INTERNATIONAL ASSOCIATION FOR STATISTICAL EDUCATION

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This column begins with information on the new IASE web site. A summary of IASE sessions at ISI 1997 is presented, followed by information on the forthcoming ISI conference to be held in 1999. The next section contains information on statistics education in Iran, and an international research network coordinated by IASE vice president, Carmen Batanero. The final section includes announcements.

1. Updated IASE Website

The IASE website has been updated, and can be located at the following address:

http://www.stat.ncsu.edu/info/iase/

The webpage includes introductions to the ISI and to the IASE in English or French. Lists are available of the IASE Executive Committee (1997-1999) and current IASE National Correspondents. A membership directory may be accessed that provides a listing of all IASE members. Membership information for IASE is provided along with a list of members' benefits and a membership application in English or French. Links are provided to previous IASE reviews and to reports from IASE meetings.

2. Report on IASE Sessions in Istanbul at the 51st Session of the International Statistical Institute, August 18-26, 1997

Dr. Maria-Gabriella Ottaviani, Dipartimento di Statistica, Probabilita' e Statistiche Applicate Universita' di Roma .

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 observations 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 and 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 was 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. 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 issue, 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 a 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 should also be assessed, as the session on "Assessment and measurement in education" showed clearly. This theme, which is of great importance to society as a whole, is starting to emerge and will increase in relevance in near future of statistics education.

The short texts of the papers presented in the Istanbul Conference have been published in the Proceedings of the 51st ISI Session, Tome LVII, Book 1, pages 409-462 and in the Contributed Papers of the 51st ISI Session, 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 large, interested, and participative audiences, whose members provided stimulating discussions from the floor. This also showed the growing interest of statisticians toward the themes IASE is devoted to developing.

3. ISI 52 in 1999

The next Session of ISI will be in 1999 in Helsinki, Finland. The following IASE sessions are being organized. Please contact the designated organizer if interested in presenting in a particular session.

Statistical Education and the Significance Tests Controversy, C. Batanero [batanero@goliat.ugr.es]

Teaching and Training Multivariate Data Analysis H. Bacelar-Nicolau [ulfphelb@cc.fc.ul.pt]

Statistical Education Using Flexible Learning Approaches, A.Di Ciaccio [diciaccio@econ.uniurb.it]

Statistical Education for Life, A. Hawkins [ash@pmn1.maths.nott.ac.uk]

Issues Involved in the Assessment and Evaluation of Student Learning of Statistics, J.Garfield [JBG@tc.umn.edu]

Visualisation as an Educational Tool, L. Weldon [weldon@cs.sfu.ca]

Statistical Training for People Working in and with Official Statistics, C. Blumberg ... [wncarolj@vax2.winona.msus.edu] and R. Smulders [RSLS@cbs.nl]

4. Statistics and Probability in Iranian School Curriculum Research Group in Statistical Education, School of Mathematical Sciences, Isfahan University of Technology, Iran

Educational System in Iran

The Iranian system of education consists of an optional one year kindergarten, a compulsory 5-years elementary school (1-5 grades), 3-years intermediate school (6-8 grades), 3-years high school (9-11 grades) and a one year newly established pre-university program. Grades 9-11 and pre-university program are taught in two semesters in each academic year. The students have their choice for selecting their branch of study after the second year of high school upon their interests and achievement of some requirements. The branches are categorized in theoretical, vocational and technical categorizes, for which, the theoretical branch consists of mathematics-physics sciences, natural sciences and literature & behavioral sciences [1] , [2]. The topics of statistics and probability are taught in different levels and branches of study which are briefly discussed in this article.

Statistics in Elementary School

In elementary school, some aspects of data gathering and graphs such as bar charts are included in mathematics curriculum and students learn how to compare data without mentioning the word "statistics".

Statistics in Intermediate School

In 6th grade, one short section of the mathematics course is devoted to working with discrete data, frequency tables, rounding data, bar charts and frequency polygons. In the 8th grade few pages of the mathematics book is devoted to categorizing the data, specially using frequency tables and calculating the mean as the only way of comparing two sets of data.

Statistics in High School

All students of the theoretical and technical branches, in 9th and 10th grades, take the same mathematics courses. In the second semester of the 10th grade two chapters are devoted to statistics and probability. In the first chapter students study frequency table, histogram, bar chart, pie chart, mean, mean deviation, variance and standard deviation for different kinds of data. In the second chapter students get familiar with combinatorics (counting rules) and probability at elementary level. In the first semester of the 11th grade of mathematics-physics science curriculum, there is a course called, algebra and probability. One-third of this course is devoted to introducing the ideas of probability, random phenomena, classical model and uniform continuous cases. Bernoulli trials, frequency interpretation of probability, axioms of probability, independent events are among the concepts introduced in some details. In the 11th grade of vocational branch, the students in business, accounting and business administration, take 2 complete courses in statistics. These courses cover descriptive statistics for univariate data in good detail. Combinatorics, probability, coefficients of correlation, simple linear regression, time series analysis, and statistical indices, are also briefly discussed in these courses.

