchange of ideas. In particular the conference aims to create opportunities for networking:

- technology with modern methods in the teaching of statistics
- school and college statistical education at all levels
- the wider community with statistical educators
- statistical education with the forefront of statistical practice
- the exchange of ideas for teaching statistics between and within developing and developed countries
- educational research results and the practice of teaching statistics

International Program Committee - ICOTS 5

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IASE Update

Organized by ISI to promote, support and improve statistics education around the world, IASE now has approximately 350 members representing 60 countries. The work of the Association is done primarily through meetings, such as ICOTS, ISI satellite meetings and round table conferences, and publications. Benefits of membership, other than support of statistics education, include reduced fees for meetings and various free publications such as *IASE Review, ISI Newsletter,* the *International Statistical Review,* and *Short Book Reviews.* Please consider joining IASE and encouraging your colleagues to join as well.