IASE matters

This issue contains an update on statistics education on the Internet by Tim Arnold, a review of Bruce Johnston's session on Statistical Literacy held at the ISI meeting in Beijing, and a detailed look at the program for the Granada Roundtable Conference by Joan Garfield.

STATISTICS EDUCATION AND THE INTERNET: DON'T BLINK!

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The global network of networks called the Internet is changing rapidly. The Internet of today is not what it was last month or even last week. The 'net' is a hot topic in the media and it is hard to tell what is only hype and what is true. When you look at the net for yourself it can be disheartening if not downright painful to wade through the plethora of information, searching for useful information. Among the mass of information are some nuggets of golden information. This article will highlight some of the treasures to be found out there in the information wilderness.

The current 'leading-edge' state of the internet, mainly concerning user interfaces to information, is now the World-Wide-Web, or just plain 'web'. A few years ago email was the main tool for users on the net, allowing people to interact on a one-to-one and even a one-to-many basis. This capability is very important and remains one of the most useful tools on the net.

Then the 'gopher' interface was developed and information services started their explosive growth. The gopher interface makes it easy to present both textual and graphical information in a hierarchical form. The web is the latest tool for information developers and users. Though the fancier information types require more bandwidth and hence a more expensive infrastructure at the user's site, the web gives us ways to deliver graphics in line with text, file transfers, animations, and the latest: true interaction with information, three dimensional graphics, and virtual reality simulations.

Interacting with information means that students can be more in control of their learning. This takes some adjustment on the part of instructors that use the computer and the web in the classroom: students can drift off into entertainment centers during a lecture. The web gives the student as much or more control than the instructor, forcing us to deal with real competition among information sources for our students' ever-shortening attention span. Engagement with information is no longer a luxury to wish for--it is now an imperative (or at least web access is making it so) to design engagement into lesson plans.

Is all this proliferation of information necessary? The point seems to be moot. It seems the benefit to be gained from linking students to the internet is worth the cost. And once they're on the net, there is no holding back the web. Whether the cost is greater than the benefit or not, the web is something we will have to deal with.

Ready-To-Wear Statistics Education

Instructors are now adding course materials for their students on the web creating a wealth of teaching aids available to anyone with web access. One can even create an online course outline complete with case studies, data sets, supplemental readings, discussion questions, with assignments and practice quizzes. All

these materials can be gleaned from sources on the internet and put into a custom web page for a course. Some course sites that a teacher may find interesting include:
http://frey.newcastle.edu.au/Stats/stat101/stat101.html Introductory statistics textbook. An excellent source of readings and explanations.

http://olam.ed.asu.edu/~glass/502/home.html Introduction to quantitative methods. Good explanations and example quizzes. Also a good probability quiz.

http://seamonkey.ed.asu.edu/~behrens/teach/WWW_data.html Good source of datasets.

http://www.geom.umn.edu/docs/snell/chance/teaching_aids/handbook.html. Excellent source of readings and discussion-generating questions, listed by statistical topic.

http://www.geom.umn.edu/docs/snell/chance/teaching_aids/data_sets.html Datasets which make good examples in the classroom.

http://www.geom.umn.edu/docs/snell/chance/teaching_aids/profiles.html Profiles discussing how topics have been taught in CHANCE courses.

http://www.stat.ucla.edu/practice/case-studies/index.html Excellent source of datasets and case-studies.

http://yunus.ms.washington.edu:80/classes/stat311/ Course materials for *Elements of Statistical Methods.*

There are some locations on the web that contain archives of XLispStat code. Many of these programs are excellent demonstrations with which students can interact. To do this requires a little extra work: installing XLispStat; setting up the NetScape web browser to use XLispStat as a "viewer" when an XLispStat demo is clicked on by the user. Once those preparations have been made, the demos can be executed by the students.
http://www.stat.ucla.edu/textbook/demos (regression, correlation, hypothesis testing, distributions, and measures of central tendency)

With an additional installation of R-code, the demos from the book *Introduction to Regression*