Pre-University Program

All students in the theoretical branches study some probability and statistics. The behavioral sciences students, in their mathematics course, learn about random experiments, frequency interpretation of probability, classical model, independent events and some rules for probability function, which is about one third of the course. The experimental sciences students, in the first chapter of their mathematics course, learn about descriptive statistics in continuous cases, as well as bar chart, pie-chart, stem-and-leaf plot, measures of central tendency and measures of variability (dispersion). Some elementary probability and calculations with probability function, conditional probability, independent events, random variables, probability mass function including binomial distribution and mathematical expectation are also added into this chapter. The mathematical sciences students take a discrete mathematics course in which probability function, conditional probability, multiplication rule, Bayes rule, some of the standard discrete distributions, mathematical expectation for discrete random variables are discussed (see [1] for details). Unfortunately there is no opportunity for students to work with real data.

The research group is currently working with some elementary school students and their teachers to define some real-world statistics projects for them. Also, there exists some hope for a change in curriculum for achieving some goals of the NCTM standards in teaching probability and statistics in according to our society needs in the curriculum [3]. A new course for all high school students is in preparation in which statistical modeling will be discussed. However, we think that this is not enough for statistical education in our curriculum. The Iranian Statistical Society is working on the subject in order to establish a teaching standard for statistics and probability in schools.

References

[1] Rejali, A., Discrete Mathematics, A new course for Iranian National Curriculum, Working Group 13 of the ICME-8, Curriculum changes in the Secondary School, Kindt, M., Abels M., Doorman M. (editors), Freudenthal Institute, pp. 73-76 (1996).

[2] The New System of High School, Ministry of Education, Iran, 3rd ed. (1993), in Farsi.

[3] Curriculum and Evaluation Standards for School Mathematics, Reston, Va: National Council of Teachers of Mathematics, (1989).

[4] Rejali, A., Teaching Probability and Statistics in School, Andishe-ye Amari, the magazine of the Iranian Statistical Society, vol.2,no.2 (fall 1997), pp. 10-18, in Farsi with English summary.

5. The International Study Group for Research on Learning Probability and Statistics

(Carmen Batanero,Secretary and Editor Departamento de Didactica de las Matematicas, Facultad de Ciencias de la Educacion Universidad de Granada)

Research into statistical education is receiving increased attention from researchers in areas such as mathematics education, statistics, education, and psychology; as shown in the papers presented at numerous international conferences and published in journals in these different disciplines. The situation was far different twenty years ago, when the scarcity of people doing research in the teaching and learning of statistics led to isolation and little collaboration. After the pioneer investigations by Piaget into children's' understanding of probability, research by psychologists mainly concentrated in adults' reasoning in taking decision under uncertainty, with notable exceptions, like the work by Fischbein and his collaborators.

The starting up of the journal *Teaching Statistics*, the Centres for Statistical Education and, in particular, the International Conferences on Teaching Statistics (ICOTS) helped to progressively link an informal research network of people interested in carrying out research on the teaching and learning statistics at all age levels. It was at ICOTS I in 1982 that the idea of forming a specific Study Group arose, suggested by Ramesh Kapadia and Anne Hawkins. Ephraim Fischbein and David Green drew up a first statement of aims for the group, whose initial name "International Study Group on Probability and Statistics Concepts and Intuitions" was slightly changed over the years until the present title was selected.

The group was intended to encourage research in statistical education; promote the exchange of information between members; develop instruments by which concepts about probability and statistics could be assessed; and in general, improve the teaching and interpretation of probability and statistics by dissemination of research findings. There have been three secretaries of the group: David Green (1986-88); Joan Garfield (1988-96) and Carmen Batanero since 1996.

In 1988, Joan Garfield began to write and distribute a Newsletter which has been transformed to an electronic version since 1996, and it is now distributed through an e-mail list. It is also available from the web page of the Statistical Education Research Group at the University of Granada (http://www.ugr.es/~batanero/). This newsletter is produced every three months to serve as a link between members and to provide information useful to research. It contains summaries of research

papers written by members, information about members, summaries of recent dissertations, and other publication of interest, information concerning recent and forthcoming conferences, and Internet resources of interest.

By the end of 1997, membership in this group had increased to a total of 218 members, many of them from Australia, France, Israel, Italy, Spain, United Kingdom, and the United States of America. There are also members from Argentina, Austria, Belgium, Bulgaria, Brazil, Canada, China, Colombia, Cuba, Fiji, Finland, Germany, Greece, Hungary, India, Japan, Malaysia, Mexico, The Netherlands, New Zealand, Norway, Poland, Romania, Russia, Singapore, South Africa, Sweden, Turkey, and Venezuela.

