International Study Group for Research on
Learning Probability and Statistics

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Notes and Comments

Happy New Year! Thank you for sending in your renewal forms so I now know how many people read the newsletter and find it useful. Once each year, usually, in May, I will include in the newsletter a full list of members' name and addresses. If anyone needs a list sooner I will be happy to send you my current roster. I am still considering a "theme" issue in May on assessment. If you have any notes, comments or relevant papers, please send them to me by April 1, 1991. Thanks.

Papers at ICOTS III: Several members requested copies of the set of research paper presented at the Third International Conference on Teaching Statistics (ICOTS III) in new Zealand last August. The cost of printing these papers is $15.00 (US) and the postage is $1.65 within the US, $1.84 to Canada and $6.84 overseas. If you would like to purchase this set of papers, please send a check or money order for the correct amount in US dollars to the General College, University of Minnesota.

Recent Papers of Interest

Romano Scozzafava from Universita "La Sapienza" in Rome, Italy; sent me copies of two of his papers. "A Project of Merged Approach to the Teaching of Probability and Statistics in the Italian Secondary Schools" was presented at ICOTS. This paper describes a teaching approach based on subjective probability and Bayesian statistics, which allows teachers to a achieve even in a short time, the most important aspects of statistical thinking. A second paper, "A Merged Approach to Probability and Bayesian Statistics" further describes this teaching approach.

A. Pesci and M. Reggiani have sent me a copy of their new book, Statistics and Probability in the Junior Middle School: A Didactic Proposal. This is a handbook for middle school teachers, both to help them learn (or re-learn) topics in probability and statistics and to help them teach students.

Copies of this book are available by writing to the authors at: Dept. of Mathematics, University Str. Nuova 65, 27100 Pavia, Italy. E Mail: DIPMAT @ IPVIAN.

PME Papers

In reviewing the proceedings of the fourteenth PME Conference held in Mexico las summer, I found three papers describing research on learning probability. They are:

"Probability Concepts and Generative Learning Theory," by Ole Björkqvist, Åbo Akademi, Vasa, Finland.

Abstract: Earlier research finding s on probability concepts are interpreted within the framework of the generative learning model. The interpretation is make with reference to the processes of the model, to the function of long ten memory, or to compartmentalization of long term memory. The social constructivist philosophy is adhered to through emphasis on viable knowledge.

"Some considerations on the Learning of Probability (ages 10-11 and 14-16) by Ana Maria Ojeda Salazar, King's College, London, Centre for Educational Studies,England.

Abstract: In this work we examined the consistency of answers to groups of questions along the analysis of a discrete random situation posed to British children aged 10-11 and 14-16 years. In the experimentation, the situation was presented to the pupils in two slightly different contexts. First the older children, another variable was whether or not they had had a previous introduction to probability. Among our general hypotheses there was the influence of the context in the answers to groups of questions concerning impossible, certain complementary and compound events and conditional probability.

"Gambling and Ethnomathematics in Australia" by Robert Peard, Dept. of Math, BCAE, Queensland,Australia.

Abstract: the phenomena of gambling is widespread throughout Australian society. Thus we have an identifiable subgroup of the population for whom gambling, particularly on horse-racing, constitutes a form of "ethnomathematics." Children form this group bring probabilistic knowledge with them to the school environment. This study researches what this knowledge is, how it is constructed and used, and the implications of this in the school system.

Statistical Education

A workshop on statistical education was described in the November issue of Amstat News, the monthly newsletter of the American Statistical Association (ASA). The author, Robert Hogg described a 3-day workshop held last June in Iowa, sponsored by ASA, the University of Iowa and other agencies. Problems with statistical education are described and in particular problems with introductory courses. Suggestions are given, including which topics are most important for a first course. Several items were suggested to ASA and the statistical profession to consider to help improve the teaching of statistics. Learning from or initiating research on the learning and teaching of statistics is never mentioned. A future issue of American Statistician will also discuss these issues.

