



THE STATISTICS TEACHER NETWORK



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UNITED KINGDOM ANNUAL STATISTICS COMPETITION

In the United Kingdom, teams of pupils and students between the ages of 9 and 19 years are once again taking up the challenge of the Annual Statistics Competition. The projects undertaken reflect the wide range of interests of the competitors themselves. Last year's entries included "A Survey of the Factors Influencing the Choice of Options Made by Third Year Pupils in Preparation for Their Fourth and Fifth Year Examination Courses", which won 500 English pounds for Greenshaw High School, Sutton. This particular study used the database facilities of a microcomputer and serves to show the value of the competition for enhancing not only statistical, but also computer, literacy.

Churchdown School, Gloucestershire, also won 500 English pounds with its entry, "Exposure Stunts Your Growth". This project was an investigation into the effects of prevailing climatic conditions on the growth and nature of algae from different habitats. The team from Devonport High School for Girls, Plymouth, won 250 English pounds for their school for "Crime in School", an analysis of school-based theft and criminal damage reported to the police during the previous two years.

One particularly memorable project from a team in the youngest age range was submitted by four pupils from Penryn School in Cornwall. Entitled "A Statistical Study of the School Drink Machine", this project included an analysis of reasons for the drink

machine's failing to satisfy its customers. After studying their results, the team changed the drink machine's menu and monitored the outcome. It is interesting to note that these young market researchers substantially increased the profitability of the machine.

The latter example also demonstrates the value of the Statistics Competition in permitting pupils to develop important communication skills. The project was refreshingly common sense in its approach. The students used what some might claim were "unsophisticated" statistical techniques, e.g. tables, bar charts, pie charts, etc. Yet these methods were entirely sufficient for the pupils' chosen task.

What of those students who are not destined to become professional statisticians? For all participants, the Competition enables individuals to develop their critical awareness of the scope and strength of arguments, theories, policies, and decisions which are based on numerically expressed evidence. Such practical experience must be invaluable to youngsters who will eventually take their places in the "facts and figures" society in which we live.

-Anne S. Hawkins
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THE SECOND INTERNATIONAL CONFERENCE ON TEACHING STATISTICS

The Second International Conference on Teaching Statistics will be held at the University of Victoria, Victoria, British Columbia, Canada on August 11 - 16, 1986. The object of the conference is to expand on the foundation begun at Sheffield, England, at ICOTS I in 1982. The major objective is to improve the quality of statistics instruction on a world-wide basis with key goals to include fostering international cooperation among teachers of statistics and promoting the interchange of ideas about teaching materials, methods, and content. A panel of international speakers will address the plenary meetings and present invited lectures. There will also be workshops, tutorials, panel and discussion groups, and contributed paper sessions. Opportunities will be provided to see and experiment with the latest in computer hardware and software. Sessions will focus on teaching statistics in the elementary school up to the college level as well as the teaching of statistics for use in government, business, and industry.

ICOTS I and II are the result of the interests and actions of the International Statistical Institute. In 1978, an Education Committee Task Force was established by ISI and charged with organizing a conference on the teaching of statistics which would be international in scope. ICOTS I was the result of the committee's deliberations. With an attendance of more than 400 delegates from over 50 countries, this landmark effort was an outstanding success. Preparations for ICOTS II are well under way, and registration is expected to exceed 1000 delegates.

There will be many sessions featuring short (10-15 minute) contributed papers at the conference. Anyone interested in presenting a contributed paper should contact Bruce Johnson, Department of Mathematics, University of Victoria, Box 1700, Victoria, B. C. V8W 2Y2. Some of the outstanding presentations at ICOTS I were contributed papers, and the

organizing committee is anxious to encourage teachers to share the ideas and techniques which they have found to be successful in the classroom.

As far as recreational activities are concerned, no better site could have been selected. Victoria, quaint and lovely, is called the garden city of Canada. It is a tourist-oriented city as well as a recreational paradise, and a number of social events have been planned for delegates and their families. These include a welcoming reception, the Sooke Logging Show/Dinner/Dance, several tours of local attractions, and a salmon fishing charter. Last, but certainly not least, the world fair on communications and transportation, EXPO 86 "WORLD IN MOTION, WORLD IN TOUCH", is being held in Vancouver in 1986. With more than 80 pavilions and theme plazas featuring space ships, computer cars, and satellites, EXPO 86 will provide a wonderful experience in color, excitement, and activity.

