

IASE REVIEW

November 1999

INTERNATIONAL ASSOCIATION FOR STATISTICAL EDUCATION
<http://www.cbs.nl/isi/iase.htm>

1. REPORT FROM THE IASE PRESIDENT	3
2. IASE EXECUTIVE 1999 - 2001	4
3. FUTURE CONFERENCES	4
4. SUMMARY OF SOME UP-COMING CONFERENCES	7
5. ISI DEVELOPMENT FUND	8
6. PUBLICATIONS	8
7. IASE STATISTICAL EDUCATION RESEARCH GROUP & NEWSLETTER	8
8. CONFERENCE REPORTS	9
9. SUMMARIES OF THE INVITED PAPER SESSIONS AT ISI-52	10
10. IASE APPLICATION FORM	17
11. QUESTIONNAIRE	19

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1. Report from the IASE President

Brian Phillips

This is a most exciting and, I feel, critical period for statistical education. Statistics is now recognised as a crucial part of the education of students in many disciplines and is used by an ever increasing number of people in the workplace. *In fact I would say that statistics is studied by more students at post-secondary level than any other topic.* Hence there are a very large number of people involved in teaching statistics and it is more important than ever that it is taught well and enthusiastically. As one of the main aims of the IASE is the improvement of statistical education worldwide, we have an important role to play in helping to achieve this. Modern methods, including advances in technology, can greatly assist us in getting statistical concepts and ways of thinking statistically to an audience with a wide range of professional interests and abilities. By together as part of an international community of statistical educators, we can become better informed and better prepared for the challenges which confront us.



The IASE executive is working on many of tasks, a number of which will be reported in more detail later in this Review. Firstly we are developing a **web site** which will provide much information useful for anyone involved with statistical education. As well as providing information about the IASE and the ISI, it provides links to relevant conference sites, statistics teaching resources including sources of data for exercises, information on statistical packages, International Statistical Societies, National Data Archives and discussion lists. The site is regularly updated and I encourage all members to explore it starting at <http://www.cbs.nl/isi/iase.htm>. I appreciate any suggestions to help improve this site so that it becomes the first place statistical educators look to for information.

One of our main activities continues to be our involvement in **international conferences**. In 1999 the main event was the 52nd session of the ISI held in Helsinki. I wish to thank all those involved in making this such a success; a full report is provided later in this Review. Also I was most privileged to attend the First International Research Forum on Statistical Reasoning Thinking and Literacy (**SRTL**) at Kibbutz Be'eri, Israel, in July, 1999. It is most pleasing to thank the sponsors the University of Minnesota, the Maurice and Gabriela Goldschleger Conference Foundation at the Weizmann Institute of Science, and Kibbutz Be'eri for helping make this occasion possible, I also especially wish to thank the co-chairs Joan Garfield (USA) and Dani Ben-Zvi (Israel) for their initiative and the wonderful job they did in providing not only a most stimulating meeting but also an unforgettable experience in a most interesting and historic part of the world. A report of the Forum is given in the current ISI Newsletter and can be found on the web site <http://www.beeri.org.il/srtl>.

In recent years a number of **developing countries** have been seeking our help and through the efforts of some members, especially Maria-Gabriella Ottaviani and Carmen Batanero, we have been able to assist countries such as Mexico, South Africa and South America who are in the process of including more statistics in school syllabi. We look forward to continued interaction in these and other countries. Also it is a great pleasure to work with the local ICOTS-6 organisers in Durban, South Africa in our planning for 2002, see later item in this Review.

We are keenly aware of the financial difficulties of statistical educators from developing countries in attending international meetings. Hence I welcome an ISI Executive Committee's initiative in establishing the **ISI Development Fund** which aimed to help people from these countries. For details see item 5 below.

Also encouraging is the **increasing co-operation between ISI sections** as seen both at ISI meetings and section conferences. I hope this trend continues. However there is a low proportion of IASE members who are also ISI members as compared to other sections. The executive sees our low profile in the ISI as a weakness and we encourage IASE members to apply for ISI membership. A form is available on <http://www.cbs.nl/isi/Candidateform.htm>

We are fortunate to have the valuable assistance of a number of members who help the small executive carry out the many tasks in which the IASE is involved. I wish to thank all those members who help greatly in the success of our organisation and although it is hard to single out individuals, I would particularly like to thank Susan Starkings (UK) for her work in organising the statistical education sessions at ICME9 for the IASE, and Carol Joyce Blumberg (USA) who never hesitates to take on extra tasks whenever asked. Also I wish to thank Gabriella for all the work she has done over the past two years as president and I welcome our continuing relationship, which includes her

important role in planning ICOTS-6. In an effort to spread the workload we recommend you support the amendments to the IASE statutes outlined on the enclosed form where we also invite your comments on future directions.

I encourage all members to become more involved in the activities of the IASE, which is your organisation and only survives by the action of its members. This can be done in many ways including helping organise sessions at ICOTS-6, writing reports or articles for one of our publications, presenting papers at meetings organised by the IASE, suggesting improvements to our web site, making suggestions of sponsorships, getting involved in discussion groups, attending at least one IASE organised conference over the next two years or organising statistical education events in your local area. In particular I encourage everyone to invite others to join the IASE, by distributing this Review to all people teaching statistics at your institution (either by copying this newsletter or giving them the web site <http://www.swin.edu.au/math/iase/review.doc> from which it can be downloaded. **With the number of people who are involved in statistical education, the IASE should have many more members.**

Finally I look forward to helping make the next two years a most productive time for the IASE and statistical education.

2. IASE Executive 1999 - 2001

<http://www.swin.edu.au/math/iase/exec99.html>

President	Brian Phillips (Australia)
President-Elect	Carmen Batanero (Spain)
Vice Presidents	Dani Ben-Zvi (Israel), Joan Garfield (USA), Lionel Pereira-Mendoza (Singapore), Gilberte Schuyten (Belgium)
Co-opted members	Maria-Gabriella Ottaviani (Italy) (Chair ICOTS-6 IPC) Susan Starkings (IASE sessions at ICME-9) Tae Rim Lee (LOC rep. for ISI-53)
Executive Director	Van den Broecke, M.P.R. (Netherlands)

3. Future conferences in Statistical Education

Conference on Teaching and Learning of Statistics

February 3-4, 2000, Faculty of Sciences, University of Lisbon, Portugal

Organisers: Portuguese Statistical Society, Association of Teachers of Mathematics, Department of Education: Department of Statistics and Operational Research, University of Lisbon.

