

# Quality Assurance: How Much is Needed?

Cary Laxer<sup>1</sup>  
Alison Young<sup>2</sup>

Dept of Coman Institute of Technology  
Terre Haute, Indiana  
laxer@rose-hulman.edu<sup>1</sup>

UNITEC, Auckland, New Zealand<sup>2</sup>

## ABSTRACT

In this new era of increasing competition there are markedly different perceptions of the quality of degree programs between institutions. Universities are continually striving to provide quality education that is also well recognised by potential students, employers, and other academic institutions. One method of ensuring quality of graduates is to ensure that the assessments that students must pass to complete their degree are of a high standard and are able to withstand scrutiny from academic peers and industry. Different universities, and even different departments within universities, use different models of quality assurance in their moderation of assessment items.

This paper contrasts two very different models of moderating assessment items in undergraduate degree programs in the USA and New Zealand.

**Keywords** Moderation, education, quality, equity



## 1. INTRODUCTION

What is moderation?

“An underlying principle of assessment is that it is:

- ◆ fair (all students are treated on an equitable basis)
- ◆ valid (that the assessments undertaken assess what they are supposed to and that they assess at an appropriate standard)
- ◆ consistent (different lecturers are making similar or comparable judgements)

Moderation therefore is a process which removes significant variation of standards in assessment.” (Blackburn and Kranenburg, 1999).

There are many different moderation processes, and these different moderation processes may be applied within programs as well as within an institution. The two institutions chosen for this study apply different moderation processes and the reasons for the adoption of these practices are many and varied.

## 2. MODELS OF MODERATION

Moderation can be conceived as occurring in a continuum, at the one end the lecturer is solely responsible for setting and grading assessment instruments, while at the other end there is an imposed quality model with rigorous formal sometimes bureaucratic procedures.

The former model accords a large amount of professional autonomy to the academic (academic freedom), the normative model of this would have the academic as a perfectly self monitoring individual.

“The lecturer setting the exam could be conceived as the wise, omniscient professional who with stark clarity foresees the way students will interpret the exam, is able to determine its length and level of difficulty accurately and consistently over each iteration of the course, and

can word it with such precision and brevity that ambiguity is a logical impossibility” (Clear, 1997).

The latter is more an industrial managerial quality control model. This model accords lesser trust to the individual academic but on the positive side acknowledges human frailty and from a management perspective is used as a risk management mechanism by the institution.

The ideal would be a model in the middle of the continuum in which a collegial team of academics engage in processes of peer review to support quality outcomes and fair assessments for students.

Moderation can occur entirely within a department of a tertiary institution and be undertaken by peers. The peer group may be extended beyond the institution and peers from other tertiary institutions may be approached to moderate assessments. In some cases external moderation is voluntary, while in other cases it may be imposed upon the institution by external regulatory authorities.

### 3. A MODEL AT UNITEC

The department of Information Systems and Computing at UNITEC Institute of Technology, in Auckland, New Zealand, offers a Bachelor of Computing Systems degree and each student would normally complete 21 courses over a three year period. Each course would typically have two or three summative assessment items, normally an assignment and end of semester exam with a mid semester test sometimes being included.

#### 3.1 The Five Point Internal Moderation Plan

The moderation procedure for all the summative assessment items is a five part plan.

1. The lecturer or lecturers discuss the assessment items for the course then, decide who is going to write them or parts of them, and then the designated lecturer writes the assessment item, either examination or assignment
2. The assessment item is then given to a peer competent in the subject but not teaching the subject in the current semester. The peer then checks the assessment item against five criteria:
  - ◆ The assessment assesses the learning outcomes, is within the scope of the prescription and is suitable for this level.
  - ◆ The questions and instructions are clear and free from ambiguity
  - ◆ The assessment is accompanied by a marking schedule to be given to students. This shows the marks for each question, the total marks and the weighting.

