THE ROYAL STATISTICAL SOCIETY'S OUTREACH INITIATIVES

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There is a sense in which all the RSS outreach initiatives are concerned with statistical education, although 'education' must be interpreted in the broadest sense possible. It includes developmental processes as well as formal school and college level education; informal education of (and through) the media; and continuing professional development of specialists and non-specialists, as well as of those whose work involves statistics or working with statisticians. Outreach is therefore intended to impact on society at large, as well as on other discipline areas or other professional bodies. This is not only achieved by the RSS projecting itself outwards. There has to be an element of drawing others towards the Society, and making statistics and statisticians more accessible.

The Royal Statistical Society began life as the London Statistical Society in 1834 and was incorporated by Royal Charter in 1887. Its original purpose was 'the procuring, arranging and publishing of Facts calculated to illustrate the Conditions and Prospects of Society' (RSS web-site, 1996). Since that time, there have inevitably been changes in its priorities. Today, it asserts that it is 'a vigorous and committed organisation, meeting the needs of its membership and promoting the practice and development of a science vital to our well-being and understanding of the world' (RSS web-site, 1996). In other words, the Society now embraces a much wider role in fostering the statistics profession, the discipline itself and its teaching.

The RSS has eight special interest Sections, e.g. Business and Industrial, Medical, Official Statistics, and Education. It also has 20 Local Groups to further the aims and interests of RSS members outside London. Currently, the membership stands at more than 6,000 people, a quarter of them living and working outside the UK. Particularly in recent years, though, the Society has sought to extend its sphere of influence by reaching out beyond its own immediate membership. To this end, it has embarked on a range of initiatives aimed at securing more informed perspectives on chance and choice on the part of all members of society. As Smith (1996) said, however, 'the innumerate and confused nature of so much political, public and media reaction to major issues involving uncertainty and risk continues to serve as a reminder to us of just how far we still are from realising this goal'.

In the past, individual members of the RSS have often contributed to public debates of current interest to the media. The BSE crisis is one example. Erroneous legal

judgments involving the evaluation of DNA evidence, controversy over school and pupil performance tables, the collection and use of official statistics, are others. While the personal initiatives of members will undoubtedly continue to be important, the RSS itself is adopting a more pro-active role. Its web-site contains some informative reports and briefing documents, together with a list of spokespeople to whom journalists can turn to for expert commentary on specified topic areas.

The media themselves are a means of providing the Society with outreach. Much of the general public's view of statistics comes from newspaper and television coverage. A constant source of concern, therefore, is that some members of the media are no more statistically literate than the 'experts' whom they quote. The RSS has therefore made efforts to work with journalists to encourage the good practice of statistics by the media. On occasions, the Society has taken a stand where published statistical articles are incorrect or misleading. For example, the editor of a particularly popular scientific journal was recently taken to task over its series purporting to explain statistical concepts because it had clearly been written by someone who was not competent to do this.

It is not always easy to convince members of the media that statistics (in its own right) can be interesting and/or entertaining for their audiences. The RSS constantly strives to find opportunities for making statistics more accessible to the public. A number of its members have contributed to general interest television programmes, e.g. *Anxiety Attack* about a Northampton Leukaemia cluster, and a *BBC Numeracy Campaign* programme on Bayes' theorem.

Outreach is not only concerned with putting out materials and opinions, however. It is also concerned with bringing in people and ideas from other contexts. To this end, recent RSS theme conferences have been designed to appeal to a broader range of participants, e.g. *Communicating Statistics* in 1995 with its strong emphasis on official statistics and education, and *Practical Bayesian Statistics* in 1997 that particularly focused on industry and finance, health and the environment. Conferences organised jointly with other bodies (such as the Environmental Statistics Study Group and the International Biometrics Society) are another effective way of facilitating the two-way process of outreach.

The same purpose is served by more formal interaction between representatives of the RSS and of other Societies. For example, the Presidents of the RSS, the Institute of Mathematics and its Applications (IMA), and the London Mathematical Society (LMS)

regularly meet together. Statisticians in the Pharmaceutical Industry (PSI) are represented on the RSS Education Committee. The RSS itself has representation on committees such as the Joint Mathematical Council, the Statistics Users' Council, the Engineering Quality Forum, the British Standards Institute, and the Parliamentary Scientific Committee. Clearly these contexts afford important opportunities to influence understanding and policy in key outreach areas.

The RSS has a well-established tradition of holding meetings in the provinces, organised by its Local Groups. These are not only 'outreach' initiatives in the geographical sense. The Local Groups also have an important role to play that mirrors the more centrally generated outreach efforts. However, the Local Groups have been particularly charged with supporting the teachers in their regions. Local statisticians are often able to provide access to real data for teaching purposes, and are also a useful source of work experience and insights about practical statistics for pupils and students. The RSS has established a database of those individual members who are willing to be involved with schools in their areas. A relatively new initiative is to encourage teachers to establish their own local networks. As schools are increasingly able to access electronic communication, this becomes more viable. Maybe a UK-based form of ISOSTAT (Isolated Statistics Teachers) will now emerge, spawning its own local and national conferences and meetings.

