CPD FOR THE BUSINESS AND GOVERNMENT SECTORS:
IMPLICATIONS OF THE RSS CPD IMPLEMENTATION STUDY

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Continuing Professional Development (CPD) is vital for any practising employee of any organisation. For many professions, especially one as diverse as the statistical one, it is important that the selection and evaluation of relevant, quality, statistical and non-statistical CPD is fully inclusive – both for the professionals themselves and also for their areas of application. This paper outlines the broad approach taken by the Royal Statistical Society (RSS) in its progress to implementing a CPD policy across its professionally qualified membership. Specifically, however, the paper will focus on two (non-academic) sectors – business and government – which in themselves are quite diverse. It will discuss how relevant CPD might be defined in those sectors; will address how a manager in these sectors might set CPD objectives for staff; and will suggest how an employee might locate suitable CPD training material.

INTRODUCTION

CPD is the maintenance, improvement and broadening of knowledge and skill and the development of the personal and professional qualities needed throughout an ***'s working life. These are not our words, but they encapsulate the approach being developed by the RSS as it seeks to implement a CPD strategy for its professionally qualified membership. The aim of the Society is to ensure that professional statisticians are, and remain, people in whom their clients and employers can have the utmost faith for the provision of quality statistical work.

The key words for the implementation policy are *development* and *breadth*. If the profession is to move forward its members must do more than just maintain the skills they have acquired to date. In addition a statistician's development involves the enhancement of both statistical and non-statistical skills. Moreover, this CPD needs to be chosen to be relevant to the employer, beneficial to the employee and acceptable to the professional society. The RSS has been undertaking a census of its C.Stat. and Grad.Stat. members, and it is the results of this which have informed the material in this paper. In particular it has confirmed that CPD is very much sector dependent, and also that, in some areas, relevant CPD training is harder to identify (this is to some extent true of the government sector) and in others (this is true of the business sector) it is sometimes hard to convince employers of its importance. It is our objective to address both of these issues in this paper.

CPD REQUIREMENTS FOR BUSINESS AND GOVERNMENT

Key among the fundamental principles which the RSS will seek to include in its CPD policy is the belief that personal and professional development are not separable – indeed, they complement each other.

For example, a statistician who becomes a manager might cease doing very much *real* statistics. Of course, this is not always so; for example, the statistician might have become the manager of a statistics section and still be very actively engaged in the professional work. But, even if the role is purely managerial and not overtly statistical at all, the person brings to the tasks of management a set of potentially vital skills developed through being a professional statistician. Examples of such skills are an understanding of the essential variability of all processes, how to measure and control it, and more generally an analytic modelling-based approach to problem solving. In any case, undertaking further statistical CPD may well improve the person's managerial performance. On the other hand, freelance statistical consultants are likely to be much more effective in their work if they possess and maintain their interpersonal, communication and organisational skills through relevant CPD.

To illustrate this, Figure 1 presents course material from part of a Career Management Skills module developed by the Careers Advisory Service at the University of Reading. This

gives a list of 18 skills that are categorised into those perceived by "employers" as being "very important", "important" or "less important" in the search for new employees. Those categorised as very important are likely to be the skills which need to be maintained and enhanced through CPD. These ideas are not new and are widely recognised in management education and training.

Let us now consider the skills that might typically be required of a professional statistician working within a technical statistical environment. A good illustration is provided by the Personal Effectiveness Profile for Statistical Consulting developed ten years ago within ICI Agrochemicals and shown in Table 1. We can see that there is much in common with the general management skills, though we do not find - nor should we expect - a perfect match.
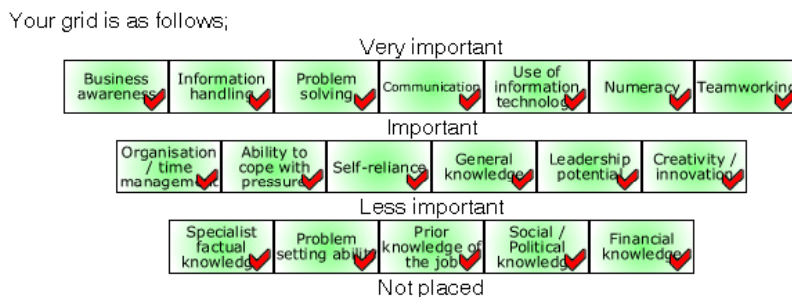

Figure 1. Skills Sorting Exercise.

Table 1
ICI Core Development Programme for Statisticians

A Core Technical Skills	C Application of Specialist Knowledge to the Job	F Work Management
	D Communication	
B Wider Technical and Business Awareness	E Innovation	G Professional Image

Clearly here maintenance and development of technical competence are regarded as important, but there is very much which matches well with the skills identified as most important in Figure 1. There is in the full ICI document a lot of detail in how performance against these skills could be measured, and hence how development could be assessed.

