
Promoting Effective Methods of Learning and Teaching Statistics and Operational Research

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The Learning and Teaching Support Network (LTSN) Centre in Maths, Stats & OR was established on 1 January 2000 and is funded for at least five years. The statistics & OR subjects are the responsibility of the Royal Statistical Society Centre for Statistical Education (RSSCSE) at the Nottingham Trent University, in conjunction with the Department of Statistics at Glasgow University. The following aims and objectives are based upon the original LTSN bid document made to the UK Higher Education funding authorities, but with particular emphasis placed on what we hope to achieve in statistics & OR.

The aims are to:

Raise the profile of learning and teaching statistics & OR, eventually to be on a par with traditional research activities as regarded by panels for the Research Assessment Exercise;
Establish a UK-wide learning and teaching community in statistics & OR;
Make a difference in learning and teaching statistics & OR that will benefit students.

The objectives are to:

Identify champions of good practice in learning and teaching;
Establish an electronic network of learning and teaching material;
Create improved methodologies for teaching specialist and non-specialist students in statistics & OR;
Research the role of information and communications technology (ICT) in learning and teaching (aiming for the best combination of learning material, web-based material and generic software);
Establish a database of who-uses-what, including best practice, and reports of successes and failures.

Participation

In order to help the LTSN Centre achieve these aims and objectives we need to enlist the help of the statistics and OR teaching community. We invite all teachers of statistics and OR in UK HE to participate in, and contribute to, our activities. Participation is not necessarily expected to be on the usual grace and favour basis, as is common in most UK academic activities. The RSSCSE has a budget of up to £20,000 over the next five years to provide funding towards helping interested practising statisticians to participate in our activities. For example, some of the money could be allocated to individuals or groups to help to release them from teaching, or contributions could be made to a university's departmental budget to facilitate pedagogic research to be carried out. Level of funding is a matter for negotiation with the RSSCSE, with corresponding extent of commitment to research. If colleagues have other ideas for the use of the funding to help us achieve our aims and objectives, please let us know.

Sponsorship

We are particularly keen to hear from employers in business and/or industry that use graduates as specialists or non-specialists in statistics and who are interested in sponsoring our national activities. After all, what we are trying to do is improve the effectiveness of teachers of statistics and OR, an activity that will help to make students who graduate *more* employable in the future.

Get Involved

We are looking to recruit a *dedicated* team of six to eight teachers from HE that can provide a scanning and facilitating role for the Centre's activities in promoting effective methods of learning and teaching statistics and OR. We invite YOU to write to us, on no more than one page of A4, about why and how you will use a bursary from the LTSN funds to help us achieve our aims. The following extensive list, in no particular order, comprises some of the activities we feel could be useful and productive for the teaching profession in statistics and OR over the next five years:

- Create local groups of interested practitioners in statistics;
- Identify champions of good practice in teaching statistics to (i) specialists (ii) non specialists;
- Use the published Quality Assurance Agency reports about the provision of Mathematics, Statistics and OR in HE to identify those departments with recognised good practice in relevant aspects of provision;
- Create an electronic learning community using locally identified and produced teaching material;
- Establish criteria by which different approaches to teaching statistics and OR can be compared;
- Carry out appropriately designed experiments to compare different approaches to teaching statistics and OR;
- Contribute to and write reports of national findings;
- Conduct an international survey of research into pedagogic issues in statistics and OR;
- Create a database of volunteer mentors/advisors of good practice in learning and teaching in statistics and OR;
- Report on the relationships and synergy between pedagogy, content and technology;
- Report experiences with using group teaching, including projects and co-operative learning;
- Report the use of consulting in teaching;
- Examine the influence of assessment methods on what is taught and learned;
- Report experiences with teaching statistics and OR to engineers;
- Give guidelines on how to enable specialist statisticians to be good communicators and good team members;
- Report the effects of technology on learning and teaching in statistics and OR;
- Conduct experiments on how the use of a computer affects what needs to be known;
- Investigate the interactive use of packages such as *DataDesk*, *ActivStats*, *Statplay* and how they affect student comprehension of difficult topics and concepts;

- Report the modern relationship between probability and statistics - what is the kind of understanding of probability that is required for conceptual understanding of statistics at various levels?
- How and when should we teach the big ideas in statistics: in fact what are the big ideas for specialists and non-specialists?
- Establish good practice in teaching statistics and OR to large classes.

References related to the above list can be found on the RSSCSE web site at <http://science.ntu.ac.uk/rsscse>. We would like to encourage a dialogue with anyone who is interested in participating in what we believe will be the most significant advancement of learning and teaching practice in statistics and OR for the foreseeable future. We are open to *any* suggestions and are looking for UK-wide coverage.

Please write to us before the end of July 2000 with your ideas of how you can participate.

Final thoughts

In September and October 2000 we shall be running a series of regional one-day workshops where key speakers will help develop our strategy and set the agenda for the next few years. We hope that by then the invitees referred to in the previous paragraph will be in place.

No doubt there will be many experienced colleagues who read this article and who will be sceptical about the whole exercise implicit in the creation of 24 LTSN subject Centres for HE. In particular, they may feel that the LTSN Centre for Mathematics, Statistics and OR is, proverbially, trying to teach their grandmothers to suck eggs. Also there may be many that feel that, having immersed themselves in teaching (lecturing?) statistics and OR for the whole of their careers, they cannot learn how to teach the subjects better. Why should they?

However, I argue that, as statistics and OR professionals, we have a personal responsibility to *improve* everything we do. It is high time that learning and teaching achieved the respect they deserve. More importantly we have a responsibility to *future* students of statistics and OR to give them a better deal from our teaching. I believe that more effective methods of learning and teaching can only come from sharing with, and learning from, colleagues' good practice, together with keeping abreast of pedagogic and technological developments. Of course, the modern parlance for this activity is *continuous professional development*. The LTSN Centre in Mathematics, Statistics and OR will be a facilitator for such development.