Perhaps one of the most significant RSS outreach initiatives has been the founding of the RSS Centre for Statistical Education, with co-sponsorship from the RSS, the University of Nottingham and SPSS(UK) Ltd. The Centre has an *extremely* wide remit; *to promote the improvement of statistical education and thinking at all levels and in all contexts*. It runs conferences and workshop seminars, contributes to appropriate national and international publications, and participates in the general debate about statistical education issues. Its resources collection and library (including teaching aids, audio-visual materials, computer software, and literature on research into statistical education) provide valuable facilities for teachers and lecturers in the locality and for visitors from further afield who come to study and research at the Centre.

'Visitors' to the Centre are always welcome. Some come for quite long periods to study. Many visitors, of course, come for much shorter periods of time, and others 'visit' only by remote access means. The Centre is gradually extending the range of support that it can provide at a distance for such people by exploiting available technology and

multimedia to the full. It also maintains a wide range of teachers' resources that are available for classroom use, mainly with lower- and upper-secondary pupils. These include booklets, audio-visual aids and computer software.

A wide range of higher degree research areas can be supported at the Centre, and there are possibilities for both full- and part-time study. Partnership opportunities also exist for teachers who want to engage in active classroom research in their own contexts, with a view to developing their own understanding of the statistical teaching/learning process, and trying out new teaching processes, but who are not pursuing a higher degree.

The Centre actively engages in its own statistical education research as well as stimulating and providing support for initiatives elsewhere. The **M**EA**N**S project (Matching Education and Assessment with Employment Needs in Statistics), based on a core partnership of Nottingham, Nottingham Trent, Sheffield and Sheffield Hallam Universities, has established a national network of trainers, employers and employees committed to finding ways of enhancing the employability of graduates. Reports from this project are available from the Centre's web-site.

The Centre has also been researching lawyers' understanding of likelihoods. If lawyers are to present quantitative evidence or to exploit expert witnesses to good effect, let alone evaluate likely outcomes for their clients, it is essential that they are statistically literate. An earlier project in collaboration with The College of Law showed that many lawyers have a very poor grasp of probability. A second-phase project has investigated in more detail the complex nature of their difficulties (see Session 4.4 papers). The intention is to develop teaching materials specifically aimed at combating these problem areas.

Alongside the RSS Centre for Statistical Education, the RSS Education Committee is concerned *inter alia* with developing relations with outside bodies such as other professional societies, with continuing professional education, and with promoting statistics as a subject and developing the Society's policy on education. Currently, its remit is;

- To seek to influence statutory and educational bodies
- To encourage lifelong learning in statistics
- To support the teaching of statistics at all levels and in all contexts
- To promote statistics as a career, and
- To be a source of advice and expertise

The Education Committee plays a key role in supporting the RSS Associate Schools. This includes developing and distributing materials to teachers in these schools. It has also done much to communicate the nature of statistics and the role of statisticians through its careers literature. The Committee is responsible for the Teachers' Bursary scheme that the RSS introduced five years ago to help support teachers on statistical education courses.

Through its reviews of curriculum, syllabuses and assessment practices, the Education Committee seeks to influence the teaching of statistics, especially at school level. To this end, it also contributes to relevant reports and joins in the public debate on issues related to numeracy, science and mathematics education. For example, it contributed to the SCAA (1996, School Curriculum and Assessment Authority) report on *The Take-Up of Advanced Mathematics and Science Courses* and to the report produced jointly with the IMA and the LMS, *Tackling the Mathematics Problem* (1995).

Established two years ago, and hence a relatively new initiative, the RSS Education *Section*, took over responsibility from the Education Committee for planning and running the *Teaching and Using Statistics* workshops that were a regular feature of the Education Committee's activities. Some of these workshops have been aimed at teachers, and some at their students (particularly 6th-Formers). The Education Section has also held a series of meetings on issues related to educational statistics, as well as to statistical education.

A further RSS Committee that is also concerned with statistical education is its Professional Affairs Committee. This Committee has done much to promote the image of statistics and the professional qualities that may be expected of statisticians through its introduction of the recognised status of Chartered Statistician. It has also undertaken, with the help of the RSS Centre, a review of continuing professional development provision.

This Committee is responsible for the professional examinations that were originally run by the Institute of Statisticians (now merged with the RSS). These have always been an important way of training statistical practitioners in other countries. The Committee has extended and continues to update its database of course equivalents, and accredited Further and Higher Education courses. Conversely, its recognition of some, rather than other, courses as being of a sufficient breadth and depth of content automatically to grant successful students exemptions is a way of influencing future course design.

Clearly, the RSS outreach activities and initiatives are many and various. Under its umbrella, the different organisational units with their varied approaches provide the broadest of possible outreach strategies, each approach complementing the efforts of the others. Although 'education' (in its broadest sense) is at least implicit in all of the initiatives, outreach must still be thought of as a *two*-way process of reducing the gap between members of the statistics profession and others, of establishing better communication channels and making statistics itself more accessible.

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