and this value-loaded term does not accurately describe an opportunity to upgrade a course which may be seized by an individual or group of academics with considerable resolution. Such an up-grading can be seen as a positive response and may well be in the interests of a particular establishment and its students at a particular time.

It does appear that until recently Portsmouth Polytechnic was exhibiting a severe case of drifting, with the age-range of the students narrowing, evening and other part-time courses declining and degree courses and post-graduates taking up the major component of effort and resource. However, times are changing and the recent and welcome influx of courses largely based on idea- and role-hybridization seem to have started rejecting earlier ideas of 'disciplines'. The new courses and some of the new approaches to courses have, at last, begun to be subject to a reverse academic drift, in that we now have very many more part-time students, not every course is a three year honours degree, and there is even favourable consideration of potential students who do not have three 'A' levels. All this, of course, is due to the new spirit of entrepreneurship which has been released by the Polytechnic's corporate status.

We have managed to begin to cast aside a system of academic elitism in which disproportionate emphasis has been given to special groups in the educational system, including ourselves. Is it therefore too much to ask that we consider altering a temporal structure which was designed to train clerics, and in which an overriding criterion in allocating time to the activity was to allow the sons of the gentry to return to their estates to oversee the harvest?

Ray Jones
School of Pharmacy & Biomedical Sciences

The Introduction of the Voluntary Assessment of Lecturing Skills in the School of Systems Engineering

Several institutions in the UK and Europe have discussed the appraisal of teaching/lecturing skills in education establishments. Within schools, military establishments and some further education establishments appraisal has already been introduced, especially during teacher/instructor training. The management and the Unions within UK education (and Portsmouth Polytechnic) have expressed different views, although both have made similar assumptions concerning the aims of appraisal and the need for appraisal to affect promotion or pay. Both have tended to be negative.

Having experienced both sides of appraisal, the following observations are aimed at provoking further constructive discussion within the Polytechnic. Assessment techniques and schemes which are not related to pay or promotion but which fulfil the general criteria outlined below are presented.

- Spreading good lecturing techniques and identifying and removing bad lecturing techniques from the system.
- Improving communications.
- Fostering a greater sense of departmental and institutional unity.
- Reinforcing the notion that the individual lecturer matters and is appreciated.
- Affording individuals the opportunity to discuss their techniques in the expectation of support.
- Increasing the confidence of the individual.
Most institutions have only considered lecturer appraisal by students, self or senior colleagues with some training in staff appraisal. From the authors experience in assessing instructors and running methods of instruction courses in the armed services, good results can be achieved in other ways. The process does not have to force a conflict or be three dimensional.

Possible systems and techniques and the early stages of the introduction of a voluntary appraisal system within the School of Systems Engineering is described. Initially the sort of people we teach and the fears of their lecturers are discussed.

**Engineering Undergraduates**

Within Engineering Education we are privileged to be teaching undergraduates who may be different in several aspects from other students. These are people who have an interest in science, in that they wish to discover the unknown. Where scientists measure things to new precision, an Engineer is interested in making things work, that is making products which are newer, better, faster and cheaper. The Engineer is eager to grasp every development as a possible solution to their present problem, remembering the development in case it is useful in the future. This is especially true of the young Engineer.

Historically, Engineers appeared in order to manage projects which were too large for a single craftsman. Engineers could negotiate with kings and priests to make compromises for building work. The same Engineers could then plan the work and direct the workers. Engineers are still effective controllers and communicators of ideas at all social and technical levels.

Sometimes a single technological advance can set off an avalanche of new products, often wiping out other products which may have taken years to evolve. Engineers are flexible and combine practical experience and new knowledge to make such advances; that is they apply general and theoretical principles. They must be inventors as well as coordinators, designers and foremen.

Engineers, like any other person, can imagine many approaches to solving a problem. Some are obvious, some are clever and excellent, some are clever and disastrous; the difference in the Engineer is that they are all people who can imagine - and then can transform their mental pictures into physical reality.

Our student Engineers are not the sort to be inspired by 'Chalk & Talk'. If they are presented with poor lecturing techniques they soon lose interest and become bored and disillusioned with their subject.

Engineering students require competent and dynamic teaching. This article will describe a simple voluntary scheme to improve lecturing techniques.