Topics: Teaching statistics at schools, students' difficulties in basic statistical concepts, training teachers to teach statistics, curricular development in statistics.

Activities: Plenary lectures, Round Tables, papers and posters

More information from Fernanda Freire, Encontro de Estatística,

Departamento de Educação, Faculdade de Ciências, Universidade de Lisboa, Edifício C1- Campo Grande, 1749-016, Lisbon, Portugal ffreire@fc.ul.pt website <http://www.fc.ul.pt/departments/educacao>

Discussion Group for PME24 Hiroshima, Japan from 23-27 July, 2000

Call for Short Contributions -- Stochastic Thinking, Learning, and Teaching

The next meeting of PME (the International Group for the Psychology of Mathematics Education) will be held at Hiroshima, Japan from 23-27 July, 2000, just prior to ICME-9. This will finish just before the gathering of ICME-9 in Tokyo. Details on PME24 can be obtained from the website: <http://www.ipc.hiroshima-u.ac.jp/~pme24/>

It is our intention to choose one topic and to use this as a basis for two meetings of the Discussion Group. For 2000 the topic will be "*The Relationship between Stochastic and Mathematical Thinking, Learning, and Teaching*". It is our intention to approach this theme from multiple perspectives, including:

1. Philosophical, in terms of the perceived boundaries of the disciplines.
2. Historical, in terms of the developments of the disciplines.

3. Educational, in terms of the positioning and implementation of the teaching and learning of stochastics within school and tertiary curricula, including such fundamental issues as teacher development, assessment, and technology.
4. Psychological, in terms of the specific cognitive and sociocultural processes involved in the teaching and learning of stochastics.
5. Research, in terms of cross-fertilization of theoretical frameworks and methodologies.

A mechanism already exists for electronic communication between potential participants through the *PME Stochastics Teaching and Learning Newsletter*, which has been circulating for four years, and through the group's active website: <http://www.beeri.org.il/stochastics> A number of short contributions will be prepared in advance to provide a focus for discussion.

The co-ordinators for this proposed Discussion Group are:

Dani Ben-Zvi (Israel) dani.ben-zvi@weizmann.ac.il Brian Greer (Ireland) b.greer@gub.ac.uk
Kath Truran (Australia) kath.truran@unisa.edu.au John Truran (Australia) truran@arts.adelaide.edu.au

ICME-9 Tokyo/Makuhari, Japan, July 31 to August 6, 2000.

Plenary session

Mike Shaughnessy (USA) is giving a plenary lecture at ICME, as a representative of the IASE. The title of his talk is *"From research to teaching: What research suggests about teaching data and chance"*.

TSG4 The Teaching and Learning of Statistics <http://www.swin.edu.au/math/iase/icme9.html>

Organisers: CO: Susan Starkings, (UK) AO starkisa@vax.sbu.ac.uk: Theodore Chadjipadelis (Greece)
Michimasa Kobayashi (Japan) Tae Rim Lee (Korea) LAO: Nakano, Toshiyuki (Japan)

The speakers for ICME-9 are now in place. They come from a wide range of backgrounds and offer a wealth of experience in statistics education. The two sessions will include talks on multimedia, comparisons between different countries on introductory statistics courses, problems with statistics in transitional countries as well as those based on empirical research. Papers will be given on statistical education for children aged 11-18, students in higher education, and also for adults.



Susan Starkings

Speakers

1. Elena Carrera (Argentina) *"Teaching Statistics in the First Years of University with Emphasis on Problem Solving"*
2. Tae Rim Lee (Korea) *"The study on the internet course of introductory statistics in cyberuniversity"*
3. Linda Gattuso (Canada) *"Student's Perceptions of the Effect on the Average of Modifying Data"*
4. Hans-Joachim Mittag (Germany) *"Multimedia for Teaching Introductory Statistics"*
5. Li Jun & Lionel Perira-Mendoza (Singapore) *"Chinese Students' Probabilistic Thinking"*
6. Joe Wisenbaker (USA) *"Structural Equation Models Relating to Attitudes About and Achievement in Introductory Statistics Courses: A Comparison of Results from the US and Israel"*
7. Dani Ben-Zvi (Israel) *"Towards a Characterization of Junior High School Students' Construction of Meanings for Data Representations"*
8. Ruslan Motoryn (Ukraine) *"The Teaching and Learning of International Statistics in Transitional Country: Case of The Ukraine"*
9. Corinne Hahn (France) *"The Use of a Multimedia Tool in Teaching Factor Analysis to School Students. Is there a Statistical Significant Improvement?"*
10. Maria da Graca Pereira (Brazil) *"Demonstrative Prototype of the Statistical Methods"*
11. James Nicholson (Ireland) *"Teaching and Learning Statistics : Diagnostic and Support Materials"*
12. Gabriel Yanez Canal (Mexico) *"If I throw three times, do I have three times probability of win"*
13. Hiroaki Hirabayashi (Japan) *"How Do We Arouse Students' Interest in Statistics? By Development of Teaching Materials"*

Short communications can be presented in the Poster Sessions

IASE Round Table Conference: Training Researchers in the Use of Statistics

The Institute of Statistical Mathematics, Tokyo, Japan, August 7-11, 2000:

Since 1968, a number of Round Table Conferences have been organised on topics in statistics education. These round table conferences were initially organised by the Education Committee of the International Statistical Institute and, since 1993, by the IASE. These conferences are usually held as satellite meetings to each meeting of ICME (International Congress on Mathematics Education), which is held every four years.



Carmen Batanero

2000 will be the year of the IASE Round Table in Japan on the topic: *Training Researchers in the Use of Statistics*. This meeting will be held at the Institute of Mathematical Statistics, Tokyo, which since its foundation as the one and only national institute of statistics in Japan, has continued to exert a distinguished influence on the study and research of statistical science as an inter-university research institute which puts a major emphasis on research collaboration with all disciplines of science. The education committee of the Japan Statistical Society chaired by Professor Yuki Miura is doing the local organisation of the conference.

From many interesting proposals presented from all around the world, 25 papers were accepted after a refereeing process that was finished in September and in which includes statisticians and statistics educators from different countries. The proposals accepted cover the different points in the conference, and statistical topics such as basic statistics, lineal models, Bayesian statistics, multivariate methods, quality control, stochastic processes, probability models. Fields of application come from Education, Psychology, Biology, Agronomy, Engineering, Economy and Business. Potential participants and referees represent 26 different countries in the 5 continents.

