
Where are we now? - Learning from Subject Review in MSOR

Bill Cox
Aston University

w.cox@aston.ac.uk

Penny Bidgood
Kingston University

p.bidgood@kingston.ac.uk

Following similar exercises in Scotland (1992-94) and Wales (1995-96) seventy-one subject reviews in Mathematics, Statistics and Operational Research (MSOR) took place in 1998-2000. The process was carried out by the Quality Assurance Agency (QAA) who had appointed eighty-seven reviewers in MSOR. The QAA has published both a subject overview report (SOR) and the individual institutional subject reports (available from www.qaa.ac.uk). The LTSN has copies of all QAA MSOR reports, and the Scottish and Welsh equivalents on its website (ltsn.mathstore.ac.uk). These are editable and can be searched via www.ltsn.gla.ac.uk/qaa/ - for example entering a word will produce all the reports containing that word (use 'student' if you want them all!).

These reports are based on evidence gathered both before and during a three and a half-day visit from the review team. Each institution prepared a self-assessment document (SAD) outlining its aims and objectives, against which it was judged, and evaluating its provision under six aspects: – curriculum design, content and organisation (CDCO), teaching, learning and assessment (TLA), student progression and achievement (SPA), student support and guidance (SSG), learning resources (LR) and quality management and enhancement (QME). The subject reviews report on each of these aspects and grade them between 1 (worst) and 4 (best). The SAD was sent in advance with other documentation, including external examiners' reports, to reviewers in preparation for the visit. The visits included observations of teaching and learning, meetings with students (past and present), staff and employers and reviewing students' work and achievements. Hence the reviews produced masses of valuable information and identified lots of good practice.

This information is a valuable resource on MSOR provision, although much of it still lies with the individual institutions. Recently, the LTSN Maths, Stats & OR Network funded a project – 'Where are we Now?' - to disseminate good practice as identified in the published reports [2]. The project has two strands:

- Identification of examples of good practice in key areas and engage providers in sharing this throughout the sector
- The development of a database based on the reports and subject review methodology for use in evidence based research and development of good practice in MSOR provision

Preliminary analysis of Subject Review Reports

While the SOR is a useful document, it does not permit identification of providers where good practice has been found, gives little indication of the 'strength of feeling' about an issue, across the sector, and does not cover Scotland and Wales. In the current project the subject reports have been analysed individually to give this extra detail. Preliminary analyses of the subject review reports including those from Scotland and Wales have now been completed. Two methods have been used – one consists of identifying the strengths and weaknesses of provision by comparing comments in the reports with key features as identified in the QAA's Subject Review Handbook and the other looks at the overall conclusions listed at the end of each report.

The Subject Review Handbook [4] contains an Aide Memoire that offers "a set of prompts which are designed to ensure focused coverage of each aspect



A maths project funded by
LTSN Maths, Stats & OR
Network

of provision." Reporting on the prompts (if mentioned at all) can be critical, complimentary, both or non-judgemental. All citations that are either complimentary, critical or both are recorded for each provider and each prompt, so it is possible to identify the strengths and weaknesses of all providers, as perceived by the reviewers, and therefore identify good and bad practice at a glance. There are about 140 such prompts but some are not commented on fully indicating that these issues did not concern the reviewers very much. To give a taste of the range of information that can be obtained we will give a summary of the topics that are most frequently mentioned listed under each aspect.

Identification of good practice and some issues to be addressed

CDCO

Flexibility and choice - Nearly three quarters of providers were complimented on the flexibility and choice offered by their programmes. Sometimes the provision was a little narrow, or didn't give a balanced view of a particular area - often this was in applied maths or statistics provision.

CDCO matched to student profile - Almost half of providers were complimented on the way in which their curriculum was matched to the skills profile of incoming students. They had gone to great lengths to track changes in school mathematics and adapt their provision accordingly. In some 10% of cases more could be done in this area

Projects - The use of projects is now commonplace, certainly at postgraduate but increasingly at undergraduate level with some 60% of providers commended for their provision. The value of projects in developing transferable skills is well recognized, and reviewers found much to commend in this area. Where weaknesses were found there were generally in lack of clarity or rigour and robustness in assessment procedures for projects.

