A STRATEGY FOR CONTINUING PROFESSIONAL EDUCATION IN STATISTICS

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In a world that is producing ever increasing amounts of data, there is unrelenting pressure to provide a quality service for design, collection, analysis, interpretation and reporting for these data. There is a corresponding need for a recognised professional qualification that attests to the ability of individual statisticians to provide this service.

In 1993 the Royal Statistical Society (RSS) began awarding Chartered Statistician (CStat) status to suitably qualified statisticians. By the end of 1995 over 1600 statisticians world-wide had received this qualification. The RSS simultaneously recognised a responsibility for maintaining professional standards after the awards had been made. Consequently, in 1996, the Society began to explore a strategy for maintaining and continuing the development of its professionally qualified statisticians.

In this paper we report our views about this strategic exercise. We argue that continuing education is essential for the maintenance of a professional statistician's portfolio of skills and expertise, and that this will help a quality service to be delivered. We argue for a flexible system based on credits, with an element of compulsion that can evolve as the profession develops.

INTRODUCTION

On January 1, 1993, after many years of negotiation and several aborted attempts, the Institute of Statisticians (IoS) and the Royal Statistical Society (RSS) merged to form a new and enlarged Royal Statistical Society. The new RSS is both a learned society open to all with an interest in statistics, and is a professional body awarding the professional title of Chartered Statistician (CStat) to those who wish to hold such a title and who meet the qualification criteria. The IoS was always a professional body for statisticians and as a consequence of the merger the RSS has embraced the issue of professionalism for statisticians. By retaining the name of the Royal Statistical Society the merged body was also able to retain the Society's charter that allows the RSS to conduct examinations, to accredit qualifications and to award the new title of CStat. This title has replaced the former professional qualifications of the IoS, and remains the only formal professional qualification in statistics.

A code of conduct is an integral part of any profession. The RSS code combines the aspirational and educational models identified by Jowell (1986), and recognises the importance of professionals knowing their limitations. CStats will improve their standing

if they keep abreast of modern developments, and this provides a strong argument for a programme of continuing professional development (CPD).

THE CSTAT QUALIFICATION

The award of CStat to fellows of the RSS is the responsibility of the Professional Affairs Committee (PAC), comprised of professionally qualified fellows. The qualification is not granted for life but has to be renewed annually. To date, however, CPD has not been a criterion for renewal. Successful applicants have at least one from (i) a class I or II UK honours degree and/or an appropriate higher degree, or equivalent overseas degree, that contains a substantial and verifiable amount of statistical method and theory, *plus* five years' practical experience in applying statistics, or (ii) the IoS Graduate Diploma plus four years' practical experience in applying statistics, or (iii) at least 10 years' practical experience in applying statistics at a substantial level together with acceptable evidence of knowledge, competence and contributions to the subject and its applications. In all cases the PAC also look for evidence that candidates have at least three years' experience which includes taking responsibility for the statistical content of their work. Evidence of CPD is expected during the period of practical experience, but it is *not* compulsory. Detailed criteria for the award of the qualification are given in Smith (1993).

OTHER SOCIETIES/PROFESSIONAL BODIES

In this section we briefly review the attitude of some other UK professional societies to CPD. A body that has close links with the RSS is *Statistics in the Pharmaceutical Industry* (PSI). Although UK-based, it has close links with Europe. There is an EU statement that 'pharmaceutical statisticians must be *appropriately experienced and qualified'*, but there is no mention of the *need* to update knowledge and skills. Within the UK the PSI identifies the CPD needs of its members and co-ordinates training through a training sub-committee, whose remit is to provide a forum for discussion and to promote good statistical practice. The Committee also makes recommendations on courses to be offered. The PSI does not hold information on all available courses and, surprisingly to us, it does not provide a record of attendance for attendees of its courses. There is no formal requirement for statisticians in the pharmaceutical industry to hold the CStat qualification, but there is pressure from within PSI for the RSS to take a lead in

CPD. At least one senior member of PSI feels that the RSS should contemplate issuing a statement of good practice with respect to CPD, and that it should take the lead in granting approval to statistical courses of high quality. The RSS approval would then add value to those courses.

Another closely related organisation is *The Operational Research Society* (ORS). It provides excellent opportunities for its members to advance their knowledge. In its member's brochure for 1997/1998 it lists 73 courses, and it seems particularly efficient at suggesting relevant ones. The ORS has performed its own market research that shows that its members would, on average, attend one course per year. In fact only 10% of members achieved this figure, and this has led to a number of courses being cancelled due to a lack of demand. In spite of the amount of information provided for its members, the ORS does not have any *formal* CPD requirement.

In 1996 *The Market Research Society* (MRS) launched a CPD scheme to encourage all members to consider their development needs on an annual basis, and to create a plan of action designed to meet these needs in a systematic manner. The MRS scheme divides development into three broad areas: academic, professional and personal. Members are expected to carry out activities in each area, but there is no compulsion.

At *The Office for National Statistics* (ONS), and more generally in the Government Statistical Service (GSS), there is no formal CPD programme for government statisticians. However, the ONS has invested resources to ensure development opportunities are available and they have developed a strategy for statistical competencies that are expressed in terms of outputs.