More information on the conference can be obtained from the web page: <http://www.ugr.es/~batanero/iasert.htm> or from Carmen Batanero, Departamento Didáctica de la Matemática, Facultad de Educación, Campus de Cartuja, 18071, Granada, Spain batanero@goliat.ugr.es

IASE Sessions at ISI-53 Seoul, Korea, August 2001

The IASE is very pleased to see that the increasing interest in our discipline has led to an even larger number of statistical education sessions at the 53rd ISI session to be held in Seoul, Korea in August, 2001. There are seven sessions to be organised by the IASE alone, with another four being jointly organised with other sections. Lionel Pereira-Mendoza is co-ordinating our section of the programme. Planning has started and anyone interested in more information should contact Lionel lpereira@nie.edu.sg.



Lionel Pereira-Mendoza

IASE sessions

1. Forum: IASE and statistics education in developing countries

Maria-Gabriella Ottaviani (Italy)
ottavian@pow2.sta.uniroma1.it

2. Undergraduate level statistics programmes

Shen Shir Ming (Hong Kong, China)
hrntssm@hkucc.hku.hk

3. The Future of Statistics Education Research

Joan Garfield (USA) jbg@maroon.tc.umn.edu

4. Research on teaching statistics at School and University levels

Susan Starkings (UK) starkisa@vax.sbu.ac.uk

5. Undergraduate statistics education in non-statistics degree programmes

Elisabeth Svenssen (Sweden)
eliss@math.chalmers.se

6. Continuing Statistics Education in the Workplace

Carol Blumberg (USA)
wncarolj@vax2.winona.msus.edu

7. Postgraduate training of statisticians

Gilberte Schuyten (Belgium)
Gilberte.Schuyten@rug.ac.be

Proposed JOINT IASE SESSIONS

1. Women's Contributions to Leadership in Statistical Education

Joint with CWS. Martha Bilotti-Aliaga (USA)
aliaga@umich.edu

2: Technology in Statistics Education

Joint with IASC Tae Rim Lee, Korea (Korea)
trlee@av9500.knou.ac.kr

3. The role of official statistics in the university curriculum

Joint with IAOS (IAOS to organise)

4: Education and the Internet: Effective Structures

Joint with IAOS Brian Phillips (Australia)
bphillips@swin.edu.au



ICOTS 6

Durban, South Africa, July 6 – 12, 2002
Developing a Statistically Literate Society

The sixth International Conference on Teaching Statistics will be held in Durban, South Africa, July 6 to 12, 2002. Planning is underway and the IASE will make a special effort to attract African participation, and in particular will offer some financial assistance to delegates from African developing nations. It is also planned that there will be strong participation from local school teachers.

International Programme Committee, IPC

IPC Executive Chair IPC: Maria-Gabriella Ottaviani (Italy) ottaviani@pow2.sta.uniroma1.it
International Organiser: Brian Phillips (Australia) bphillips@swin.edu.au
IPC Secretary: Dani Ben-Zvi (Israel) dani.ben-zvi@weizmann.ac.il

Local organiser representatives

Chair of the Local Organising Committee: Delia North (South Africa) delian@icon.co.za
President South Africa Statistical Association: Linda Haines (South Africa) haines@stat.unp.ac.za

Topics and Convenors:

School Level Lionel Pereira-Mendoza (Singapore) lpereira@nie.edu.sg
Post Secondary Gilberte Schuyten (Belgium) Gilberte.Schuyten@rug.ac.be & Allan Rossman (USA) rossman@dickinson.edu
Workplace Carol Joyce Blumberg (USA) wncarolj@vax2.winona.msus.edu
& René H. M. Smulders (The Netherlands) RSLs@cbs.nl
Wider Society Helen MacGillivray (Australia) h.macgillivray@fsc.qut.edu.au
International Perspective Vitalis Muba (Tanzania) eastc@ud.co.tz
Research Carmen Batanero (Spain) batanero@goliat.ugr.es & Joan Garfield (USA) jbg@maroon.tc.umn.edu
Technology Lawrence Weldon (Canada) weldon@sfu.ca
Other Determinants Philip Boland (Ireland) Philip.J.Boland@ucd.ie
Contributed Papers Susan Starkings (UK) starkisa@vax.sbu.ac.uk
For updated information, please consult the ICOTS-6 Web-site: <http://www.beeri.org.il/icots6>

4. Summary of some up-coming conferences of interest to statistical educators

Portugal Conference on Teaching and Learning of Statistics

February 3-4, 2000 University of Lisbon, Portugal. clad.lead@mail.telepac.pt

15th Australian Statistical Conference 3 - 7 July, 2000 Adelaide, South Australia
<http://www.sapmea.asn.au/15ASC.htm>

PME July 23-27, 2000 Hiroshima, Japan <http://www.ipc.hiroshima-u.ac.jp/~pme24/>

ICME-9 July 31 - August 6, 2000 Tokyo, Japan <http://www.swin.edu.au/math/iase/icme9.html>

IASE Round Table August 7-11, 2000 Tokyo, Japan <http://www.ugr.es/~batanero/iasert.htm>

ASA Joint Statistical Meetings August 13 - 17, 2000 Indianapolis, USA <http://www.amstat.org/meetings/jsm/2000/>

IASE Sessions at ISI-53 August 2001: Seoul, Korea <http://www.swin.edu.au/math/iase/isi53.html>

ICOTS-6 July 7-12, 2002: Durban, South Africa <http://www.beeri.org.il/icots6>

5. ISI Development Fund

One of the aims of the ISI is to promote the quality of statistics internationally. As developing countries are in the greatest need for such improvement, the ISI considers it as its duty to provide assistance to statisticians from developing countries in achieving this improvement. For this purpose, the Executive Committee of ISI has proposed to establish the ISI Development Fund. Full details and an application form can be downloaded from <http://www.swin.edu.au/mathsis/iase/isidevfund.doc>

6. Publications

1. **Due out soon:** Two interesting publication with interest to statistics educators due soon are:

- (a) A special issue of **Mathematical Thinking and Learning**, edited by Brian Greer (Northern Ireland). This will contain a number of articles on stochastics education. For more information contact Brian Greer b.greer@qub.ac.uk
(b) A Special Issue of **Educational Studies in Mathematics on Data Handling** Editors Dave Pratt (UK) and Janet Ainley (UK). For further information contact Janet Ainley janet.ainley@warwick.ac.uk

2. **Research on the Role of Technology in Teaching and Learning Statistics** Papers from the 1996 Round Table Conference of IASE, Granada, Spain. **Web version** now available at http://www.dartmouth.edu/%7Echance/teaching_aids/IASE/cover.html