The final announcement for the ICOTS II Conference may be requested from Tom Lietaer, ICOTS II Conference, University Extension Office, University of Victoria, P. O. Box 1700, Victoria, B. C. CANADA V8W 2Y2. For further details, see the articles on ICOTS II written by Jim Swift in the September 1985 and the January 1986 issues of the newsletter. -Ed.

NEW PROGRAMS

A Literacy Program in Probability and Statistics for the New Jersey Schools

Rutgers University, on the initiative of its president, has established a Center for Mathematics, Science, and Computer Education to assist New Jersey school districts in their efforts to enhance student achievement in these fields. The role of the Center is to establish partner relationships between University faculty, school districts, industrial scientists, and concerned community groups.

Since its creation in August, 1984, the Center has undertaken several projects in its role as intermediary between the University, industry, and the community. Prominent among these was the Literacy Program for Probability and Statistics in the Schools which was conducted in the summer of 1985.

In my capacity as Acting Director of the Rutgers' Center and member of the ASA/NCTM Joint Committee, I had the opportunity to bring together the efforts of both groups to the benefit of the New Jersey schools. In this endeavor, the partnership was thus enlarged to include the ASA/NCTM leaders as well as classroom teachers who had participated in the national QL Project and/or the Woodrow Wilson Fellowship Program.

Unlike the Woodrow Wilson and QL projects, the Center group was not primarily concerned with developing materials in probability and statistics for classroom use. Rather, the group chose to focus on the introduction of probability and statistics concepts into the curriculum in the New Jersey school system at all levels. Further, the committee felt that it was important to introduce these concepts quite early by incorporating activity based projects where students gather, record, and examine data; hypothesize; and then make predictions. These early experiences would lay a foundation for the more advanced and complex ideas that would be introduced in later grades. Among other ideas offered was the notion that probability and statistics lend themselves well to concrete problem solving contexts; that concepts should appear in a variety of forms throughout the curriculum in secondary schools; and that a specific course in probability and statistics should be instituted at the secondary level to provide students with the opportunity to synthesize, generalize, and apply the ideas developed in the earlier grades.

Further, the committee recognized the importance of providing materials which would be used in the earlier grades in a form which would invite teacher use, and it was also agreed that the teachers who were potential users of

the materials should participate in their preparation and work cooperatively with the committee. The group indicated that the study of maps, graphs, and tables was an important component of the program because they are commonly used in many disciplines, and their interpretation provides an exercise in critical thinking.

To help achieve these objectives, the decision was made to conduct a one week intensive institute for New Jersey teachers in the summer of 1985. The institute was held July 15-19, 1985, and the topics presented included Exploring Data I Using the Microcomputer (BASIC40), Applying Data Using the Microcomputer (APL), Exploring Data II: Permutations and Combinations, Topics in Probability, Simulations Using LOGO and BASIC, Probability and Simulations in APL, Sampling Models and Simulations (BASIC), and Models and Simulations (APL). Speakers included Drs. James Landwehr, AT&T Bell Laboratories; Carolyn Maher, Rutgers University; John O'Brien, Tappan Zee High School; and Amie Knox, Woodrow Wilson Foundation.

At the request of the Rutgers Organizing Committee, the ASA agreed to provide three continuing education credits to participants. Funds from the New Jersey Department of Higher Education Central Regional Grant made available stipends for participants. As an expression of their support, the Woodrow Wilson Foundation underwrote some of the expenses of the institute and provided funds for a luncheon meeting.

Evaluations of the institute by participants were highly positive. Future activities at the Center include a seminar on May 3rd for teachers of grades 7-12 and a one week summer institute July 7-11th. For information, contact the Center, 009 Geology Hall, Rutgers University, New Brunswick, NJ 08903. Success we hope, will be achieved through the continuous commitment to improved education in schools.

-Carolyn J. Maher
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10 Seminary Place
New Brunswick, NJ 08903

LETTERS

Please write to the editor if you would like to share books, articles, ideas, or lessons that have been successful in your classroom.