The *Actuarial Profession* has a CPD scheme that distinguishes between formal and informal CPD, and is mandatory for certain classes of actuaries. The *Institute of Chartered Accountants* is attempting to develop a strategy for their CPD activities up to the year 2005 and have published a consultation document entitled '*Added Value Professionals: Accountants in 2005'*. There are some excellent ideas for good practice for CPD in their *Post Qualification and Training* document, and in Section 5, we suggest a strategy for compulsory CPD for CStats, which draws on these ideas.

Within the UK many professions not related to statistics have CPD programmes. Nurses, medical doctors, dentists and engineers all have compulsory CPD during their period of practical training. For example, the nursing profession requires their members to keep a portfolio of activities, over a 3-year period, which is submitted to their governing

body as proof of activity. Clearly it is especially important for practitioners in the medical profession to keep up to date.

The position outside the UK appears to be just as varied. There are moves in some branches of statistics for some form of CPD. Official statisticians in Europe can use the structured programme of courses provided by TES on behalf of Eurostat, for their CPD, see Teekens (1998), in this session. Many official statisticians benefit from extensive training schemes put on by their own organisations, but there is no formal procedure for these qualifications to be recognised. We hope that our proposals, and those of TES, will provide a framework for the wider recognition of existing schemes of CPD.

LIFELONG LEARNING

There is an international move towards the recognition of the importance for all citizens to be able regularly to update their skills. For UK citizens Dearing (1997) has expressed a view that they should embrace *lifelong learning* in order to keep up with the current and future pace of change in the world, including technology and its ramifications in education, business and industry. There is a need for a programme of broad-based CPD, coupled with flexible and recognised pathways throughout life, with encouragement coming from employers. More specialised areas of activity will have special needs, and professional bodies will have a *duty* to demonstrate excellence. They must be the standard bearers of reliable benchmarks in education, business and industry. Dearing emphasises that the academic community must take collective responsibility for ensuring consistency between and within educational programmes, *wherever* they are delivered. Statisticians may be late in addressing professional status but they can still take a lead in CPD.

In 1997 the RSS surveyed its professionally qualified fellows over issues related to CPD. The responses from fellows were uniformly positive. In terms of commitments from their employers, over 60% of fellows who responded stated that their employers would be prepared to allow them more than 5 days a year for CPD, with nearly 25% reporting an allowance of more than 10 days. It is clear that a large proportion of professionally qualified fellows *and* their employers are committed to personal development in statistics. We feel that the time is now right for the RSS to create a benchmark standard for CPD and to set in place a flexible scheme with compulsory elements.

A STRATEGY FOR CPD FOR STATISTICIANS

A fundamental principle of being a practising and professionally qualified statistician is that one takes a *personal* responsibility to maintain ones competence and excellence throughout ones working life. All members *owe it to themselves and their fellow professionals* to ensure that they are professionally up to date and that the *reputation of the CStat qualification* is safeguarded. CPD is essential for the maintenance of standards and programmes for it appear to have two main dimensions. The first is the voluntary and/or compulsory dimension, while the second relates to the content of programmes on a formal/informal, or structured/unstructured basis. Our review of other professions, and of related areas, shows that all combinations are possible. What should be the requirement for statisticians?

We favour a scheme with a flexible structure, with the ability to evolve, but with compulsory elements. The CStat is a demonstrable entry qualification that now requires backing up by a verifiable CPD programme. Initially CPD should be made compulsory during the qualifying period of practical experience for all future candidates for CStat. We would also like to make it compulsory for all those with CStat to keep a diary of CPD activities that should be reported annually to the RSS when they renew their subscription. This would enable the RSS to develop a database of relevant CPD activities.

We believe that society now expects that professionals can demonstrate their expertise, not only through practice, but also through verifiable qualifications and activities that guarantee a commitment to improvement. At the outset the targets should be relatively easy to attain, but as the profession matures we would expect that the CPD conditions would evolve into something more challenging. The RSS should also negotiate with the PSI and ONS about the desirability of all statisticians in these areas having professional status. Once a major group accepts the need for professional standards we believe that the move to some form of compulsory CPD will be unstoppable.

CPD activities are varied, and we like the classification used by actuaries into formal and informal. An alternative is the MRS classification into academic, professional and personal. A flexible structure within a compulsory CPD programme can be achieved by a system of credit accumulation. Credits could be accumulated under each CPD heading and minimum targets set for each area, and for the overall total in a given time period. In the first instance the time period could be three years, but as the system evolves this could shorten to an annual requirement.

There will never be complete agreement about the credit values of different forms of CPD. We favour a system of scoring based nominally on hours of activity, with 1 point for each hour. Preparation and homework hours should be included. Thus passive attendance at a seminar would score one point, while *delivering* the seminar might score 12 points. Attendance at a formal training course of 2 days duration might score 24 points, while attending a two-day conference scores 12 points. Private study should be encouraged, and thus should be included, even though it is difficult to monitor. Total points should include a minimum number from formal activities that can be monitored, with a minority coming from informal activities such as reading. One of the tasks for the RSS will be to create a credit scoring system for all aspects of CPD. We welcome suggestions from statisticians with interests in these matters.

ACKNOWLEDGEMENTS

TMFSmith was supported by a grant from the Economic and Social Research Council under the ALCD programme.

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