**Some Fears Considered**

Since 'The Appraisal of Teaching' appeared on the agenda in Higher Education establishments in Europe, discussion with fellow Science and Engineering lecturers around the
UK has revealed a widespread distrust. Both unions and management make similar assumptions concerning the aims of appraisal and the need for appraisal to effect promotion or pay! Both assume that lecturer appraisal would only be performed by self, by students or by senior colleagues with training in staff appraisal. This does not help the situation. It is assumed that the appraiser/appraisee relationship forces conflict and that appraisal requires reward and rights of appeal. This does not have to be the case and appraisal can have many advantages. We all like doing a good job! The fears expressed by staff and the negative assumptions often made by unions and management do not have to be fulfilled.

The appraiser/appraisee relationship does not have to force any conflict or be “up and down”. Lecturers can be paired each term or year to assess the lecturing skills of each other in single lectures.

Voluntary appraisal in this form does not have to be negative or critical as suggested by views that appraisal requires reward and rights of appeal. These views suggest that the results of any appraisal are not personal. This does not have to be the case. The critique can be private between the lecturers and the standard can be a moving average particular to an individual. For example after the critique the appraiser can be briefed to give the three worst points followed by the three best points. In this way it is impossible to compare one lecturer with another as all will receive three bad points and three good points no matter how good or poor the lecturing technique.

Information from engineering students does have validity. In Europe they have had over ten years to compare different teaching techniques and standards. Appraisal by students through questionnaire is dangerous as although students tend to be honest, they may only give the bad points rather than a constructive critique. A solution is for student appraisal to be anonymous to both the student and the lecturer. Students can be asked to complete anonymous questionnaires at the end of terms (or years) which specifically ask for lecturers to remain anonymous. The collation of these questionnaires can then be used to brief the entire staff of a course or department without being personal. This is constructive as a review of critical points is helpful to all.

It is not necessary for the assessors of lecturing skills to be trained in this skill providing a clear and concise critique sheet is provided. A thirty minute collective brief is adequate. As an example, within one minute of the beginning of a lecture we can all subconsciously make value judgements on basic lecturing skills such as:-

**Introduction**
Did it inspire?
Was it clear?
Did it take place?

**Preparation**
Were the teaching aids ready?
(Where is the chalk?)
Did the lecturer know where to start teaching?
Where are we in the syllabus?
Are the visual aids (view-foils etc.) professional?

**Timings**
Was the lecturer on time?
Did the teaching start on time?
Were the students on time?

**Review**
Did a review take place?
Did it inspire?
Did the lecturer know where s/he finished last time?

These require little formal training to assess
The Assessment Sheet
Example of items which may be included on an assessment proforma for the beginning of a lecture are:-

Prelims - The preliminaries cover those items that cannot be confirmed until the class convenes. For example, have the students brought the correct equipment?

Revision - Was a reminder given to students of what took place in the last lecture and if possible relating it to that which will take place in this lecture. Check that the students have the knowledge to progress.

Introduction - Did the introduction include the object of the lecture, the reason why the students need to know the subject matter and an incentive.

Preparation - For every lecture, a clear plan is required that includes:

- What the students are expected to know by the end of the lecture.
- What must be taught.
- How this is to be done.
- What aids and administrative arrangements are required.

The middle and end of a lecture can be assessed with a sheet that includes some or all of the following headings:-

- Did the lesson conform to a plan? (i.e. beginning, middle, end)
- Were the stages of the lecture confirmed?
- Were aids used and were they used correctly?
- Could the subject matter be simplified? Was the learning tested?
- Were the students interested?
- Could the interest have been stimulated by:-
  - Enthusiasm
  - Activity
  - More use of senses
  - Simplicity
  - Realism
  - Variety

- Was there distraction?
- Consider the lecturer's:-
  - Voice
  - Manner
  - Confidence
  - Attitude
  - Enthusiasm
  - Attitude to the class

- Was the lecture logical and clear at all times?
- Was the question technique correct?
- Was the objective achieved?
- Was the subject matter summarised?
- Was there a look forward to the next lecture?

Using these simple headings it is easy to produce a list and grid for a lecturer to tick or cross during assessment. With such a simple proforma it is easy for a lecturer to assess another colleague's performance and provide constructive critique.

Sample Assessment Proforma are available from the author.
The Introduction of the Voluntary Assessment
This part could have been titled; "How to become unpopular" or "How to lose trust, such is the distrust and fear of assessment among the staff in general. The idea of voluntary assessment was first suggested within the School of Systems, Portsmouth Polytechnic in September 1990. The ideas were greeted with less than an enthusiastic response. Since that time visitors from Sheffield Polytechnic and Brunel University have been asked to provide critiques for individual lectures and these have been successful.