- ◆ The student workload is reasonable with respect to the assessment’s weighting.
  - ◆ The assessment provides sufficient scope to differentiate adequate from excellent work
  - ◆ The peer moderator also has the opportunity to make comments on the assessment item.
3. If the lecturer is new to the subject, or if it is the first time a course has been offered or if advised by the Head of Department, the assessment item is then given to the official internal moderator, a position held within the department, which is applied for by academic staff within the department, on an annual basis and is acknowledged by a teaching load reduction. The role of the internal moderator includes:
    - ◆ Ensuring that the individual course outlines are prepared in terms of learning outcomes and resources, and provide adequate detail of the complete assessment program
    - ◆ Examining the items of each course (pre-event) to ascertain that the following criteria are complied with:
      - ◆ The assessment relates to the learning outcomes of the prescription
      - ◆ The assessment is within the scope of the prescription
      - ◆ The questions are clearly stated
      - ◆ The instructions are clear and comply with the Academic Statute
      - ◆ The assessment items measure the generic and intellectual capabilities being developed
    - ◆ Summative assessments for courses combine to provide a valid and reliable assessment of the learning outcomes
    - ◆ All course assessment items have been subject to peer review.
  4. The assessment item is then given to the Program Co-ordinator to check that all the previous processes have been followed and that collectively all the assessment items cover all the learning outcomes of the prescription for the course.
  5. The assessment item with the signed cover sheet is then sent to the office staff for formatting, this is optional as academic staff can choose to do all their own typing and formatting, but the option is available for academic staff who need assistance. It is a requirement for final examinations to be formatted by the office staff. Either hard copy or soft copy can be supplied, the exams or assignments are then photocopied in class sets, class lists provided and sealed and stored by office staff until the day of the exam.

### 3.2 External Moderation

As well as internal moderation within the department there are two forms of external moderation used. The department has, as all departments are required to at UNITEC, an Advisory Committee of leading IT professionals who meet at least three times per year. At one of those meetings they review all the material pertaining to a selection of the courses. Courses are reviewed on a cyclic basis so the full set of courses are covered over a five year period. The material presented would typically include course outlines, course notes, text books or other resources and would always include the assessment items. They also review a sample of marked scripts to ensure the correct level of achievement of the students as well as the content of the course being current and topical.

It is also common to have academics from other institutions regularly check the level and standard of assessment items. In some cases these are formally appointed roles (such as degree monitors who act as critical friends) while in others it is a chosen practice by the lecturer. At UNITEC this takes place at least twice per year when the degree monitor visits, and he reviews a subset of the material.

### 3.3 Timeframe

To ensure that the moderation procedure runs smoothly and there is not a backlog with the office staff or the internal moderator a timeline is agreed upon by the lecturers. All assessment items must be with the peer moderator at least four weeks prior to the exam or the date of handing out an assignment. They must be with the internal moderator at least three weeks prior. This allows two weeks for the items to be reformatted into the standard DISC exam format, if the lecturer chooses to have an office staff member word process the assignment or exam, and then photocopied ready for exam day.

Therefore the week preceding exam week, all exams are copied with the correct number of copies for the students in the class, a class list supplied, sealed in envelopes and locked in the office, this ensures no last minute panics or exams not ready in time.

After the students have sat the exam and the papers marked, a copy of the exam is put on a shared drive so it is available for future students enrolled in that course to view.

## 4. A MODEL AT ROSE-HULMAN

The Department of Computer Science at Rose-Hulman Institute of Technology in Terre Haute, Indiana offers a Bachelor of Science under graduate degree. Each

student normally completes 16 computer science courses over a four year period. In addition, students have significant mathematics, science and humanities requirements, and have six free electives. Courses early in the major have many summative assessment items. These include several homework exercises (typically short answer style questions that reinforce theoretical concepts), several laboratory exercises (typically short programming assignments that can be completed in 3-4 hours), a large project (typically worked on in groups of 3-4 students over a 4-5 week period), and 2 or 3 exams. More advanced courses in the major tend to be large project oriented, where perhaps the only assessment item would be the project. Students may have several milestones along the way, but these are all assessed together at the time of project completion and presentation.

### 4.1 Generation of Assessment items

The introductory courses are also service courses (all freshmen are required to take an beginning computer programming and problem solving course, and several courses are taught to computer engineering majors as well as computer science majors), so they tend to have several sections and be taught by several faculty members. To insure that students in each section receive instruction in the same material, examinations are common for all sections (i.e., the same examination is given to all sections at a common time). Each instructor teaching the course submits several possible exam questions to the (volunteer) instructor coordinating the exam. The exam coordinator develops a draft of the exam and submits it to the other lecturers for review and feedback. Several iterations of this process may take place before the final version of the exam is decided on. Laboratory and homework exercises may be handled in a similar way, or each instructor may develop problems for the students in his or her section to work on. Although most, if not all, of the assessment items are common for all sections of a course, each instructor is responsible for marking his or her own students' work.

