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On Integrated Lecturer Self-evaluation*

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The concept of the module review as a mechanism through which an individual teacher may undertake self-evaluation is introduced. The concept is placed in the context of institutional self-evaluation. An example of such a review arising from the author's own teaching within a Department of Electrical Engineering and Electronics is presented.

INTRODUCTION

AT BRUNEL University module reviews are prepared by all members of staff with respect to all the modules for which they have teaching responsibilities. These reviews represent the teachers' own *self-evaluation* of their teaching. In this paper, the requirements of such reviews as laid down by the University are presented, together with an example arising from the author's own teaching. The reviews are then placed in the context of the evaluation processes of the University. These have been informed by the literature on educational evaluation. The paper begins by presenting material drawn from this literature, an awareness of which is necessary for an appreciation of the role of the reviews in the University's self-evaluation of its teaching.

This paper is the author's response to the need, identified by Skilbeck [1, p. 14]: 'for educators everywhere to pay greater attention to the goals, values and processes of self-evaluation. Evaluation needs to become a critically reflective community.'

EVALUATION IN EDUCATION

The natural starting point for any investigation into evaluation in higher education is a definition of what is meant by evaluation in education. A definition acceptable to British academics would be found only in recent literature, since in 1976 Stenhouse [2] remarked: 'there is a highly developed specialist area of evaluation in education research in the United States and Sweden, but only the beginnings of such a development in Britain.' The definition of education evaluation adopted in this paper is that due to Adelman and Alexander [3, p. 5]: 'By "educational evaluation" we mean the making of judgments about the worth and effectiveness of educational institutions, processes and outcomes; about the relationship between these; about the resource, planning and implementation frameworks for such ventures.' It immediately follows from this definition that in an educational context [4, p. 11]; 'Evaluation in short, is an endeavour which is partly social, partly political, and only partly technical.'

Adelman and Alexander [3] make a distinction between 'formal' and 'informal' evaluation, 'formal' evaluation being distinguished from 'informal' by virtue of the *accessibility* of that process. In this paper, evaluation is taken to mean formal evaluation.

GOALS OF EVALUATION

In this paper, the main goals of evaluation are taken to be those specified by Adelman and Alexander [3, p. 57]: 'The main goals of evaluation are to promote improved teaching and learning and to provide all participants in courses with information on a wide range of aspects of a course's operation.' It follows that [3, p. 57]: 'these goals require that the evaluation be conducted as far as possible by course teachers and learners.' Therefore, evaluation must be an on-going activity as each new academic year brings a new group of learners, and involvement of the teacher in the evaluation process is a prepequisite.

LOGICAL DEVELOPMENT THE CONCEPT OF EDUCATIONAL EVALUATION

The evaluation procedures that are to be presented in this paper are informed by the logical development, over many years, of the concept of education evaluation.

In the early 1960s a comparative approach to evaluation was adopted [5] which involved comparing one curriculum against another. However, Hamilton [5, p. 16] has observed that: 'a critical problem that plagues all comparative evaluation studies is that there may be no common criteria (or set of criteria) against which to measure performance.' Hamilton has further stated that [5, p. 19]:

> In the light of the difficulties thrown up by the comparative approach, British evaluation research began to cast around for alternative

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> avenues to explore. One possibility rapidly taken up, was to import an American innovation—the 'objectives' evaluation model. This differs from the comparative approach in two major respects: (1) Evaluation becomes a central part of the curriculum development process, ... (2) The curriculum under review is no longer compared with another curriculum, but instead it is assessed against a set of prespecified *objectives*.

Initially, the adoption of the objectives model led to an undue emphasis on course content by British higher education. This is clearly brought out in [6, pp. 10–11]:

> Educational catalogues and prospectuses and reports characteristically contain a variety of formalised plans and statements which relate to particular teaching arrangements. Each of these summaries can be said to constitute or define an instructional system. ... The traditional evaluator builds *his* study around innovations defined in this way.... *His* aim is to evaluate the instructional system by examining whether, for example, it has attained 'its objectives' or met its 'performance criteria'. This *technological* approach fails to recognise the catalogue description for what it is. It ignores the fact that an instructional system, when adopted, undergoes modifications that are rarely trivial.

Further warnings about an overemphasis on course content came from Cox [7, p. 23]:

> descriptions of courses which contain only lists of content areas can be of little help in encouraging students to develop learning styles of working and thinking and attitudes towards learning that will enable them to cope with the demands of the future emphasising adaptability, relearning and flexibility.