This academic year a small group of three or four lecturers will begin to assess each others lectures on a voluntary basis.

Each stage of the introduction of technique appraisal is slow because of the widespread distrust and fear of the assessment process. It is only by successful example that real progress in the area can be achieved.

Conclusions
The appraisal techniques presented are aimed at assessing and improving lecturing techniques, not at assessing individual lecturers. The standard meetings with departmental heads can still be used to assess management skills and afford individuals the opportunity to discuss general problems and enable management to gain more knowledge about staff in a personal environment.

As lecturers assess their techniques in pairs, appraisal is personal and individual. With a moving average it is impossible to make rewards based on lecturing technique. Instead the process just improves the system output, individual output and individual performance.

Anonymous student appraisal can bring points that reoccur to the notice of all members of staff.

The process may improve communications, building a new and deep pair bond every time the process takes place. This in turn fosters a greater sense of departmental unity. The individual lecturer feels that s/he matters and is appreciated at a personal level. Individuals are provided with an opportunity to discuss their technique in the expectation of support from a colleague who has shared the experience of assessment with them.

Most important of all good lecturing techniques may be spread through the school while bad techniques are identified and discouraged or removed from the system. This will benefit our students and the organisation as a whole.

David A Sanders and Giles Tewkesbury
School of Systems Engineering

Peer Tutoring links between colleges and schools

There is an exciting way in which schools and colleges can work together: that is to set up a Peer Tutoring link. This uses students as a teaching resource and as positive role models in schools. At Imperial College they have nearly 100 student volunteers from various departments; they taking part in a Peer Tutoring Scheme and spend their Wednesday afternoons in local primary and secondary schools.

If you would like more information about setting up a scheme or perhaps building on links you already have then please contact the Educational Development Unit who will arrange for you to be sent more details and names of contacts.
Computerised Learning: The Dawning of Interactive Multimedia

The advent of the computer within the wider educational arena during the Sixties and Seventies created ambivalent emotions amongst those involved with the learning process. On one extreme the technophiles heralded the computer as an answer to many educational problems. Others, however, did not welcome the intrusion of cold logic machines into the essentially human process of education and saw it as a potential threat to the social processes involved. In retrospect it is clear that both these sides of the argument overstated the case. Both the enthusiasms and anxieties that accompanied the introduction of the computer in education have paled in the light of the limited progress made in the field of Computer Aided Learning (CAL) over the last twenty years. By any standard this has been methodical rather than spectacular.

The potential benefits of using the computer as an educational resource, however, still remain and drive the efforts of those who are devoted to the development of computerised learning packages. Foremost of these is the ability of a computer to present information in an interactive format allowing the learner to control the pace, level of difficulty and style of educational material presented. Also a computer package can often provide a level of polish and sophistication not otherwise possible on a smaller scale. In practice it is often the economic factors which determine whether computers are introduced as a learning resource. In schools the prospect of financing one-per-pupil computer stations to deliver learning has widely inhibited uptake, it is difficult to justify such expenditure when there is a often a shortage of more basic resources such as textbooks. It is also doubtful whether any computer in the near future will have the flexibility (let alone the sense of humour) needed to deal with the demands of an average classroom pupil. The computer has however found a role in presenting specialised education, for example in commercial environments, where in-house training is often expensive to provide through other means. In general CAL packages can be divided into those systems designed for the wider educational market (generic packages) and those commissioned for a particular training application (specific packages). An example of the former would be a computer based typing tutor or language learning system, an example of the latter would be an interactive computer-video system commissioned by a company to train its sales representatives.

To date the development of computerised learning has followed a variety of routes resulting in packages which span a wide range of sophistication. The level of interactivity and the quality of communication with the user of a system are important parameters in this respect. At the most modest end of this spectrum, packages can be little more than computerised "slide-shows" of information, at the most sophisticated so-called "Intelligent Tutoring Systems" employ learner-modelling and inferencing techniques to conduct an "interactive dialogue" with users. The majority of CAL applications - the mainstream, falls between these poles. Typically a package will employ on-screen menus which allow a student to choose which aspects of the learning material to explore, it may also monitor the responses given by the learner to determine which level of difficulty to present.

From an early stage it has been recognised that the effectiveness of any computer based learning system depends to a large degree on the richness of the media used. The inclusion of motion video in particular has been seen as a desirable element in CAL systems. This has led to the development of 'Interactive Video'. Such systems employ a computer linked to a twelve inch videodisc player to present material across the complete range of media in-