3. **ICOTS-5 proceedings**

Statistical Education – Expanding the Network

Available from CTMA Ltd, 425 Race Course Road, Singapore 218671, Tel: (65) 299 8992

FAX: (65) 299 8983 ctmapl@singnet.com.sg or Lionel Pereira-Mendoza lpereira@nie.edu.sg

4. For other IASE publications look at <http://www.swin.edu.au/mathsis/iase/publications.html>

7. IASE Statistical Education Research Group and Research Newsletter

Since 1991, the *International Study Group for Research on Learning Probability and Statistics* has been an informal research network of people who share a common interest in carrying research into the teaching and learning statistics at all age levels. It was at *ICOTS 1* that the idea of forming a study group arose, possibly suggested by Ramesh Kapadia and Anne Hawkins. Efraim Fischbein and David Green drew up a first statement of aims for the group. Other people contributing to starting the group were Lennart Råde, Joan Garfield, Hans-Joachim Benz, Ruma Falk, Michael Shaughnessy and Manfred Borovcnic. The first secretary was David Green. In 1988 Joan Garfield took over from David and held office until 1996. Carmen Batanero has been the Secretary since 1996.

At the end of 1999, there are around 250 members from 42 countries in the group. A newsletter was distributed by e-mail through the *Stat_Ed* list at the University of Granada to serve as a link between members and to provide information useful to research. It is also available from the web page <http://www.ugr.es/~batanero/iase.html>. The newsletter contains summaries of research papers written by members, information about members, summaries of recent dissertations, other publications of interest and information concerning recent and forthcoming conferences, and Internet resources of interest. During 1999 discussions were held with the *IASE* to include the *International Study Group* as a special interest group within our association and to change the Newsletter into a regular *IASE* publication. There is no doubt that research has a notable influence in extending our knowledge, in advancing the academic recognition of a discipline, as well as in improving the practice of education. For this reason research has been a main interest by *IASE* since its foundation.

We therefore are glad to announce that the Executive Committee has agreed to accept the *International Study Group for Research into Learning Probability and Statistics* as a research group within *IASE*, with the name of *Statistical Education Research Group*. From January 2000 the *Statistical Education Research Newsletter* will replace our current *Newsletter*. It will be published electronically with 3 issues a year, which will be located in a web site linked to the *IASE* main server. All the *IASE* members with e-mail facilities will be sent the table of contents via

e-mail. Carmen Batanero, Joan Garfield, M. Gabriella Ottaviani, and John Truran will be the team responsible for producing this Newsletter. All of us consider that receiving information about research activities will be of interest to all *IASE* members, will serve to connect *IASE* researchers to colleagues all around the world, and will allow a quicker spreading of research results that could also benefit curriculum developments. All *IASE* members and others interested in research in statistical education are welcome to send relevant information to be published in the Newsletter to Carmen Batanero batanero@goliat.ugr.es

8. Conference Reports

PRESTA Programme de Recherche et d' Enseignement en Statistique Appliquée

International Conference on Experiences and Perspectives of Statistics Teaching: Challenges for the XXI Century Florianopolis (Brazil) September 20-22, 1999

The PRESTA (Programme de Recherche et d' Enseignement en Statistique Appliquée) and the *IASE* have worked together in organising this Conference in the occasion of this five-year inter-university cooperation programme in South America. There were about 180 delegates coming from many countries in Central and South America from Mexico and Cuba to Argentina and Chile. *IASE* was represented by Maria-Gabriella Ottaviani and Carmen Batanero, whose presence and contributions helped the local statistical education groups become more visible, and made them more aware of the *IASE* activities. We plan to have a fuller report in a future publication.

Statistical Reasoning Thinking and Literacy (SRTL)



Joan and Dani at SRTL

The First International Research Forum on SRTL was held in Kibbutz Be'eri in the beautiful northwest Negev hills in Israel in July 99. The Forum met for five days, to share current research, discuss important issues, and initiate collaborative projects. Sessions were held informally with a high level of interaction. Videos of students in classrooms or interview settings were used to present, discuss and argue about participants' current research. One result of SRTL will be an edited book on Statistical Reasoning, Thinking and Literacy. This will summarise the work presented and discussions conducted on theoretical, methodological, pedagogical, assessment, literacy and communication issues. The co-chairs Joan Garfield jbg@tc.umn.edu and Dani Ben-Zvi dani.ben-zvi@weizmann.ac.il plan to organize a second Research Forum (SRTL-2) in 2001. To learn more about the SRTL forum please visit the Website: <http://www.beeri.org.il/srtl> or contact Joan or Dani.

Psychology of Mathematics Education

Our relationship with the Psychology of Mathematics Education (PME) group is strong as was seen in the 11 presentations relating to research on stochastics teaching and learning given at the annual meeting of PME at Haifa, Israel in July 1999. The PME Project Group for Stochastics Teaching and Learning met twice during the conference. Over 30 people attended the first meeting, which provided a useful opportunity to summarise many of the important contact points in stochastics research for people who were new to the field. Abstracts are published in the International Study Group Newsletter [Vol. 12, No. 3], <http://www.ugr.es/~batanero/v12se99.htm>.

IASE at ISI-52



Maria-Gabriella Ottaviani

Helsinki was the place for statistical educators to be last August where the importance of our discipline was demonstrated at the 52nd ISI meeting. Maria-Gabriella Ottaviani co-ordinated the *IASE* sessions in which a total of 21 invited speakers and 14 discussants gave some wonderful presentations in the six sessions organised by the *IASE* plus the joint session with the IAOS. *IASE* members were also involved in a panel discussion on statistical literacy. Apart from these there were another five contributed paper sessions in which over 30 papers were presented. The complete papers are available in the Proceedings of the 52nd Session of the ISI, Helsinki, 1999 and from our ISI52 site, <http://www.swin.edu.au/math/iase/isi52.html>. Also the discussants' comments will be in ISI-52 Proceedings, Book 4 soon to be published.

9. Summaries of the invited statistics education paper sessions at ISI-52

IPM 58. Statistical education and significance tests controversy.

Organiser /Chair: Carmen Batanero (Spain)

Empirical sciences, in general, and particularly psychology and education, rely heavily on proving the existence of effects through the standard significance tests. The use of statistical inference dates back almost 300 years, but statistical tests were popularised by the works of Fisher, Neyman and Pearson and today most researchers implicitly use a mixture of the logic suggested by these three authors. However, because the logic of statistical inference is difficult to grasp, its use and interpretation is not always adequate and have been criticised for nearly 50 years.