Opportunities for learning transferable skills - There was a lot of good practice observed here, with 60% of providers commended. The best provision in this area demonstrated transferable skills embedded in the curriculum, spanning a number of different courses. On the other hand delivery of transferable skills was also the only significant weakness referred to under CDCO, with a quarter of providers showing some deficiency in this area. Mainly the criticisms were of the type:

- not all students could be guaranteed to be exposed to all skills
- absence/weakness of assessment in one or more skills
- lack of specific support/resources for developing transferable skills

TLA

Teaching observed - Overwhelmingly (in 80% of providers) observed teaching was commended and found satisfactory by reviewers.

Student participation - Whether in lectures or the learning process generally, student participation attracted a lot of attention, with 40% of providers commended and 40% criticized in this respect. So there is much to be pleased with, but also a lot to do, in this area.

Academic support and guidance in the learning process - Although difficult to separate from similar features under SSG, the academic support and guidance was mentioned often under TLA, with a lot to commend (45% of providers), and not too much to worry about (about 10% of providers were criticized in this area).

Assessment attracted by far the most criticism under TLA, here broken down into various features:

- **Clarity in standards and criteria of assessment** - 30% commended and 40% criticized
- **Use of assessment in promoting learning** - half commended and a quarter criticized
- **Use of assessment to measure attainment** - 20% commended and 40% criticized
- **Appropriateness of assessment to student profile** - 15% commended and the same proportion criticized
- **Consistency of marking, etc** - only 15% complimented in this area and 25% criticized
- **Evidence of internal/external moderation** - while only 20% of provision was commended, a worrying 50% attracted some criticism in this area

There is no doubt that assessment is one of the major areas of weakness in the reviewed provision - as it has been in many subject reviews.

SPA

Poor progression and completion rates are another area of concern, across the HE sector. This may be related to both the widening participation and assessment issues. There are (at least) two features commented on widely here:

- **Progression rates at each stage of programme** - 30% of providers complimented and 45% attracting criticism, mainly at the first year level
- **Completion of the programme** - nearly 40% commended but criticisms in over 20% of cases

Student achievement from destination data - Overwhelming, reviewers were impressed by the excellent employment records of graduates in MSOR. Interviews with employers indicated that they were on the whole very pleased with the products of these degrees. 65% of providers were specifically commended in this area, and there were only a handful of criticisms

SSG

Written support and guidance - This is another area where most institutions have clearly got their act together, with 60% commended for their provision here. Helpful student handbooks are now commonplace, and also staff handbooks are beginning to make an appearance. About 10% of providers attracted some criticism in this area, often in relation to information about curriculum choices or assessment arrangements.

Staff/student relations - Reviewers, students and staff clearly attach great importance to good staff/student relations and it is something that is soon noticed on a visit. There were specific compliments in nearly half of the provision, and no significant criticisms.

Helpful staff - Clearly related to the previous item, the helpfulness and approachability of staff is without doubt the lynch pin of good provision. It was commended in three quarters of the provision and again there were no real criticisms. The help and support given by the staff is the crucial ingredient in good, effectively run provision, no matter how good the documentation and formal processes.

Support for the transition to university - While this was specifically commended in half of the providers reviewed, the problems with progression at first year level noted above show that there is still much to do in this area. 10% of providers were criticised in this area.

Individual needs met in academic guidance and tutorial support - Obviously greatly valued by reviewers and students alike, this area was commended for 45% of providers, and was only criticized specifically in a handful of cases. On the other hand, the problems noted over progression raise the question of whether individual students are receiving all the help they need

LR

There were no significant issues with an almost universal commendation of resources in the 1998-2000 review; 92% of providers were graded 4 and the rest graded 3 in this aspect [1]. Interestingly the Scottish reviewers were more critical on resources and particularly drew attention to staffing issues in some cases (rarely mentioned in QAA review).

