

Teaching and learning data analysis in a complex environment

Ken Johnson, School of Resources, Environment and Society, Australian National University
Ken.Johnson@anu.edu.au

Two problems face courses in science that deal with data and the creation of information: first there is the complexity of the issues to be addressed; second there is the limited applicability of statistical approaches. Where the methodology is 'data making', classically through experimentation, the problem is not serious for the approach of statistics is very valuable. Where the methodology is 'data taking' the issues are different. Databases are large and rarely samples. Instead they are from the population: remote sensing, climate records, the population census are just a few. In this field the techniques of exploratory analysis and data mining are more appropriate. The problem for education is how to train students to deal with these environments.

The presentation discusses a course which explores these issues. It is supported by a poster. A new approach to data analysis and interpretation is necessary. It relates to the processes by which we comprehend our environment and develops analytical methods that are relatively assumption free. It relies heavily on computer aided learning modules and a range of case studies to develop experience. It sets, as a project, the problem of exploring variation in the climate in the longer term. Programs were prepared for the analytical steps and made direct and easy to use so that attention could focus on the tasks of application to the problem, knowledge of the analytical method and interpretation to create and communicate information.

IT skills of university students in 2001

Kieran F. Lim, School of Biological and Chemical Sciences, Deakin University and **Amanda Kendle**, Faculty of Medicine and Dentistry, The University of Western Australia
lim@deakin.edu.au

General background

This paper is the second in a series of investigations on the computer skills of undergraduate students at the start of university.¹ The use of computers is becoming more widespread in education and in the wider Australian community.²⁻⁴ Increasingly, universities are depending more on information technology (IT) in their mainstream activities. Some examples of IT usage in Australian university teaching and learning include:

- dissemination of materials through the Web, email, bulletin boards, etc.;
- on-line assessment;
- electronic submission of assignments;
- typed (word processed) reports; and
- collaborative and cooperative learning through discussion groups and computer-mediated communication.

General university policy⁴ and the use of information technology (IT) in university teaching and learning are implicitly based on **the assumption that university students are becoming more computer literate.**