

**NEWSLETTER OF THE  
INTERNATIONAL STUDY GROUP  
FOR RESEARCH ON  
LEARNING PROBABILITY  
AND STATISTICS**

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Should we be doing more? Should we revise or add to our list of aims?

It is time to update the membership list again and find out who is still reading these newsletters and wants to continue to be on the mailing list. Postage costs are getting high so I would like to delete from the list anyone who does not want to continue receiving the newsletter. Please drop me a note in the mail or on e-mail by January 1, 1993 if you **DO** want to stay in this study group. Please let me know any changes in address: regular mail and e-mail. I will be putting together a membership list with complete addresses to include in the January newsletter.

It is now five years since I took over as secretary and newsletter editor for this group. I think its a good time to review the original aims of the group, which are:

1. Promotion of the exchange of information between members
2. Encouragement of research activity by members
3. Development of probability and statistics concepts instruments
4. Improvement in the teaching of probability and statistics by dissemination and interpretation of research findings to educators.
5. Organization of meetings

Here is a summary of what we have accomplished in the past five years. I have produced the newsletter three times per year, describing current papers and projects of members as well as information about other articles and projects I hear or read about.

I know that members have contacted each other for additional information when it is of interest, and I have often mailed copies of papers and articles sent to me to other members. We have had one meeting, at ICOTS 3 in New Zealand, and will meet again at ICOTS 4 in Morocco. We informally published a collection of research papers from the ICOTS 4 meetings, and have had one "theme" issue of the newsletter on assessment.

Let me know if you have any thoughts about what this study group should be like for the next five years. Also, I do not want to dominate this position, so if anyone else would like to be secretary and newsletter editor, please let me know. I will summarize the reactions I get for our next newsletter.

#### Call for Information from Members

If you have written any papers, given a presentation, or are working on a project that would interest this group, please send me copies of the papers or summaries of the projects so I can include that information in the next newsletter. (I know many of you gave papers at ICME, the ISI roundtable, or PME this summer, so please, send me copies!)

#### New Members

I would like to welcome the following new members to the study group:

**B. Bonnie Baranowski**  
Cambridge College  
15 Mifflin Place  
Cambridge, MA 02138  
USA

**Van Bowen**  
Mathematics and Computer Science  
University of Richmond, VA 23173  
USA

**Chris Brien**  
School of Mathematics  
University of South Australia  
North Terrace  
Adelaide  
South Australia 50000

**Kevin J. Keen**  
Department of Mathematics  
Royal Roads Military College  
FMO Victoria, British Columbia  
Canada V0S 1B0

**Vee Ming Ng**  
Mathematical and Physical Sciences  
Murdoch University  
Murdoch, WA 6150  
Australia

**David Sylwester**  
Department of Statistics  
Stokely Management Center  
College of Business Administration  
University of Tennessee  
Knoxville, Tennessee 37996-0532  
USA

#### Publications and Presentations of Members

**Iddo Gal** sent me a copy of his paper which was presented at the recent ISI roundtable in Lennoxville, Canada. His paper is titled: "Reaching out: Some issues and dilemmas in expanding statistics education." This paper, based on Project STARC, examines key aspects of current approaches to statistical education, observes areas where existing approaches are inadequate, and reviews recommendations for teacher development.

**Clifford Konold and Ruma Falk** sent a copy of the paper they presented at the 16th International Conference for the Psychology of Mathematics Education (ICME) in August. Their paper was titled "Encoding difficulty: A psychological basis for 'misperceptions' of randomness."

**Abstract:** Subjects' ratings of the apparent randomness of ten binary sequences were compared to the time required to memorize those same sequences. Memorization time proved a better predictor of the subjective randomness of the ratings than measures of the "objective" randomness of the sequences. This result is interpreted as supporting the hypothesis that randomness judgments are mediated by subjective assessments of encoding difficulty. Such assessments are seen as compatible with the information theorists' interpretation of randomness.

**Manfred Borovcnik** presented a paper at ICME in August, "Intuitive strategies for teaching probability

and statistics," based on his recently published book (described in the May newsletter).

**Joan Garfield** led a roundtable discussion at the American Statistical Association (ASA) in August on using cooperative learning activities in statistics classes. She has copies of a handout with some references and suggestions for using cooperative groups.

The paper by **Efraim Fischbein** and colleagues which was described in the May newsletter, "Factors affecting probabilistic judgments in children and adolescents" appeared in *Educational Studies in Mathematics*, Vol 22, 523-549, 1991.

**Ruma Falk's** paper, "A closer look at the probabilities of the notorious three prisoners" was published in *Cognition*, Volume 43, 197-223, 1992.

#### Other Articles of Interest

"The effect of simulation software on students' attitudes and understanding in introductory statistics" by **Joan Sterling** and **Mary Gray**. *Journal of Computers in Mathematics and Science Teaching*, Vol 10 (4) Summer 1991, 51-56.

