Teaching critical statistics : Technological determinism and the analysis of social policy

Kate Bloor

The use of technology to provide students with new knowledge and skill in the area of the social sciences is becoming more popular both here and in America. At the present time in the UK, there is a centrally funded organisation, the CTI, specifically to provide advice and information to academics about IT in higher education teaching. The information available in the new CTI software catalogue is concise, but detailed, providing access to a range of software from various places, particularly the US[1].

The purpose of this article is to draw attention to the possible bias in software used for teaching, and to present an approach to the use of IT in teaching statistics for social science which **encourages** students to become aware of technological bias. Technology, either overtly or covertly, conceptually or electronically, reproduces and reinforces existing social relations.[2] For example, a review of one package for the CTI catalogue, which aimed to provide students with an understanding of financial choices within households, made various questionable assumptions about the lifestyles of men and women. It assumed that the typical household consisted of married men and women, and that women were the one and only main carers for children, so that only their career choices were affected by the presence of children, not the choices of men. These were more than stereotypical visions of modern household life, but both reflections of and reinforcements for minority views about acceptable social behaviour.

Within the context of a multidisciplinary degree allowing students to examine the social context of the uses of technology, and the role of information and research within social policy making, one course on databases and spreadsheets attempts to use this methodological approach as the basis for course material and teaching methods. Additional teaching objectives are to develop an awareness of the varied and often competing views of social relations, in order that the student is able to understand and develop a critical view of social policy. These approaches may not be entirely new, but are applied in a particular combination in this course with particular objectives, subsequent challenges, and problems from a teaching perspective.

It is hoped that this approach will encourage students to be aware of the possible bias of the technology. Thus students are encouraged to see technology in general, including that which they use to learn the analysis of social policy data as neither inherently value free, nor inherently biassed. They are encouraged to integrate their understanding of social theory and technology, through an examination of social policy data, and a critical view of the tools used to analyze it.

This may not be easy given that students' understanding of established social policy may be limited to start with. What it does require is a supportive and well resourced teaching environment, where different courses build on different critical views. These may not always be complementary, and may even provide conflicts in relation to theoretical approaches, where a consensus would by definition be academically stultifying. Whatever the possible difficulties for students given a whole diet of different approaches, this does provide a basis for the development of courses which build on and extend this critical thinking in the teaching of statistical and technological skills.

Given the interest of Radical Statistics in quantitative analysis, I would like to focus on spreadsheets.

Firstly, I think it is important to point out that the conscious development of teaching material which deals with the needs of groups of students so often seen as passive and disadvantaged is frequently heavily criticised, and at times even ridiculed within academia. To give an example, one response to the approach of this teaching programme, was that gender free language in the classroom, and the use of social policy data which looked at women's issues (such as fertility, contraception and single parent families) would alienate male members of the audience. This particular critic inadvertently and ironically drew attention to the alienation which women have traditionally felt from the teaching of male oriented technology in male oriented environments. Research has not corroborated the critics view, but in fact has demonstrated that boys tend to dominate the keyboards in the teaching of technology at school, and exclude girls through a variety of means, including aggression.

The example of non-sexist language may seem trivial, but is only one of a number of efforts within the context of the course to provide material in areas which have frequently been neglected, and which alienate neither men nor women. It is also part of an attempt to use methods of teaching and learning which address, and are sensitive to, a variety of differences between students and within social policy perspectives. For example the use of women oriented analogies such as 'iron' and 'washing machine', instead of 'car' and 'aeroplane'.. In addition issues of race, class, sexuality and disability may be equally as important dimensions in the course as is gender, and are considered of no less importance.

This debate, of course, does raise the tricky and unresolved problem of whether the technology itself is inherently biased towards certain ideologies and world views. Is it inherently biased towards older, male, white, middle class or able-bodied views of the world? These issues are currently a centre of debate in feminist critiques of science and technology, for example Wajcman [3] who suggests (p 13) '... a key issue here is whether the problem lies in men's domination of technology, or whether the technology is in some sense inherently patriarchal. If women were in control would they apply technology to more benign ends?'.