I would like to have the enclosed information about MATHDISK FIVE: STATISTICS considered for publication in The Statistics Teacher Network. Some of the programs on MATHDISK FIVE have been (and others will be) discussed in the Microcomputer Assisted Mathematics section of The Mathematics Teacher.

The Statistics Teacher Network is a very timely publication. I plan to recommend it to participants in Workshop #173 at the Dallas NCTM meeting, and also during a series of NSF/NCTM sponsored in-service conferences to be held during the summer of 1986 and 1987.

-Clark Kimberling
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Information regarding the contents of MATHDISK FIVE and details on cost and ordering are included in the NEW PUBLICATIONS AND PRODUCTS section of the newsletter. -Ed.

Woodrow Wilson National Fellowship Foundation will again sponsor mini-institutes in statistics during the summer of 1986. The five day institutes will be presented by master teachers who participated in the Summer Institute on High School Statistics held at Princeton University in the summer of 1984. The main focus will be to teach secondary teachers new statistics techniques for classroom use. The topics center around statistics in society and include exploratory data analysis, sampling, probability, and simulation. Participants will have access to computers and software for teaching statistics. The leaders are Peter Barbella, Edgewood High School, Madison, WI; Gail Burrill, Whitnall High School, Greenfield, WI; Chris Olsen, George

Washington High School, Cedar Rapids, IA; and Murray Siegel, Walton High School, Marietta, GA.

The sites and contacts for each of the institutes are:

University of Houston
Houston, TX
June 23 - 27, 1986
Dr. James Younglove

Portland State University
Portland, OR
July 7 - 11, 1986
Dr. Eugene Enneking

Butler University
Indianapolis, IN
July 21 - 25, 1986
Ms. Claire Baker

Oglethorpe University
Atlanta, GA
July 28 - August 1, 1986
Dr. John Thames

San Francisco Unified School Dist.
San Francisco, CA
August 4 - 8, 1986
Ms. Theresa Hernandez-Heinz

-Gail Burrill
Whitnall High School
Greenfield, WI 53228

For more information, please contact one of the sites, any of the master teachers, or Ann Pomphrey of the Woodrow Wilson National Fellowship Foundation, Princeton, New Jersey 08542. -Ed.

DON'T LET THIS PASS YOU BY...

...the March 1986 issue of Student Math Notes, an insert in the NCTM NEWS BULLETIN. The article, "Successful Simulation: Approximate Answers to Real Questions" by Albert Shulte, introduces simulation techniques with examples about supermarket checkout lines, bowling games, and connecting airplane flights.

...the April 4, 1986 and April 18, 1986 issues of MATH Magazine, a publication of Scholastic, Inc. for grades 7 - 9. The April 4th issue contains an article, "Behind the Batting Average" by Rachel Maizes which is part of a series on charts, graphs, and statistics which is being featured by MATH Magazine this year. The March 21st issue of MATH contains an announcement and entry form for the Sneaky Graphs Contest which MATH Magazine is conducting again this year. The grand prize is an Apple IIC personal computer system with keyboard, disk drive, monitor and stand. The four runners-up will be awarded Casio HR-100 calculators. The contest is open to all students in grades 7 - 9. For details concerning the contest, contact the editor of MATH, Sue Macy, at Scholastic MATH, 730 Broadway, New York, NY 10003. The April 18th issue of MATH features an interview with Michael Kagay, Vice President from Louis Harris Polls, on random sampling. Mr. Kagay uses a poll of teachers conducted for Metropolitan Life to illustrate sampling techniques and to explain sampling error. Also discussed in the article is the classic example of a biased sample, the Literary Digest Poll conducted prior to the 1936 presidential election.

NEW PUBLICATIONS AND PRODUCTS

Kimberling, Clark
MATHDISK FIVE: STATISTICS
University of Evansville Press
1800 Lincoln Avenue
Evansville, IN 47714
1986, Disk \$28.95 and Workbook \$12.95

MATHDISK FIVE: STATISTICS is a collection of thirty-six Applesoft BASIC programs on topics in probability and statistics. Accompanying the main disk (for Apple IIe, DOS 3.3) is Datadisk 5A, onto which users can save data files in addition to those already on the disk.