Upper level courses in the department tend to be single sectioned or, at most, double sectioned taught by the same instructor. In these cases the course instructor has complete autonomy in developing all assessment items. Both in the upper level courses and in the lower level courses, the only people generating, reviewing, and marking the assessment items are the lecturers teaching the course.

### 4.2 External Moderation

Rose-Hulman has a National Board of Advisors which acts in an advisory capacity to the Institute academic programs. Although the Board is an

Institute resource and not a departmental one, each member of the Board expresses an interest in which department of the Institute they would like to advise. The Board meets once a year, usually in the early fall. During each meeting there is time allocated for faculty members to meet with interested Board members for discussion on curricular issues.

The Institute is also blessed with a successful industrial recruiting program for our graduates. When a corporate recruiter visits campus to conduct interviews, they are usually paired up with faculty members in the departments they are recruiting from, over lunch. This provides yet another opportunity for the faculty to discuss the curricular goals and objectives and to get feedback from the industrial sector.

Accreditation is a formal form of external moderation. The Institute receives its general accreditation from the North Central Association of Colleges and Schools, and the engineering programs are further accredited by the Accreditation Board of Engineering and Technology (ABET). The computer science department chair serves as a Computer Science Advisory Board (CSAB) visitor, and, with the merging of CSAB and ABET, the computer science department will seek CSAB accreditation at the Institute's next ABET visit in 2001.

## 5. COMPARISON

The two models of moderation are quite clearly different. The UNITEC model is somewhat bureaucratic and does take a period of weeks to complete. There is a danger of lecturers "teaching to the test" as exams are written long before they are administered and cover material yet to be taught (at the time of the exam writing) in lectures. However when the students see the assessment item, assignment, exam or test, they can be assured that it has been rigorously checked by other academics, meets the learning outcomes of the course and is set at the right level.

The Rose-Hulman model, on the other hand, leaves everything to the individual course lecturer. Assessment items are written when needed, usually only one or two days before they are distributed. (Items that need large numbers of copies, e.g. for multi-section courses, are prepared a little farther in advance, perhaps up to a week before being distributed.) Students trust their lecturers to write assessment items appropriate for the level of the course they are enrolled in. If students feel an assessment item is inappropriate they have the opportunity to say so on the end of course evaluation.

The Rose-Hulman model also runs the risk of having different levels of assessment in the same course in different terms. If the lecturer for a course changes between terms (which is common) then, since there is

no internal or peer moderation, the level students are expected to perform at can be different. Different lecturers may also emphasize different aspects of the material, and this can also be reflected in assessment items.

## 6. CONCLUSIONS

The cost of tertiary education continues to rise above the level of inflation. Students are paying more for their education and are demanding more from their institutions in terms of the quality of that education. Many employers are requiring that students have certain grades before they will interview them for jobs. Thus, the need to accurately assess a student's mastery of the material is becoming more and more important.

We have presented two very different models for moderating student assessment items. At one extreme lies a rigorous model which requires several levels of moderation before a student sees an assessment item. This helps to insure the level and quality of the assessment item is appropriate for the students, is uniform across the course, and remains consistent over terms and lecturers. However, due to the work load and time commitment involved, there are few summative assessment items in each course (typically two or three), although the courses may have formative assessment items included. At the other end lies a model which insures academic freedom of the faculty member, and a trust in that person's professionalism and ability to generate meaningful assessment items. In this model many more assessment items are possible, leading to more feedback to the students on what they have mastered at the expense of the faculty member's time to grade the additional assessment items.

One of the authors (Laxer) has now taught under both of the assessment systems described in this paper. He feels the UNITEC model is too rigid and does not provide a sufficient amount of assessment. On the other hand, the Rose-Hulman model has too much assessment and the quality of that assessment is not as controlled as it is in the UNITEC model. It's time to find a happy medium, one that assures quality assessment for the student and insures the recognition and credibility of the degree earned.

## 7. REFERENCES

- Blackburn, M., Kranenburg, I.**, Summary of feedback from Moderation survey undertaken in Semester One 1999 in the Business Faculty, Internal report, Auckland Institute of Technology, 1999
- Clear, T.**, Processes of Examination, Moderation, Assessment - Goals Norms, Display or Dialogue? Proceedings of the Partnerships in Assessment of Student Achievement Conference, 1996
- Bachelor of Computer Systems**, the definitive document, UNITEC Institute of Technology, 1998