Rather than give in to patriarchy, and insist that technology is so inherently biased that it dominates and oppresses women to such an extent that it is just 'male' and therefore cannot and should not be taught to women, I take the view that, as with anything else in society, technology can be reclaimed. A male oriented technological determinism and essentialism is not simply replace, I would argue, with a female oriented technological determinism and essentialism. Giving technology to women as a legitimate domain means giving them critical control in the class room in relation to both their technical skills, and the conceptual and theoretical aspects of their existence, as women in general and in relation to social policy specifically. This, I argue, can be achieved through the use of critical social policy.

Within the course 'Information systems and social policy' on the 'New technology: Social Policy, Research and Information ' (SPRI) degree, the students receive a series of lectures on the graphical presentation of social policy data, in which their attention is drawn to ways in which information can be distorted or misrepresented. Using a spreadsheet as an example. the disadvantages of particular ways of examining data are discussed, with particular emphasis on the difficulties of using data which is inadequate, because it is collected by the state, and hence reflects the interests of the state. Hands on sessions, with step-by-step worksheets, and demonstrations using the package projected onto an overhead projector screen, teach the basic technical and mathematical skills relatively quickly. The students can learn these basic skills at their own pace. competitiveness and aggression in a mixed class is therefore reduced, because the methods of teaching are neither aggressive nor competitive.

The students have a 2,000 words written assignment, in which they have to choose and analyze some social policy data which relates to their other work and interests. Within this assignment, they are required to demonstrate an awareness of the inherent drawbacks of the source of information; assess how it can best be demonstrated using graphics; use basic statistical methods to manipulate the data (percentages, totals, predictions etc..); discuss the implications of any trends identified in the data; and evaluate the package as

a tool for social policy analysis.

Experience of teaching this course has been mixed. It has been interesting to see how mixed ability and mixed background students learn. Levels of co-operation among students have been high, as has anxiety about what are seen to be quite different learning objectives. Students who seem to be academically weak seem to perform reasonably well, and learn a lot in the process. Enthusiasm is often very high, because the areas to be explored are new and seen as exciting, and because of the great degree of choice. Good students excel because they are able to consolidate or reinforce their own powers of critical thinking.

No student has yet met all of the above objectives, but not one has failed to reach any of them. Perhaps the biggest area of difficulty is the lack of a critical viewpoint to start with: those students who have some social policy background seem to grasp the objectives much more quickly than those who have none.

Finally there may be ways in which the pool of material from which students can draw on as examples, and also for their assignments could be developed further. For example the involvement of students was enhanced by the use of a recent documentary video on maintenance payments under the new Child Support Act. Supporting material could have given them case studies of data looking at the changing make up of families in the UK, which helped them link data analysis with recent social policy, an area of weakness demonstrated in many students' work.

To sum up, I would like to go back to overall teaching and learning strategies, to suggest that in the teaching of statistics using technology, that it is important to allow both men and women to deconstruct the material which is presented to them, and the tools which they use in analysis. As Rothschild [4] points out (referring to McIntosh), women are either absent in the structures of knowledge, and/or they are presented as problems and anomalies to be studied and 'corrected' to fit in appropriately. One clear example is the way in which single mothers (and fathers) are treated in social policy theory, and how this is reflected in the way that statistics on single parents are presented. In relation to men and women in the classroom, the use of social policy data on womens' position in society can be used to help students develop an awareness of the process of objectification of women in the use and analysis of social policy data.

Using a model of learning which is based on the students' own experiences, both personal and academic, it is possible to teach statistics in a way that enhances the quality of their critical powers both in relation to technology and

to social policy., and to teach methods which are accessible, and so help students to find confidence and security in their own power of criticism.

1.   Henry MS 1991 (Ed) Information technology in sociology, and the policy sciences. CTI software catalogue. 2e.

2   Bloor K (1992) New technology, oppression and teaching: some objectives and difficulties. SocInfo Newsletter 28-31.

3   Wajcman J (1991) Feminism confronts technology. Polity Press.

4   Rothschild J (1988) Teaching technology from a feminist perspective. Pergamon Press.

Kate Bloor, Tel : 071 6355451