Information About Members

Anne Hawkins has moved to a new post as Research Fellow/Lecturer in Medical Statistics and Epidemiology, specializing in AIDS/HIV research. Her new address is:

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Andrejs Dunkels e-mail address is:

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Claude Gaulins' correct e-mail address is:

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Arnold Well's e-mail address is:

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Georg Schrage's e-mail address is:

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Meral Aksu's e-mail address is:

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Ann Roseberry has left BBN and is now working at TERC. Her new address is:

TERC
2067 Massachusetts Avenue
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Bertram (Chip) Bruce has also left BBN. He is now at:

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P.H. Cheung is now a lecturer at the University of Hong Kong. His new address is:

Dept. of Curriculum Studies
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Khoon Yoong Wong has left Singapore and is now at:

Science and Mathematics Education Centre
Curtin University of Technology
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E-Mail: NWONGKY@cc.curtin.edu.au

New Members

We have two new members.

Susan Friel, Mathematics and Science Education Network, University of North Carolina, CB #3345, 201 Peabody Hall, Chaper Hill, NC.27599-3345 USA.

Fancher Wolfe, Metropolitan State University, 730 Hennepin Avenue, Minneapolis, MN 55403 USA

Other Information

The proceedings of the 1988 ISI roundtable conference on Teaching Statistics may be purchased for $30 (US) from the International Statistical Institute, 428 Prinses Prinses Beatrixlaan, P.O. Box 950, 2270 AZ, Voorburg, the Netherlands. In this volume, Anne Hawkins has recorded the dialogue and exchanges between curriculum experts, teachers, and researchers directly involved in training statistics teachers. Also included are the keynote papers.

Pete Wilder is a student at the Institute of Education in London who is researching the use of STELLA as a modeling tool to help students of probability and statistics apply theory to real world problems. He would like to make contact with anyone using STELLA or similar dynamic, modelling software, in the area of probability or statistics education.

E-Mail address: TEUEPJW@IOE.LON.AC.UK

Continuing Dialogue on Andrzej Matuszewski's comments on teaching statistics.

From Andrew Ahlgren:

Regarding Matuszewski's caution about bi-variate perspectives being as dangerously misleading as uni-variate perspectives: multi-variate perspectives carry their own set of dangerously misleading aspects-including gross exploitation of type-I errors and misleading weights that result from correlated independent variables.

From Matuszski, addressing Anne Hawkins' comments in the September newsletter:

Yes I appreciate MULTIVARIATE methods. I know that some semi-statisticians use them correctly. Persons with NO statistical expertise, however, who use multivariate statistical software are like children with explosives.

Multivariate methods may serve as mirage which can be obtained after a long run. Certain appealing features of selected such methods can be taught therefore even in the very basic courses. That is a challenge for our Group.

The obvious reason against even trivariate methods are paradoxes. Even professional have troubles to explain or sometimes to understand them.

I want to stress once again that BIVARIABILITY does not mean triviality. There exits strong mathematical background behind bivariate methods (one-way ANOVA can be treated as such e.g.) The problem: linear vs. non-linear correlation is very complicated too and I believe is quite practical.

The important problems (there exists a relation between them): 1/ which method to choose: parametric (generally based on normal distribution assumption) or nonparametric, for a given data? 2/ can ordinal variables be numerically scaled or not? should be taught within the bivariate analysis framework, too. Most appropriate data analysis situation to pose these problems is the two-sample data to establish the difference in location. Both cases: independent and dependent samples, can be handled with two variables.

For direct contact with Andrejs, his address is: Institute of Computer Science, PkiN P.O. Box 22, 00 901 Warsaw, Poland. e-mail: DABROWSK@PLEARN

New Column in Teaching Statistics

David Green, editor of Teaching Statistics has asked me to write a regular "research report" for this journal. My first column described recent conferences where research papers on learning probability and statistics have been presented, along with information on relevant papers.

My second column summarizes recent reviews of research of learning probability and statistics. In future columns I plan to describe the current activities and findings of different research groups, such as the people at Bielefeld (Biehler, Scholz and Steinbring), and at the University of Massachusetts, Amherst (Falk, Konold, Pollatscehek, and Well). If anyone would like copies of the columns I'll be happy to send them out to you.

The next issue of this newsletter will be sent out in May, 1991. Have a good new year!