Research results on the understanding of the philosophy and concepts implied in testing hypotheses have additionally shown widespread misconceptions among both university students and scientists who use statistical inference in their daily work. These misconceptions refer mainly to the level of significance, although recent research have also shown confusion between the roles of the null and alternative hypotheses and misunderstandings related to the sample statistics and its distribution. The statistical test controversy has recently increased within some professional institutions, and scientific journals, which are suggesting important shifts in their editorial policies regarding the use of statistical significance testing. Statistical educators, cannot ignore this controversy and the problems of finding the way of introducing the fundamental ideas of inferences to our students as well as to the general public. The aim of this session was to identify critical points where more research on statistical misconception, as well as changes in the teaching are needed to contribute to the correct application of statistical inference in professional and scientific work. The following papers were presented in the session by IASE members:

1. *"Teaching Hypothesis Testing. Can it still be useful?"* Henrik Dahl (Norway). Recently statistics has become a part of the curriculum in secondary schools in Norway including Testing Hypotheses and Interval Estimation. The introduction of these topics has not been without controversy. Because of this the Norwegian Statistical Society in 1996 formed a committee in which Henrik took part to evaluate the different textbooks. One criticism were the lack of interesting applications of the theory. Henrik discussed teaching key concepts, teaching problems and suggested some meaningful examples that can help students to understand basic concepts behind statistical tests.

2. *"Some empirical evidence on learning difficulties about testing hypotheses."* Angustias Vallecillos (Spain). In spite of the numerous references to the problems derived from incorrect uses of statistical tests or from misinterpretations of their results by experimental researchers in different areas, the educational world has remained detached from them until now. In her paper Angustias presented a survey of educational experimental research on this topic, as well as a summary of the results in her own comprehensive assessment of undergraduates' learning difficulties concerning statistical tests. She pointed to some difficulties and errors that underlie the problems described and should be taken into account to improve the teaching and learning of the topics. Students' conceptions about key concepts in statistical tests were also described.

3. *"Beyond the significance test controversy: Prime time for Bayes?"* Bruno Lecoutre (France). To solve the paradoxical situation around statistical tests, Bruno suggested it is time for a positive agreement of procedures that bypass the common misuses of statistical tests. He suggested that the Bayesian philosophy should become an attractive challenge for the scientists, the applied statisticians and the statistical instructors of the 21st century,

In his reaction, Emeritus Professor Paul K. Ito, (Japan) pointed out that the contrivency in fact has three different levels: theoretical statistics (Fisher, Neyman-Pearson and Bayesian inference), applications of statistics (what type of data analysis should we admit in scientific research and published papers) and teaching (when, how and to which extent should we teach statistics). The three levels are in fact interrelated, because our epistemological position affects our applications and our teaching of statistics. Professor Michael Capobianco (USA) provided other significant teaching examples and in his reaction added some other points, such as the difficulty in understanding independence and the philosophical problems around confidence intervals.

The discussion following was very lively and interesting with many questions raised from the audience, concerning different philosophical, psychological and didactical problems around statistical inference. We think that this topic still needs a lot of research on the part of statistical educators.

IPM 59. Teaching and training multivariate data-analysis
Organiser/Chair: Helena Bacelar Nicolau (Portugal)

This session aimed at showing, comparing and discussing different experiences and ways in which Multivariate Data Analysis (MDA) has been taught to different kinds of people by teachers / trainers who have been working for a long time on the MDA methods in different domains. The session consisted of four papers.

The first paper, *entitled "Introduction à la classification en Sciences Humaines"*, was presented by Georges Le Calvé (France) who described his way to teach in an introductory course on cluster analysis for students in human sciences. Despite their usual weak background in mathematics, these students seem quite prepared to easily go from analysing (data) and learning from real examples what a cluster is, to understanding an abstract notion (distance), since they follow the same kind of reasoning in behaviour sciences. Then they are able to go further, discuss and find solutions to more complex problems of cluster analysis domain. The whole course is conducted by the way of examples.

Then Peter G. Bryant (USA) talked about *"Discussion, debate, and disagreement: teaching multiple regression by case discussion"*. Peter reported his recent experience in giving courses in statistics in business schools, where he is using the classroom time for debate and discussion rather than lecture, "shifting the emphasis to data and its interpretation rather than focusing on the mathematical techniques involved". The paper particularly focused on teaching multiple regression by emphasising case discussion. Description of the course and the students, the case discussion approach and the results from applying it were presented, in a rather vivid talk, where the speaker promoted (provoked) comments and debate from and among the participants in the session.

The third paper, presented by Hans-Peter Baeumer (Germany) focused on *"Teaching multivariate data analysis in the fields of Biology and Ecology"*. Baumer pointed out the relevant role of MDA in these areas, and therefore on the teaching of MDA with a strong component of emulated solving of real world problems. He further pointed out that techniques to teach in a MDA course at the university - spatiotemporal techniques, for instance, should already be successfully applied to real world problems in Biology and/or Ecology and must be implemented in some easy-to-use statistical software systems. An applications-oriented approach how to efficiently collect experimental data as well as how to reliably analyse multivariate data obtained in laboratory and field experiments "that meets the requirements Biologists and Ecologists are confronted with in their profession" was described.

The last speaker was Kameo Matusita (Japan) who presented *"Some remarks in teaching the correlation coefficient"*. By choosing and discussing several suitable counter-examples, he stated some important "matters to be attended to in teaching correlation coefficient". He showed some important mistakes that can arise from (mis)interpreting correlation coefficient values, strongly advising that such kind of studies should be taken into account when teaching and training data analysis, especially MDA methodology. Kameo also referred to graphical representations for instance, as adequate tools to help and clarify data analysis problems and to avoid bad statistical interpretation, also when looking to output of specific statistical software. A simulated comparative study between affinity coefficient and the correlation coefficient in the Gaussian case was presented.

The remainder of the session was devoted to discussion by F. Nicolau (Portugal) followed by a rather enlarged and rich discussion, debate, and agreement/disagreement of viewpoints among speakers and participants. These included the "need of effective and efficient ways for teaching statistics", "what about text books and available software", "need of a syllabus and database of basic notions on cluster analysis", "multimedia auxiliary materials and knowledge of new technologies behind new approaches to teaching MDA", "training teachers", "role of classification and data analysis societies" and "preparing one's mind for full citizenship and democracy".

No doubt that MDA methodology is receiving an increasing interest on the part of researchers and teachers. The organiser feels that this session must be only the beginning of a continued and deeper work on teaching and training MDA, in order to better analyse and find solutions to students' difficulties in the topics, as well as to improve didactic approaches for MDA. It is our intention to pursue in this way.