In government, also, similar importance is given to statistical and non-statistical skills. In the UK, jobs and career paths in the Government Statistical Services (GSS) are wide and varied and therefore the statistical skills required are equally varied and often specific to a particular job or career path. To illustrate this, Table 2 outlines some example career paths and the associated statistical skills. This list is not exhaustive and most jobs will require a combination of several roles.

Obviously the skills required will depend on the particular job and chosen career path. We can discern general statistical skills that are likely to be needed by all government statisticians, for whom the following might be considered core statistical skills. Most people will need at least some experience of the broad areas and associated knowledge.

A. Designing and managing the data-collection process
B. Compiling, analysing and interpreting data and statistics
C. Dealing with customers and dissemination
D. Standards, methods and professional expertise

In the light of this background, the GSS has produced a statement of what is required for Statistical Competency. This is shown in Table 3.

Table 2
Career Paths and Statistical Skills

Statistical Consultancy. Large numbers of government statisticians are engaged in the process of translating policy and other business needs into information requirements and analysis. As well as excellent interpersonal skills and a good knowledge of the subject area and policy context, statistical consultants need to: know what statistical information is currently available and its limitations; know how to exploit administrative systems to meet data requirements; design and implement new data collections; and have an awareness of various analytical techniques.

Methodology: Quality is the key to maintaining credibility in statistics and statistical advice. A key element of quality is ensuring that methods are fit for the purpose, and reflect best practice and latest developments. Methodologists will often specialise in a particular subject area building strong skills and understanding of the latest research. They will often need a good background and understanding of mathematical statistics in addition to problem solving and project management skills.

Statistical Management. Statisticians may move into a purely managerial position and therefore may not be practising statistics on a daily basis. Leadership and management skills are crucial but statistical managers will need to maintain their links with the wider profession and know their own limitations and what questions need to be asked, and where to get support and help from others.

Statistical Process Management. A great deal of government statistical work involves managing existing processes for producing statistics and making ongoing efficiency and quality improvements. Statisticians need skills to be able to manage and improve processes which reflect customer requirements, an understanding of the methodology used, and when to call on support of others to make improvements to the process/methodology.

Table 3
Statistical Competency

Competency	Key Positive Indicators	Negative Indicators
Statistical Has an understanding of statistics and has experience of applying statistics to practical problems including having an aptitude for handling and interpreting quantitative data, or given the support has the potential to develop rapidly in these areas.	• Shows good understanding of existing statistical knowledge (which may even be rudimentary) • Ability to learn and extend statistical knowledge to other areas • High level of interest in statistics and its applications • Applies existing knowledge to practical problems and thinks around statistical problems • Handles and interprets data drawing out key messages	• Has a cook book approach to statistics – clear evidence of having not internalised existing knowledge • Does not demonstrate the necessary intellectual skills to develop new statistical competences • Shows little interest in how statistics can be used in the real world • Fails to apply existing knowledge to new problems and does not suggest a sensible approach to solving problems • Misinterprets data or simply verbalises data rather than telling a story

But this is only part of the story. For recruitment to and promotion within the UK Civil Service in general, candidates are assessed against a much broader set of competencies developed by the Cabinet Office which is set out in Table 4, together with a list of appropriate training and development needs.

Table 4
Central Statement of Core Training and Development Needs

Category	Training and Development Needs	
Management and achieving results	• managing people: • developing people • appraising people • managing different kinds of people • managing resources/ achieving Value for Money • decision making • planning/operations management	• delivering quality services to customers/clients (internal or external) • delegating/working through people • team working • knowledge of equal opportunities policies • understanding, valuing and managing cultural diversity
Leadership	• creating a vision and securing commitment • change management • individual/corporate contribution	• team building • motivation
Intellect and creativity	• evidence-based policy development • logical/analytical thinking • creative/innovative thinking • strategic thinking • using numbers	• focusing on impact of those affected by policies/decisions • evaluating policies already in place • awareness of impact/benefits of new technology
Communicating	• written communication • oral and non-verbal communication • making presentations • interviewing skills • listening skills	• effective briefing • awareness/knowledge of how to present issues to outside world • making/communicating with external contacts • networking
Personal effectiveness	• dealing with stress/pressure • negotiating skills • influencing (including assertiveness) • workload/time management	• developing self-awareness (e.g. of strengths and weaknesses, etc) • commitment to personal development/learning
Expertise and knowledge	• public policy and administration: workings of government and parliament • government finance: the budget, etc • Europe: institutions, legal processes, budget, key issues • constitutional/important legal changes: Devolution, Human Rights Act, Reform of the Lords, Freedom of Information, etc	• accountancy and finance (including resource accounting and budget management) • the legal framework • project management • IT skills/awareness
Working with integrity	• understanding CS principles • propriety	• awareness of Open Government principles
Corporate awareness	• understanding the role of the "centre" (i.e. Cabinet Office and Treasury) in policy development • the Government's modernisation agenda	• understanding role of the Fast Stream in the Civil Service • "joined-up thinking": working across boundaries/partnership

The general story is consistent across the business and government sectors, but clearly now requires managers and employees to be able to set priorities and to locate appropriate CPD opportunities.