This package is designed for several kinds of use: (1) as a teacher's tool kit to be used during classroom activities; (2) as a laboratory aid for students doing

computer-assisted homework; and (3) as a means for students to explore statistical questions on their own. The programs can be individually copied and are designed to be modified.

The workbook contains a listing of each program as well as a set of exercises. Approximately 10% of the total of 200 exercises are designed "for programmers". The programs have been categorized into six sections, named here with the number of programs per section: Representing Data (7), Distribution of Data (5), Probability Topics (9), Confidence Levels (6), Selected Topics (9), and Data Files (3).

For example, the section titled Representing Data contains programs named Range, Frequency Classes, Histogram, Ogive, Sort, and Percentiles. Four of these can be used to analyze any data collection on Datadisk 5A. Among other programs included in MATHDISK FIVE are Running Average, Permutations, Combinations, Binomial, Normal, Central Limit Theorem, Poisson, Random Numbers, Regression, and Create and Read (Datafiles).

SECOND STUDY OF MATHEMATICS: SUMMARY
REPORT, UNITED STATES
Stipes Publishing Company
10-12 Chester Street
Champaign, IL 61820
1985, 140 Pages, \$8.80

Past issues of The Arithmetic Teacher and The Mathematics Teacher have featured articles summarizing 8th-grade and 12th-grade U. S. mathematics performance from the Second International Mathematics Study. This publication includes the revised summary report of the international study containing the 1981-82 findings as well as comparisons with the first international study in 1964. This is the second of four reports. A detailed U. S. report and the international reports will follow within the year. Topics include discussions on how teachers and students spend their time, how mathematics is taught, how changes in achievement occurred between 1964 and 1982, and on students' attitudes toward mathematics. -Ed.

QUANTITATIVE LITERACY SERIES
Dale Seymour Publications
P. O. Box 10888
Palo Alto, CA 94303
1986

The Quantitative Literacy Project has produced four mathematics units that address the teaching of statistics and probability at the precollege level. By title, these are Exploring Data, Introduction to Probability, The Art and Techniques of Simulation, and Information from Samples. Each booklet will have a teacher's manual which will be an expanded version of the student's booklet containing answers, marginal notes on important points, and suggestions on how to use the book. Unit I, Exploring Data, can be ordered now at a cost of \$14.95 for the teacher's edition and \$9.95 for the student's edition with a set of 10 student texts available for \$59.95. The remaining three units will be published during the rest of '86. See the 1986 Dale Seymour Catalog for details.

The Quantitative Literacy staff is currently in the process of developing a video tape for use in the demonstration of the teaching of these materials. The tape will provide an overview of QL's philosophy and approach to teaching statistics in grades 6-12. It is expected that the tape will be available by August, 1986. -Ed.

CALENDAR

International Congress of Mathematicians

ICM-86 will be held August 3 - 11, 1986 on the campus of the University of California, Berkeley. ICM-86 has been held in the United States only once previously when Harvard was the site of the meeting in 1950. There will be seven 45-minute lectures in probability and mathematical statistics presented by invited speakers as well as numerous short contributed talks. Copies of the Third Announcement of the Congress, which contains information and forms for registration and accommodations, may be obtained from: ICM-86, P. O. Box 6887, Providence, RI 02940.

Second International Conference on Teaching Statistics

ICOTS II will be held August 11 - 16, 1986, at the University of Victoria, British Columbia, CANADA. For details about the conference, which is being sponsored by the International Statistical Institute and the University of Victoria, see the related articles on ICOTS in the September 1985, January 1986, and also the current issue of the newsletter.

HELP!

This section of the newsletter is for your questions and requests. Please write to the editor if you have any questions of your own. If you help anyone solve a problem, please send a copy of your letter to the editor as there are others who will want the information.

Here's a question for the HELP! column of The Statistics Teacher Network newsletter:

What is the origin and/or significance of the label "standard error of the mean"? Why is it called "error"?

-John S. Detrick
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Gahanna, Ohio 43230

WHERE TO WRITE

Address all letters, announcements, questions, articles being submitted for publication, and requests to get on or off of the mailing list to the editor:

-Beth Bryan
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Augusta College
Augusta, GA 30910

Please share this newsletter with other teachers interested in statistics. You may photocopy anything in it.