QME

Effectiveness of QME systems - With much good practice found (35% commended), there is still no doubt that this is a major area of concern for MSOR (as it is in most subject areas). Some 40% of providers attracted criticisms in this area. Usually the criticisms are directed at the rigour of assessment processes and the (lack of) response to issues raised by students or external examiners. Essentially it is the closing the loop problem, ie acting effectively and promptly on quality issues identified - see below.

Response to external examiners - This is an area that crops up a significant number of times. 40% of providers were commended for their timely and effective responses to issues raised by external examiners, but there were significant criticisms in some 20% of provision. These were usually related to issues that had been repeatedly raised by external examiners but not yet addressed.

Views of students - Most providers (55% commended) now have effective, well documented staff/student committees, and along with good staff/student relations this usually makes for good, well run provision and happy students. However, there were a number of cases (20%) where response to students' concerns is tardy or non-existent, or where lack of formal structures lead to problems.

Identification and implementation of action for quality enhancement - Again, the closing the loop problem - and much to do in nearly a half of providers, despite compliments for 40%.

Induction of new staff - Another area where most providers seem to have got their act together, with mentoring arrangements, teaching certificates, ILT membership, etc, commended for half of providers. There were a handful of critical comments.

Appraisal and peer review - Ditto, but somewhat more patchy, with engaging experienced staff and linking to staff development activities the main problems.

Take-up of staff development activities in regard to TLA and SSG - Comments here normally refer to take-up of central staff development activities. Of course much staff development in TLA and SSG is done on a collegial basis - 'in house'. Some 30% commended and 10% criticized.

The Next Step - Dissemination of good practice

Analysis the reports gives a detailed picture of the strengths and weaknesses of MSOR provision in the UK. It raises many thought-provoking issues, reveals much good practice, and provides sources of evidence for research and development into MSOR education in HE. It has already helped the LTSN in its advice to HEFCE on the priority needs of the MSOR community [3]. With other sources, it has helped to identify assessment and progression, and the transition to university, as key areas needing attention within the community and these feature strongly in LTSN's current activities and future plans. The present 'Where are we now' project will initially focus on the dissemination of identified good practice in a limited number of areas:

- Access/widening participation, and its implications for student support
- Innovative use of CAL/IT and other methods in teaching and learning
- Student mentoring and peer tutoring
- Student record systems that help in early identification of potential progression problems
- Effective and innovative assessment
- Transferable skills

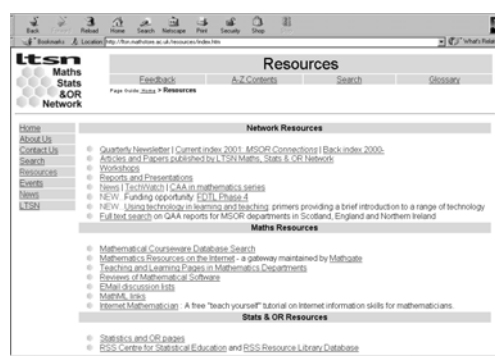
We hope to work with UK providers that have proven good practice in these areas to disseminate this across the sector by a variety of means. We would like to hear from anyone who would be interested in working with us on this project, either in providing examples of good practice, or in dissemination activities. There will be regular updating on the project and associated activities in *MSOR Connections*.

References

- [1] Mathematics, Statistics and Operational Research Overview Report, QO7/2000, QAA
- [2] *MSOR Connections*, 1, 1, February 2001
- [3] *MSOR Connections*, 1, 2, May 2001
- [4] Subject Review Handbook, October 1998 – 2000, QAA

How to...find maths, stats & OR searchable QAA reports on the Web

1. Go to <http://ltsn.mathstore.ac.uk/>
2. Press **Resources** from the menu on the left and then choose **Full text search on QAA reports for MSOR departments in Scotland, England and Northern Ireland**



3. Enter search terms in the box provided to find the QAA reports which contain the matching terms