An overemphasis on curriculum content may be avoided if the objectives are evaluated rather than viewing evaluation in terms of achieving objectives—a point made by Scriven in 1967 [1, p. 103]. Following on from this point, Scriven introduced the distinction between 'formative' and 'summative' evaluation [1, p. 104]. This distinction is clearly expressed in [4, p. 13]:

> formative information ... is, information which describes how the program is operating and contributes to it.... When a program has become established ... it might be time to question its overall effectiveness and impact.... During this phase, an evaluation may be termed *summative*.

It is important to realise what the results of formative and summative evaluations are.

> As a result of formative evaluation, revisions are made in the staffing, activities, organisation, and other materials of the program.... The goal of summative evaluation is to collect and to present information needed for summary statements and judgments about the program and its value. [4, p. 16]

The distinction between formative and summative evaluation is made sharper by an appreciation of what summative evaluation does not entail.

> The summative evaluator's function is not to work with the staff and suggest improvements while the program is running, but rather collect data and write a summary report showing what the program looks like, what has been achieved, and what implications and recommendations may be derived for improving future efforts and/or informing public policy. [4, p. 13]

Notwithstanding a move away from an overemphasis on course content, numerous serious criticisms of the use of the objectives model of evaluation, in an educational context, still remain. The objectives model has come to be referred to as the classical model of evaluation by some British authors.

In 1972 Parlett and Hamilton [2, pp. 112–113] introduced the concept of illuminative evaluation:

> Attempted measurement of 'educational products' is abandoned for intensive study of the programme as a whole ... Observation, interviews with participants (students, instructors, administrators and others), questionnaires, and analysis of documents and background information are all combined to help 'illuminate' problems, issues, and significant programme features.

Initially, the adoption of the illuminative model led to an undue emphasis on innovation by British higher education. This was a consequence of the adoption of an illuminative model being most easily motivated in the context of evaluating an innovation. The implementation of the illuminative model is clearly explained in [6, p. 14]: 'In illuminative evaluation there are three characteristic stages: investigators observe; inquire further; and then seek to explain.'

MODULE REVIEWS

The minutes of the 43rd meeting of the Brunel University Degrees Committee (June 1993) contain the statement:

> at the level of each module or short course taught:
>
> 'The lecturer(s) for the module should review the delivery of the module as soon as possible after its completion. The review should include consideration of the numbers taking the module, pass and fail rates, grade distribution, standard deviation; the teaching and learning methods and management; content; student feedback mechanisms; topics raised and responses; any comments (if available) specific to the module raised by the External Examiner.'

In the Department of Electrical Engineering and Electronics the module reviews are informed by the minutes of the department staff/student liaison committee and the minutes of the Boards of Studies for the degree programmes concerned with the module.

The author's module review for a linear systems course he teaches is reproduced in the Appendix to this paper. It represents a *formative* self-evaluation of the author's teaching. It should be noted that in the review the author follows departmental practice in referring to the standard departmental feedback form as a questionnaire. In the review, the author has followed the advice of Thorpe [8, p. 173] that: 'you should not discard feedback simply because of low response rates.'

The distinction between a feedback form and a questionnaire is clearly expressed by Thorpe [8, p. 179]:

> the dividing line between a feedback form and a questionnaire may be a very fine one. The fully fledged professional questionnaire is, however, very time consuming. Its value lies in the opportunity it provides to generalise about a large number of individual reactions to commonly expressed issues. Such questionnaires require several weeks preparation by a practitioner, ... and again several weeks analysis by a practitioner.... they remain on the fringes of concerns here, as likely to be too time consuming for most regular purposes.

MODULE REVIEWS IN THE CONTEXT OF DEPARTMENTAL EVALUATION

The next level up from the module reviews in the processes of departmental evaluation are the annual reviews prepared for each of the degree programmes run by the department. The annual review of a course is essentially a regular, baseline evaluation (see: [8, pp. 167–169] carried out by the course director. The relevant module reviews inform the annual review. *Summative* statements concerning the teaching within a department are prepared as a result of the major review of the department. Departments undergo major review every four years. The major review of a department is a comprehensive, illuminative evaluation of the teaching of the department. The relevant annual reviews inform the major review, which is the responsibility of the University Degrees Committee and follows guidelines laid down by the Committee. It is expected that in future the module reviews will be available on request to the members of the major review panel.