Members keep in touch through the Newsletter, and electronic or ordinary mail, and meet at the International Conferences on Teaching Statistics and other ISI and IASE Conferences. In addition, there is an increasing group presence in the International Congresses on Mathematics Education (ICME), Psychology of Mathematics Education Conferences (PME), and other international meetings. There have been contacts among group members to carry out research projects or to collaborate in the writing of international books. Other activities include participation in applied statistics competitions for schools, Centres for Statistical Education, reporting research results in Journals (such as *The Journal of Statistical Education*, or *Teaching Statistics*), supervising dissertations, editing journals, or preparing Internet resources for teaching statistics.

Requests to become a member of the group, to publish a summary or information in the Newsletter, or to get more information, should be sent to Carmen Batanero, Facultad de Ciencias de la Educacion, Universidad de Granada, 18071 Granada, Spain Phone: 34 58 243950 Fax: 34 58 246359

batanero@goliat.ugr.es
http://www.ugr.es/~batanero/

6. Announcements

ICOTS 5 in Singapore

ICOTS 5 will be held in Singapore June 21-26, 1998. For further information please refer to the ISI Newsletter Vol. 21, no. 1 (p. 18) and no. 2 (p. 18). The deadline for applications for accommodations is May 20, 1998. Complete information is available at the WWW site:

http://www.nie.ac.sg:8000/~wwwmath/icots.html

Publications

Copies of the most recent IASE publication, *Research on the Role of Technology in Teaching and Learning Statistics* (edited by J. Garfield and G. Burrill) are available for $30 US. Please contact Ms. Erica v.d. Kraan at the ISI office at e-mail address: isi@cs.vu.nl

Research Papers on Stochastics Education from 1997, a collection of research papers presented at conference in 1997, is available from J. Garfield (address listed above). The cost is $12 for people in the USA and Canada, and $20 for others. These prices include airmail postage.

International Statistics Competition

The Department of Statistics at Kinnaird College for women, Lahore in Pakistan have launched an international competition of data analysis for the world-wide community of students/young adults aged 18-26 (see page 8). The competition aims at enhancing the data analytical skills of the young generation of today. It carries attractive incentives such as engraved shields and beautiful souvenirs along with certificates. More information can be obtained from:

Ms. Saleha Naghmi Habibullah
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INTERNATIONAL ASSOCIATION FOR STATISTICAL COMPUTING

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Highlights of the Meeting of IASC General Assembly

The meeting was held at 4.30 pm, Wednesday 20 August, 1997 in the Lutfi Kyrdar Istanbul International Congress Center, Istanbul.

The Announced Agenda:

1. Approval of the Agenda
2. President's Report
3. Secretary's Report
4. Treasurer's Report
5. Introduction of New Officers
6. Incoming President's Statement
7. Membership Issues
8. Regional Sections
9. Forthcoming Meetings
10. Any Other Business

The retiring President, Murray Cameron, welcomed attendees and opened the meeting. Murray Cameron requested that the Agenda be amended to include the Minutes of the General Assembly, Beijing, 1995. The Minutes were approved as presented. The retiring President presented a report. He commented positively on the healthy financial position and stable membership and the diversity of Scientific meetings supported by IASC, with special note of the Asian Sectional meetings in Seoul and Manila, and the European section's activities including COMPSTATs, Tartu meetings and Padua Summer School. The 2nd World Congress had been a major recent success, strengthening interactions between US participants and those from other continents. The Athens satellite meeting organised by Prof. Kitsos had also been succesful. Planning for Helsinki was proceeding.

IASC publications were continuing to improve. Edward Wegman said he was grateful to Allmuth Hoerman for her contribution to *SSN*. Editorial changes to *CSDA* in 1995 had proved beneficial. Publications of Proceedings of COMPSTAT'96, and an earlier meeting in 1994, had been published amd those of 2nd World Congress were pending.

Prof. Galmacci's contribution in maintaining the IASC Home Page was acknowledged.

The retiring President highlighted the importance and opportunity for enhanced links with the Interface Society, and other organisations. He concluded that it was difficult to properly acknowledge so many contributors to IASC. Service as President had been pleasurable, and he had established many friendships he valued. He thanked Council, the board and all others and encouraged active participation from all.

The retiring IASC Secretary, Malcolm Hudson, presented a report. The Treasurer, Henk Kiers, also presented a written report. He thanked Henk Sala, in the ISI office for his contributions. He noted the IASC finances show a positive net income of 57,000 guilders, a higher return than in previous years despite loans to conference organisers. The graph displayed showed a rundown in finances from 1991-93 had been reversed and stabilised in 1996. Henk Kiers proposed the budget for 1997 and 1998 did not require increases in subscription rates, and should remain fixed. This motion was seconded and accepted by the meeting.

Henk Kiers then invited comment on the need for a new "extraordinary" membership class for citizens of UN designated "underdeveloped" nations. Some problems were cited:

- difficulty in communication, without a Newsletter;