Graphics can also be made "alive" from the web: For more information, see *http://stat.umn.edu/~rcode/index.html*

There are also many places of interest to find raw materials for classroom use. Stories from newspapers can be brought into the classroom via the web and used for discussion. Penpal projects are being used, encouraging students to collaborate with other statistics students on problems. Reference papers and journal articles are proliferating on the web. A class may use exhibitions from museums as supplementary material. A list of museums as a starting place is: *http://www.usc.edu/lacmnh/webmuseums*

Other sources of interesting material include information from the US Government: *http://wwwhost/cc/utexas.edu/world/instruction/index.html* and a list of general educational resources: *http://info/umd.edu:86/Educational_Resources/*

It seems that those who don't yet have web or internet access are being left behind. Current inequities in network access are becoming more pronounced as the internet continues to grow exponentially. In time perhaps these inequities will disappear and the newcomers to the web will have missed the growing pains and information overload which are currently being felt in the industrialized countries. When most everyone is on the net, it may be that educational inequities that have existed for years may be erased with the flourishing of 'virtual universities' and comprehensive distance education possible on the internet.

If you have web access, open the file locations given in the Universal Resource Locators (URLs) above. If you don't have web access, but you do have email access, you can learn more about the internet by sending this one-line email message: send software/info/internet.primer to the address: archive@jse.stat.ncsu.edu

STATISTICAL LITERACY IN EDUCATIONAL PROGRAMMES

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In the Statistical Literacy in Educational Programmes session (CP25) three speakers presented approaches and solutions to statistical literacy in their countries. Donald Bentley, USA, spoke on 'Statistical Literacy in US Education: Theory Versus Practice'. There is a demand for statistics in schools and we need to be prepared to supply the proper resource people. Donald emphasised the selection of statistical topics with relevant data so that the students can develop their knowledge and skills. In this approach, standardised evaluation procedures of the students are needed. Teachers presently in the system need in-service training and the new teachers need Statistics in their training programs.

At the college level, teaching is done through Statistics departments often emphasising advanced rather than training courses. Statistics taught in Mathematics departments often emphasise the mathematics component rather than general education for the community. Statisticians teaching in applied departments report lack of funding and isolation.

Regardless of level, statistical topics can appeal to a wider audience. We need to use real data problems, explain the research question, develop the protocol or design, show how this leads to an analysis, and then present a conclusion to the original problem.

Dr. Subanar spoke on 'Statistical Literacy in Educational Program' with particular reference to Indonesia and other developing countries. To have an impact on society or in teacher-training we need to present the "how" of Statistics. The intuitive idea of a relevant problem can be presented and developed to capture the interest and teach the principles in Statistics. There is a need to change the curriculum from the drill system to the concept approach.

In Indonesia, there are only few with statistical training beyond the first degree. Statisticians are scattered over a wide geographic area and literally isolated. The critical mass to support each other is missing. The teaching load tends to be heavy. As there is little contact between statisticians and general users our discipline becomes irrelevant to them. In particular, our message is not getting to high school students,

and students tend to avoid the subject. There is much that needs doing.

Hiroshi Midzuno gave a wide-ranging discourse under the title 'Development of Statistical Education in Japanese High Schools'. In Japan, statistics is part of mathematics and many statistics courses are taught in other departments. Often the teacher's background is mathematics. A rigid adherence to course guidelines is followed. We must emphasise statistical literacy in our teachers, in our programmes and subsequently in our students. Our profession can become vulnerable if we neglect this literacy and consequently lose support from the public.

TECHNOLOGY IN TEACHING; THE ROUNDTABLE IN GRANADA

Joan Garfield, University of Minnesota, Department of Educational Psychology, 332 Burton Hall, 178 Pillsbury Drive S.E., Minneapolis, MN 55455 [Tel: 612-625-0337, Fax: 612-624-8241, E-mail: jbg@maroon.tc.umn.edu]

The International Association for Statistical Education (IASE) is sponsoring an invitational roundtable conference to be held at theUniversity of Granada, Spain on July 23-27 1996. The topic of this roundtable is "Research on the Role of Technology in Teaching and Learning Statistics," in the context of elementary, secondary, or college level instruction.