THE FUTURE OF THE MODULE REVIEWED

In view of some of the profound problems encountered in the teaching of the linear system course, the module review of which is appended, it is appropriate to make a few remarks here about the future of this course. It has a history of being regarded within its home department as a course students find inherently difficult. When the author first took on responsibility for the course he redesigned the laboratory element of the course to ease the burden it was imposing on the students. The way in which the laboratory element of the course was developed is reported in Owens [9]. The module review reports that the students do not, in general, find the laboratory element of the course a problem. However, the review also reports that the taught element of the course is deeply unattractive to many of its students. To satisfactorily address this problem the content of the course would have to be significantly revised. However, [1, p. 16]: 'when time and resources are limited, how do we justify teaching "x" but ignoring "y"? These questions are seldom asked because the typical curriculum is not rationally planned from first principles, but is taken over as part of a tradition, perhaps with a few minor adjustments from year to year.'

The restructuring of Brunel University's academic year away from the traditional British system of three terms, towards the semester structure, of two semesters, prevalent in the United States, has necessitated the complete restructuring of degree programmes. This has offered a unique opportunity to address the problems associated with the linear systems course. From the October 1993 intake onwards, undergraduates in the Department of Electrical Engineering and Electronics will first encounter the topic of linear systems in the second semester of their first year. The syllabus content has been greatly reduced but core material is to be introduced earlier in the course, this material being covered more slowly than before. In particular, more time will be spent developing in the students an appreciation of the role of mathematical modelling in engineering.

LONG-TERM GOALS FOR EVALUATION

The Faculty of Technology of Brunel University shares the hope expressed in [7, p. 32] that:

> evaluation of teaching may develop away from retrospective and external judgments and more towards constant reflection on the significance of the educational experience. Such a shift in emphasis in evaluation would parallel the move towards a more learner orientated approach in course planning.

CONCLUSIONS

The concept of the module review as a mechanism through which an individual teacher may undertake self-evaluation has been presented. This concept has been placed in the context of institutional self-evaluation.

All members of the teaching staff at Brunel University are involved in the processes of evaluation of the University's teaching. It is, therefore, the responsibility of all of the University's teaching staff to pay heed to Nisbet's warning [1, p. 169] that:

> Evaluation is no longer a novelty but is now an integral part of the power stucture in education. There is a danger that it may be used as a control mechanism to implement policy rather than an instrument for the assessment and criticism of policy.

Module reviews can be used in the appraisal of academic staff. In the author's own department, the Head of Department requests of each member of the teaching staff that they bring copies of the last set of module reviews they prepared with them to their annual appraisal. The issues that this practice raises, in the context of the evaluation of faculty, are discussed in Janna and Jakubowski [10].

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APPENDIX: ANNUAL MODULE REVIEW

EE 204 (Linear Systems)

Reviewer T. J. Owens

Part 1: nature of module

Participants

Linear Systems;
Year 2 Electronic and Electrical Engineering
Year 2 Microelectronics Systems Design
About 90 in all.

Content and level

This year 2 module is intended to present an introductory, yet comprehensive treatment of linear systems. The presentation is geared to students who are being exposed to a unified treatment of the behaviour of linear dynamic systems for the first time. The theory is presented in a way that will prepare the student for specialising in diverse areas like communication systems, control systems, and electronics. As in the previous year, there was no evidence of motivational differences in the two groups of students taking the course.

Prerequisite knowledge:

Electrical Engineering Principles—EE102
Electromechanical & Electromagnetic Principles—EE106 (advisable)
Mathematical Methods—MS110
Vector and Matrix Algebra—MS121

Co-requisite knowledge:

Fourier Series and Integral Transforms—MS212

Teaching methods

Traditional lectures formed the bulk of the students' contact time. All lectures were given by T. J. Owens, 27 hours in all. One hour a week for the first nine weeks, two hours a week thereafter. The students also had 15 hours scheduled laboratory time composed of 5 × 3 hour sessions, one laboratory being taken every three weeks. The laboratory supervision was split between T. J. Owens and P. J. Turner. Eight hours of

seminars were scheduled over two terms, for each seminar group. Half the seminars were run by T. J. Owens, half by P. J. Turner. Some lectures were supported by handouts. The majority of lectures involved substantial 'copying from the board'. Handouts were limited to ease the pressure on departmental photocopying facilities. The lectures were supported by the distribution of suggested exercises. The overall aims of the course were stated explicitly.