IPM 60. Statistical education using flexible learning approaches.

Organiser /Chair: Agostino Di Ciaccio (Italy)

Two papers were presented at this invited paper. The third paper included in the program of the session, untitled "*Teaching statistics with Internet: a survey of available resources and the St@tNet Project*", was not presented due to the state of health of the author Gilbert Saporta allowing more time for the other two speakers to present their papers and giving more time for questions and comments. Any interested people can find Saporta's motivating paper, showing the available resources in INTERNET for the teaching of statistics, in the proceedings of the conference or at the conference web site <http://www.stat.fi/isi99/proceedings.html>.

James B. Ramsay (USA) gave one of the keynote addresses, entitled "*Why do students find statistics so difficult?*" James is a brilliant speaker and his talk was very stimulating. He outlined that a main problem in learning statistics is that statistics and probability theory are essentially acausal. Students find more difficult to understand statistics than other cognate disciplines such as physics, chemistry, biology and economics, because these disciplines are inherently casual. Starting from this consideration he tried to deduce the implications for the teaching of statistics together with practical suggestions for their implementation.

The second interesting paper was by Deborah Nolan and Duncan Temple Lang, titled "*Multimedia Statistical Labs & Toolkit (TILE)*" and presented by Deborah Nolan. The TILE project consists of two parts: statistics labs that are designed to teach students how to think critically (and statistically) about quantitative problems that are real and important to them; a toolkit, which provides a flexible and extensible environment where instructors can develop portable teaching applications. Deborah showed some instructional labs which use multimedia to create an interactive and applied setting where students learn the important statistical concepts. Exercises, simulations, problem solving and even animated adventures and puzzles are used to involve the students.

Gianfranco Galmacci (Italy) and Juha Puranen (Finland), were the two discussants of the session. Several other participants to the session contributed with questions or comments and the discussion was lively and interesting. Concerning the paper of James Ramsay it was argued that there are also other components which make statistics so difficult for the students and some participants talked about their personal experience. There was several positive comments on the innovative project TILE presented by Deborah Nolan, however it was observed that more research should be carried out to evaluate the efficacy of this kind of tools in the teaching of statistics.

IPM 61. Statistical education for life

Organiser/Chair: Brian Phillips (Australia)

This session invited professionals from different parts of the community to discuss applications of statistics in their fields and to suggest how the general statistical education of the community may be improved so that people can better use statistical information to help them make decisions about issues which affect their lives.

Mary Gray's paper (USA) *Justice by the numbers: Educating judicial decision makers* which was presented by Hasan Hamdan, gave an insight into the importance of using statistical thinking in the law. She showed how the testimony of statistical experts has become increasingly important in many legal situations including employment cases, criminal cases, insurance cases and antitrust cases not only in United States courts, but elsewhere in the world. However, she observed that judges often have great discretion in deciding what evidence can be admitted and ultimately the validity and weight of such evidence. Given that not only is statistics not well understood by the general public, but in fact may produce anxiety, sound judicial decision making is in real jeopardy if the decision makers cannot be made to understand and evaluate statistical evidence properly. She concluded that although there is no specific code of ethics binding statisticians, general ethical principles would certainly preclude some statistical presentations that have found their way into courtrooms. Similarly, general principles of good teaching would preclude the complex and muddled presentations that too often appear. It is the role of the statistical expert to convince the finders-of-fact that the evidence can be relied upon. Gray claimed that reliability in a forensic context should include sensitivity, quality control, discriminating power and good old-fashioned honesty. Finally she pointed out that this last point depends on nothing more than what every good teacher knows: giving the listeners a sense of contact, clarity and confidence along with lack of evasions and not undermined by superciliousness or arrogance.

Vincenzo Lo Moro (Italy) presentation titled "*Official statistics and the outside world*" discussed the issue of the increasing demand for official statistics from National Statistical Institutes and the satisfaction of the users in the workplace with the information and service they receive. This paper aimed at suggesting an evolutionary model for

statistical education required by the increased consumption of official statistics. Vincenzo outlined recent developments of statistics supplied by NSIs and gave an assessment of a user satisfaction. A theory of the relation between the increased availability of statistics and statistical culture was suggested along with the realisation that a more detailed and structured in-field analysis of this relation should be done (even a cross-sectional analysis involving NSIs at different stages of development of their relation with the outside world). Statistical education is based on learning, techniques, approaches, and on becoming familiar with handling statistical data. However, statistical information becomes necessary only later in life, when official statistics data are required to work and to establish relations. Strategies to reduce the disappointment of users of statistics were discussed.

Amanda Burls (UK) presentation on "*Childhood leukaemia - communicating with a worried public*" involved a case-history of an attempt by a local health authority in the U.K. to deal with high levels of public anxiety about a cluster of childhood leukaemia in Northampton by a risk communication strategy. Amanda explained how in similar circumstances of intense public demand and extensive adverse publicity, health authority's usually respond by setting up, predictably inconclusive, epidemiological studies. However, despite intense public, political, media and management pressure to do just this, her team chose rather to educate the public about disease clusters and the limitations of epidemiological methods. This involved working with the community and media and producing a written report for parents and later working with the BBC to produce programmes on disease clusters. The conference presentation involved the excellent use a powerpoint presentation which included video clips of television coverage to illustrate aspects of the approach taken which could not be adequately captured in the written word. The report received a very positive response from an external peer review and was adopted and published by the health authority in January 1996. Evaluation shows that it has been partially successful. A BBC2 documentary, *Anxiety Attack 2 - Street of Doom*, was also produced in response to this report and is being used as part of the teaching programme in the Royal Statistical Society and in a number of UK universities. The report is available on the Northamptonshire Health Authority's website <http://www.northants-ha.anglox.nhs.uk>.

In the discussion John Pidgeon (Australia) and Helena Bacelar-Nicolau (Portugal) commented how contacts between statistical methodologists and users, or potential users, of statistics must be continually improved and that such a goal can be accomplished by developing co-operation among institutions. They saw that all papers pointed out the need of statistical education of different kind of people, at different levels, then discussed a number of aspects of the talks.

IPM 62. Issues involved in the assessment and evaluation of student learning of statistics

Organiser: Joan Garfield (USA) Reported by Joe Wisenbaker (USA)

The first of the three papers was given by Susan Starkings (UK) "*How to assess large groups with the minimal amount of resources but preserving quality*". Susan considered the advantages and disadvantages of three different approaches to assessing student learning in the context of large classes: multiple-choice exams, group work and in-class presentations. These were viewed from the perspectives of diagnostic, formative and summative assessment. Attention was devoted to the level of effort and preparation required on the part of the instructor, the depth of knowledge that can be ascertained, and difficulties posed for the student. It was emphasized that, while all three approaches offer distinct advantages, no one approach should be recommended under all circumstances. The instructor must make judicious choices with a clear idea about the kind of information they are desire.