SELECTION AND LOCATION OF CPD REQUIREMENTS

In the business and government sectors, as well as in others, the development of staff generally evolves from an annual Staff Development Review. At this time the previous year's performance is evaluated and targets are set for the coming year. As part of this it is important to identify the elements of CPD which are likely to be required to help the employee meet these performance targets.

We have discussed with colleagues in the business and government sectors how they would approach this and what would be their constraints. A consensus emerges that CPD would generally be planned in three areas:

Statistical development: Here the manager would look for areas where deficiencies were apparent. CPD could consist of a supervised internal project, self-development through literature reading, coaching from the manager or another trained statistician. External training courses are frequently regarded as a last resort – for financial reasons, or because of their lack of direct relevance.

Personal development: In this case also the manager would seek to isolate areas of deficiency or areas of development which will enhance the value of the employee – time management, negotiating skills, presentation skills, … and so on. The provision of this type of CPD would frequently be internal, organised through the Human Resources department.

Non-statistical, technical: Training in this sector tends to fall into two categories – generalist training to enhance non-statistical skills, and specialist training to aid a deeper understanding of the work of the specific sector. Under the first heading might come data management and computing courses. These would frequently be external courses run, for example, by the SAS Institute. The second type of training would frequently be internal training, either formal or informal, and might be provided for employees from a wide range of disciplines. Industrial examples might be:

- Introduction to environmental toxicology
- Safety aspects of genetically modified foodstuffs
- The role of the employee in quality management

Government and economic examples might be:

- Understanding the Gross Domestic Product
- Interpreting the National Accounts
- Macro-economics for non-economists

While the desired training might be relatively easy to specify, the key issues frequently remain as to how such training opportunities might be identified, and how they might be funded. The second can often be the more difficult problem (and is beyond the scope of this paper), because it requires that employing organisations recognise their obligations both to their employees and also to their shareholders. The most important asset of any organisation is its workforce, and the employment of quality staff must go hand-in-hand with their development and retention. We say no more on this topic.

The provision of training opportunities requires access to relevant information and an indication of the quality of what might be provided. The first, especially with web access, is easy while the second really requires that information be passed on by word of mouth! What we provide here is a selective and non-random foray into the sources being developed by the Royal Statistical Society for use by its members and others who visit http://www.rss.org.uk.

Within the RSS website there are sections covering *careers* and *CPD* and it is planned to develop these further. In both sections there are links to the websites of a range of groups providing both statistical and non-statistical CPD. While inclusion in the RSS website in no way implies accreditation, it does provide access to opportunities for consideration. In the future there are plans to develop and make available a wide list of CPD training material across a range of areas. At present this can be found through the website of the Royal Statistical Society Centre for

Statistical Education which is funded by a consortium of partners and is based at Nottingham Trent University: the address is http://science.ntu.ac.uk/rsscse/Training_Directory. The interesting thing about the site at present is that it contains a list of economic and government CPD material available through the UK Office of National Statistics.

A concern of the RSS CPD Implementation Working Party, in its desire to ensure that CPD requirements are inclusive of all types of statistician, is how to provide opportunities for the lone statistician – especially those in St Helena or The Seychelles (see Phil Crook's paper to the Royal Statistical Society 2000 Conference). One possibility for the provision of statistical CPD comes from the range of courses which are becoming available in modular fashion and through distance learning (or both). Examples are the MSc in Official Statistics at the University of Southampton (http://www.socstats.soton.ac.uk), and the MSc in Biometry at the University of Reading (http://www.rdg.ac.uk/statistics) which will be available in this form in the near future. Reading also hope to launch later this year a Professional Doctorate in Statistics which will incorporate elements of research with individually designed programmes of statistical and non-statistical CPD for people in permanent employment working in their own country.

CONCLUSIONS

Briefly, the RSS is committed to the provision of a CPD policy for its membership. It is firm in its belief that this CPD should contain both statistical and non-statistical CPD, and that this non-statistical CPD should include personal developmental training together with CPD which is directly relevant to the employment constituency of each individual. In some areas it is recognised that such material may be difficult to locate. To do so requires commitment by the employer to view CPD as a fundamental part of its responsibility to its employees, and also means that professional bodies should look to provide suitable and comprehensive website information for their membership. This the RSS has started to do, and its further development is part of the ongoing business plan.

REFERENCES
Crook, P. (2000). *The loneliness of the long distance statistician.* The Royal Statistical Society Conference, Reading. http://www.rss.org.uk/cpd/rss2000/crook.html.