Assessment methods

Three hour written examination

six questions, two sections—one section of one compulsory question carrying 40% of the marks, one section of five questions of which three must be attempted. Each question in section 2 carries 20% of the marks.

Five laboratory logbook submissions.

The marking of the examination was undertaken entirely by the module lecturer. The mark awarded on the module has no laboratory component. However, 'satisfactory' laboratory performance on the basis of the marks obtained from laboratory logbook submissions is required. The laboratory logbook marking was the responsibility of T. J. Owens and P. J. Turner.

Performance

Attendance at lectures was, as in the previous year, consistently around 60 students. There was no 'tailing off' in attendance through the course. Attendance at laboratory sessions was very good. Generally, logbook submissions appeared on time and were acceptable to the markers. Attendance at seminars was very variable.

Breakdown of examination results

No. of candidates sitting the paper: 89
Average mark obtained 43%
Highest mark obtained 92%
Lowest mark obtained 4%

Distribution of marks

Range of marks	No. of candidates in that range
90–100	1
80–89	4
70–79	6
60–69	10
50–59	9
40–49	19
35–39	4
20–34	23
0–19	13

Percentage of candidates at first-class honours standard: 12%
Percentage of candidates failing (<35%) 40%

Part 2: student feedback

Analysis of responses to questionnaire

It was intended to distribute the standard department questionnaire to all students. The lecturer received the questionnaires for distribution after the scheduled completion of the course. Consequently, they were distributed to students who had turned up for a large group seminar. Although copies of the questionnaire were left in the departmental office for the other students to complete and return, only two students responded.

Total number of returns: 17
Percentage of the number took the exam who responded: 19.1%
Not all returns responded to each question.

Given the low rate of returns and the non-committal nature of the responses, no detailed numerical analysis of the questionnaires will be presented here.

Only three students made written comments:

1. Felt the course was presented in a blocky approach, with an idea expressed well, but then no link to ideas before or after it. Few examples worked through from beginning to end. Often simple points are over-explained, whereas complex ideas are underexplained and skipped over.
2. Sometimes very patronising! And sidetracks a lot. State space modelling especialy confusing. CODAS very good.
3. Sometimes the lecturer is patronising. Written presentation: odd word is unreadable.

Staff–student liaison commmittee
No comments about this module were reported.

Part 3: review of the module

Changes in content and their effect
The course was changed on the previous year in that the z-transform was not taught as students had complained that they became confused between the z and the Laplace transform. To compensate for this reduction in material more material was introduced on modelling with, in particular, an increased emphasis on the modelling of mechanical systems. The lecturer believes these changes to have been right in principle in that a greater emphasis was placed on an understanding of the fundamentals.

Other changes in presentation and their effect
This year full worked solutions to all question sheets were not distributed, as in the previous year, only the final answers. This change of policy, whilst saving on photocopying costs, appears to have had no discernible effect on student performance.

Comments on students' response to assessment
Although the average mark on the paper is slightly higher than the year before, the spread of marks is also greater. The high number of fail grades on the examination paper is clearly unacceptable. However, up to one-third of the candidates appear to be making no serious effort to master the material. It is therefore felt that no benefit would accrue from making the course 'lighter'. It is likely that such a move would only raise the average by awarding higher marks to the better candidates without having any real effect on the performance of the idle.

Proposed changes in content/presentation
It is difficult to know what can be done to improve on the unsatisfactory attendance record. No changes are recommended at the present time to address this issue.

The coverage of convolution, including a highly analytical derivation of the relevant result, will be reduced to a simple statement. The material to be deleted from the module is not directly examinable so the change should not inflate the examination marks of the more able. The change may, however, reduce the apparent sense of intimidation felt by the less able.

Staff development
No specific staff development is recommended at this time, though module content needs on-going review.

Other comments
The examination was disrupted by a bomb scare. The candidates commenced the examination at 9.30 a.m. At 10 a.m. the candidates were instructed to leave the examination rooms because of a bomb scare. The candidates returned to recommence the examination at 10.50 a.m. It is extremely difficult to judge the effect of the scare on the performance of individual candidates. The average on the paper the year before was 40%. This suggests the effects of the scare were not great. However, on balance the examiner believes the effect to having been slightly to the detriment of the candidates' overall performance.

The examination marks were normalized to 50% at the meeting of the Board of Examiners.

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