The second paper "*A model of classroom assessment in action: using assessments to improve student learning and statistical reasoning*" by Beth Chance, Joan Garfield and Robert delMas (USA), presented by Beth Chance, provided an in-depth examination of an on-going study of the effectiveness of a computer simulation activity focused on constructing and visualizing the concept of sampling distributions. The perspective on assessment that guided their work was directed toward the long term improvement of their computer program and a search for critical features that might serve to enhance students' understanding as assessed through graphics-based test items. While they have been able to alter student activities to enhance the understanding of sampling distributions, considerable student variation and misconceptions remain. Their current work examines the role of lecture-based instruction on the concept, degree of student task engagement, time invested and the number of predictions asked of the students. It was emphasized that instructional goals must play a large role in shaping the assessment of student knowledge.

In the third paper "*Assessment in statistics using the personal compute*" by Giuseppe Cicchitelli, Francesco Bartolucci and Antonio Forcina (Italy) Giuseppe Cicchitelli reported on the development of a computer-based assessment system in introductory statistics courses involving true-false items and latent trait modeling. This was developed in an effort to supplement an existing approach relying exclusively on oral examinations. A central feature

of the testing model employed is a large item bank with individual items calibrated with respect to item discrimination and difficulty. Items are blocked and presented by personal computers to students in either a preselected order or by random selection. The authors report good agreement between grades assigned to students by the computerized testing process and by the traditional oral examinations. They see this form of testing as providing a useful aid to the oral examination permitting the selection of more probing questions in that context. It also provides a data base that permits an examination of particular student misconceptions allowing an informed effort to alter instruction. Possible lines along which this system can be improved include the introduction of multiple choice items, items that may be presented conditional on responses to other items, and the implementation of an adaptive testing approach.

In the discussion by Dani Ben-Zvi (Israel) set forth another framework within which the papers could be categorized. This included considerations of alternative assessment practices with a strong emphasis on their purpose: program evaluation, monitoring student progress, evaluating student achievement, or institutional decision making. He emphasized the need to combine new methods with the old in the service of improving available information, to view students as active participants in the evaluation process, and to be aware of new developments in assessment.

In her discussion Gilberte Schuyten (Belgium) focused on the paradigmatic and pragmatic differences underlying each paper. In particular, she looked at the why, who, what, when and conditions of assessment considered by the authors. While each of the papers was seen as offering valuable thoughts on assessment, they all varied in many respects from the standpoint of the perspectives from which they were written.

The audience's concerns included the level of technical resources required to implement some of the mentioned instructional and assessment practices as well as a call to bear in mind the considerable degree of diversity among our students and instructional goals that should be considered in the context of selecting assessment approaches.

IPM 63. Visualisation as an educational tool

Organiser/Chair: Larry Weldon (Canada)

The paper by Thomas Bradstreet, USA on "*Graphical Excellence - The importance of sound principles and practices for effective communication*" emphasized that statistical education needs to take this responsibility more seriously than in the past, since graphics are no longer merely a frill to supplement numerical results but rather a basic form of quantitative communication. Careers can depend on it.

Hans-Joachim Mittag's, (Germany) paper "*Emphasizing visualization and activities in teaching introductory statistics by interactive multimedia*" demonstrated his multi-media statistical education computer package and talked about the pedagogic principles underlying it. He showed how to combine graphics with optional text buttons to provide students with diverse preparation information at the appropriate level. The use of sound, real data sets, and pictures, was also included to stimulate interest. The package was proposed as a way to make statistics more attractive to students. Project information and a demo version is at <http://www.fernuni-hagen.de/STATISTIK> (in German)

Clovis Peres (Brazil) spoke on "*Visualization for teaching all steps of data-based scientific research*". He proposed that an additional emphasis on the scientific method, with its circular pattern of objective ---> data ---> conclusion ---> reconsideration of objective, would help students to bridge the gap between their technical learning and the needs of the scientific world.

Andrej Blejec (Slovenia) discussed the papers with the following emphases: He agreed with Bradstreet's theme and especially the idea that a spectrum of objectives exists for graphics, from analytical tools at one extreme to presentation graphics on the other extreme. We need to make students aware of this spectrum as well as give them detailed training in how to choose details from graphing options. On Mittag's talk, Andrej commented on the fact that everyone understood the graphics side of the display, but the German wording on the other side was accessible to a smaller group. This pointed out the need for large budgets and international cooperation in the development of this kind of teaching tool. Concerning Peres' talk, he recognised that the use of consulting projects for teaching does help students to become aware of the way statistical problems are presented in the real world.

IPM 42. Statistical training of people working in and with official statistics.

Co-organised by Carol Joyce Blumberg (USA) (Representing IASE) and René H. M. Smulders, (Netherlands) (Representing IAOS, International Association for Official Statistics).

The first paper presented was "*The dissemination of statistical literacy among citizens and public administration directors*" by Luigi Biggeri and Alberto Zuliani (Italy). Biggeri and Zuliani began by pointing out that the fight against illiteracy has achieved considerable success in the 20th century under the leadership of UNESCO. But, numeracy, and in particular statistical literacy, has received little attention. They define statistical literacy as "the capacity of applying statistical reasoning and interpreting statistical information." All citizens need statistical literacy to be able to understand "everyday life", to make rational decisions, and to have social control over public policies. Further, there is a need for a statistical culture among policy makers in both the public and private sectors, as well as among the mass media and teachers at the primary and secondary levels.