This will be a small "working conference" of about 24 participants, consisting of presentations, software demonstrations, and discussions. Presentations will be grouped into the following categories:

1. Exemplary software for teaching statistics and probability Demonstrations will be given of exemplary software used to help students learn statistics and probability. Presenters will also discuss the design and purpose of a particular software program, the research on which it is based, as well as evaluative information on the effectiveness of the particular program in helping students learn topics in probability or statistics.
2. How technology changes the teaching of statistics and probability Presentations will focus on the how the use of computers,

graphing calculators, and multimedia have changed or should change the nature of statistics instruction at different educational levels (e.g., K-6, Secondary School, College).

3. What can be learned from research on the impact of technology in helping students learn statistics Presentations will highlight empirical research involving the use of technology in statistics courses at different educational levels.

4. Questions to be addressed regarding the role of technology in statistics education These papers will examine unresolved issues involved in the use of technology in improving student learning, and outline the types of research studies that need to be conducted in the future.

NEWS AND ANNOUNCEMENTS

ICOTS 5, June 1998
Under the theme *Statistical Education-Expanding the Network* plans are being made for the next International Conference on Teaching Statistics, to be held in Singapore. For more details on the Program Committee and their plans, please contact: *Brian Phillips, School of Mathematical Sciences, Swinburne University of Technology, PO Box 218, Hawthorn, 3122, Australia. [Tel: +61-3-9214-8288, Fax: +61-3-9819-0821. E-mail: brp@swin.OZ.AU].* Brian would also like to ask for expressions of interest for hosting ICOTS 6!

Tartu Conference on Computational Statistics and Statistical Education - Call for Papers

The sections of ISI, the International Statistical Institute, IASC and IASE together with the Institute of Mathematical Statistics of the University of Tartu and the Estonian Statistical Society will organize the Conference on common problems of Computational Statistics and Statistical Education. The conference will be held during one week in early summer (June 2nd to June 8th, 1996) in the old University city Tartu situated in the southern Estonia.

The International Program Committee includes the following persons (preliminary list): J. Antoch (Chech Republic), R. Biehler (Germany), S. Mustonen (Finland), E.-M. Tiit (Estonia),

L.-M. Tooding (Estonia).

On the conference the following topics will be discussed:
-- Recent problems in Computational Statistics (including the problems of education of computational statisticians and creation of teaching software for statistics).
-- Visualization methods (their role in statistical education and in development of methodology for applied statistics).
-- Development of Statistical Education (on different levels. Meeting changing demands for statistical education in different specialities).
-- Methodology of teaching statistics using statistical software (impact of technology on content and methodology of statistical education).

The working language of the conference is English. The preliminary list of key-note speakers is the following:

1. R. Biehler, Germany (IASE),
2. M. Borovcnik, Austria (IASE),
3. W. Eddy, USA (IASC),
4. C. Lauro, Italy (IASC),
5. S. Mustonen, Finland (IASC),
6. P. Naeve, Germany (IASC),
7. L. Rade, Sweden (IASE).

The abstracts will be published before the conference and the proceedings during one year after the conference. Information (including the transportation, accommodation, social program, weather and local conditions):

Institute of Mathematical Statistics, University of Tartu, J. Liivi 2, EE2400, Tartu, Estonia, fax: (37) 27 433 509, tel: (37) 27 465 488 (E. Tiit), (37) 27 430 813 (L.-M. Tooding.), (37) 27465 453 (E. Ehasalu), e-mail: etiit@madli.ut.ee, liina_t@vask.ut.ee, elvi@madli.ut.ee

Future Editions of IASE Matters

Submissions of material on statistical education for possible publication in these pages are welcome. Please send them to Richard L. Scheaffer, Department of Statistics, University of Florida, 103 Griffin Floyd Hall, PO Box 118545, Gainesville, FL. [Tel: 904-392-1941, Fax: 904-392-5175 E-mail: scheaffe@stat.ufl.edu]