**Abstract:** Although the use of software has become widespread in elementary statistics courses, there has been little formal evaluation of its effectiveness. In this experiment with the use of software, primarily for simulations in an introductory statistics course, effectiveness was measured in two ways: whether students did better on examinations and whether they believed that the software was useful. Results showed that students did significantly better on the examinations and that about half of them considered the software to be useful. However, even among those who believed that the software was helpful, many objected to the extra time involved.

"The case for rules in reasoning" by **Edward E. Smith**, **Christopher Langston** and **Richard E. Nisbett**, in *Cognitive Science*, 1992, 16, 1-40.

**Abstract:** A number of theoretical positions in

psychology— including variants of case-based reasoning, instance-based analogy, and connectionist models— maintain that abstract rules are not involved in human reasoning, or at best play a minor role. Other views hold that the use of abstract rules is a core aspect of human reasoning. We propose eight criteria for determining whether or not people use abstract rules in reasoning, and examine evidence relevant to each criterion for several rule systems. We argue that there is substantial evidence that several different inferential rules, including modus ponens, contractual rules, casual rules, and the law of large numbers, are used in solving everyday problems. We discuss the implication for various theoretical positions and consider hybrid mechanisms that combine aspects of instance and rule models.

### Statistical Education Projects in North Carolina

STAT-MAPS, Statistics Materials and Activities for Problem Solving is a new NSF-funded project at Appalachian State University in North Carolina. Directed by Mike Perry and Gary Kader, STAT-MAPS is developing and testing a comprehensive secondary curriculum in statistical education based on active learning through applications of statistics. The curriculum stresses exploratory and experimental approaches to learning and emphasizes the role of statistics in society.

Two related projects also directed by Perry and Kader are SIM-PAC, "Simulations in Mathematics-Probability and Computing" which developed instructional strategies for learning probability concepts through the study of computer simulation models, and STAT-LINC, "Statistics Leaders in North Carolina" a teacher education project developing a model for teacher preparation in statistics.

For more information on any of these projects, contact Perry at perry1m@conrad.appstate.edu or Kader at kadergd@conrad.appstate.edu

### Data Visualization

In the *NCRMSE Research Review* (a report from the

National Center for Research in Mathematical Sciences Education at the University of Wisconsin), there is a review of *Learning and Testing Mathematics in Context: The Case of Data Visualization*, by de Lange, van Reeuwijk, Burrill and Romberg (1992). The book describes a prototype unit prepared by Dutch mathematics educators which was piloted at a high school in Wisconsin. The unit on data visualization was designed to assist students in the development of skills required to use critically the statistics presented by the media, using a series of problems built around a context or theme. Appropriate assessment activities were designed to motivate students by providing them with feedback on their progress. Both the unit "Data Visualization" and the book describing the implementation of this unit, are available from Wings for Learning: Sunburst Catalogue (phone: 800-321-7511).

### New Journal of Statistical Education

An electronic journal of statistical education will soon be available, free of charge, to anyone with access to electronic mail. This journal, initially sponsored by the Statistics department at North Carolina State University and the ASA Section on Statistical Education, will publish (on e-mail) articles related to teaching statistics, primarily at the college level. In addition to refereed articles there will be regular departments such as: "Data Sets and Stories" providing data sets and contexts useful in teaching, "Media Highlights" briefly summarizing pertinent items published elsewhere, and "Reviews" of software, books, and educational materials. There are also plans for an accompanying e-mail discussion group. The first issue of the journal is slated for July 1993. For more information or to find out how to submit articles, contact Jackie Dietz, the founding editor, at dietz@stat.ncsu.edu.

### International Association for Statistical Education (IASE)

A new group within the International Statistical Institute has been formed, and founding members are being recruited. The IASE is devoted to the

development and improvement of statistics world-wide through education and training. If you would like to join, write to: International Association for Statistics Education, c/o The International Statistical Institute, 428 Prinses Beatrixlaan, P.O. Box 950, 2270 AZ, Voorburg, The Netherlands.

#### ICOTS 4

The Fourth International Conference on Teaching Statistics will be held in Marrakech, Morocco from July 25-30 in 1994. I am inquiring into the possibility of holding a one-day research roundtable (as described in previous newsletters) immediately prior to the conference. There will also be a meeting scheduled during the conference for members of this study group.

For further information on the conference, write to: Mr. EL GHAZALI Abdelziz, Chairman of the Local organizing Committee, INSEA, PO Box 6217, Rabat-Instituts, Rabat, Morocco

or,

Pr. Y. ESCOUFIER, Chairman of the Programme Committee, Universite Montpellier II, Science et Technique du Languedoc, Place E Bataillon-34095, Montpellier Cedex 5, France.

**REMEMBER to let me know if you would like to remain on the mailing list for this study group. Otherwise, this is the last newsletter you will receive.**

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