They then examined the statistical literacy needs of various users and recipients. Hence, the dissemination of statistical literacy is one of the most important challenges for the 21st century. It is vital that academic and official statisticians, national statistical societies, and the ISI be involved in these dissemination efforts. A strategic plan needs to be developed, with detailed objectives and actions, that includes the implementation of a pervasive educational process both in schools and in society. The paper concluded with the actions carried out thus far by ISI globally, including the launching of the World Numeracy Programme, and by SIS (the Italian Statistical Society), Istituto Nazionale di Statistica (ISTAT) and the Ministry of Education in Italy. In Italy, these included a national conference in 1997, a "Census of Children" to be carried out in 1999 to 2001, seminars for journalists and various public administrators, and the preparation of materials for the public in print, on television, and on the Internet

The second presentation was the "*Impact of the internet on Official Statistics: New opportunities and dilemmas for training*" by Lea Bregar and Irena Ograjen_ek, University of Ljubljana, Slovenia. The focus of this presentation was the Course on European Economic Statistics (CEES) which the authors developed in co-operation with TES (Training of European Statisticians) Institute and colleagues at the University of Ljubljana and in Sofia, Bulgaria. This on-line course uses the Internet and hyper-media to help increase the quality and efficiency of users' access to information, flexibility for exploring and using official statistics, and integration of learning experiences and knowledge. Topics covered include: Statistical Units, Classifications, Registers, Systems of National Accounts, Index Numbers, Population and Labour Force Statistics, Enterprise Statistics, and Uses of Statistics. A course modularization approach was used that combined both linear and non-linear study paths. Finally a discussion was held of the results of the pilot course delivery early in 1999 using both a distance education format (with 175 students) and a virtual classroom (with 10 students). It was found that although the students were very motivated, they found it hard to study independently and relied more heavily on the teacher than the authors expected.

The third paper in the Meeting was "*New and emerging demands for statistical training in response to user needs: Meeting the human resource challenge in the Caribbean*" by Linda Hewitt, University of the West Indies, Trinidad. Hewitt began her presentation by explaining how market globalisation and the increased use of computers and other technologies have made it vital for the Caribbean (and other developing regions) to produce useful economic, demographic, and social statistics. Yet, at the University level statistics is still not regarded as a priority area and not even given a status similar to that of Economics, Engineering, the Natural and Medical Sciences or even the Humanities. Even though the students must complete a course entitled "Statistics and Scientific Method", it is considered an albatross that must be off-loaded for the students to complete their degrees. Although some effort is being made to make the University programmes match the requirements of the workplace, much more ought to be done to train students to be proficient in the application of statistical methods as a decision making and management tool. Another problem in the Caribbean is that the University of the West Indies has a very strict matriculation policy. Hence, people with practical experience in the statistical field cannot gain admission to the University to increase their statistical skills and make them competitive with the new University graduates. Another problem in the Caribbean is the lack of an intermediate training institution similar to those available in the European Community. The presentation ended with a discussion of the economic obstacles that make the creation of a statistical culture hard in the Caribbean. Complacency and the decreased status of the various national and regional statistical offices are additional obstacles.

The second half of the Meeting was devoted to comments by two discussants, responses by the presenters to the discussants' comments and approximately 30 minutes of audience questions and comments. The first discussant, Jayanta K. Ghosh (India) (USA) was asked to focus his comments on the paper by Biggeri and Zuliani. He began

by saying that he liked their definition of statistical literacy better than the usual dichotomy of "descriptive" versus "inferential" statistics, although the usual dichotomy has the advantage that it forces one to consider the distinctions between sample and population, between data and model, and between error and uncertainty. He also pointed out the emphasis in the paper on different courses at different levels is an important one. He also expressed the hope that the World Numeracy Programme will be able to begin to have a visible impact.

Paul Cheung (Singapore), the second discussant, focused on the papers by Bregar and Ograjen_ek and Hewitt. He started by saying that Hewitt's points are equally relevant in Singapore and other small countries. He then emphasised that academic statistics programs must do more to help prepare their graduates to fit the needs of the National Statistics Offices (NSOs), while at the same time making sure that statistical education and training does not degenerate into the mere teaching of statistical packages with little theoretical content. He was also excited by the development of virtual courses, such as the one Bregar and Ograjen_ek described. He ended his comments by saying that although formal educational institutions and training institutes have an important role to play in basic statistics education, NSOs must be involved in the continuing education of the public and of statistics professionals

IPM 6. Statistical literacy: Panel discussion.

Chair: Luigi Biggeri (Italy), report by Carol Joyce Blumberg (USA)

IASE members were also involved in a panel dissemination of statistical literacy among citizens and public administration directors. The panellists were Oladejo O. Ajayi (Nigeria), Carol Joyce Blumberg (USA) who replaced Miguel Cervera (Mexico), Maria Gabriella Ottaviani (Italy) and Martin Podehl (Canada).

Panellists gave 10 minute presentations on what their countries, primarily through their national statistics offices and national statistics and mathematics societies, were doing in terms of statistical literacy. Comments were also made on what each thought were the biggest accomplishments have been made so far. Further, panellists addressed what they saw the future needs to be in terms of statistical literacy and how what was needed towards accomplishing them. There was then a lively discussion for approximately one hour with many of the members of the audience participating. There was a wide diversity of opinions about the future needs and ways of accomplishing the needs. It is clear that Statistical Literacy is an important issue since this Invited Panel discussion was extremely well attended by those interested in statistics education, in official statistics and other areas.



Net Cafe at ISI-52



INTERNATIONAL ASSOCIATION FOR STATISTICAL EDUCATION

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Please bill me I enclose a cheque for _____ payable to the ISI

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Association Internationale pour l'Enseignement de la Statistique

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IASE Statutes

The IASE executive consists of six elected members, the President, President Elect and four Vice presidents. This honorary group, all who have very heavy normal work commitments, has the responsibility of carrying out all the tasks of the IASE. This would be impossible without the help of its members, and it is considered an appropriate time to formally expand the group. Also it is considered fitting to have the opportunity to recognise outstanding contributions to the statistical education and the IASE. To do this it is necessary to make some small changes to the IASE statutes which requires several steps. The first was that any ten (10) individual members of the Association agree to the changes. This has been done. Secondly a majority approval at a meeting of the General Assembly was needed, which was done in Helsinki. Finally it is required to have a mail vote of the individual membership. Ratification of the proposed amendments will require a majority of **two-thirds** of all the votes cast.

Hence the Executive recommends you to approve the changes by completing the form below and returning to the ISI:

I support the proposal to amend the IASE statutes by:

- (i) increasing the number of Vice-Presidents on the Executive Committee from 4 to 5; Yes [] No []
- (ii) creating a position for the immediate past president on the Executive Committee; Yes [] No []
- (iii) introducing a category of honorary membership. Yes [] No []

General Questions

To determine your views on general IASE policy or on the products that IASE provides (conferences, publications) we would like to know your ideas on the following:

- (a) Do you think that IASE should work to develop its own hardcopy journal? Yes [] No [] Please tick one

If yes to (a)

Would you be prepared to support such a journal?" Yes [] No [] Please tick one

If so how? _____

- (b) Do you think that THE IASE should develop more specialized small scale topic-specific conferences?"

Yes [] No [] Please tick one

If so give brief details. _____

Please send your responses to
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