

INTEGRATING REFLECTIVE SELF-ASSESSMENT ACROSS THE CURRICULUM

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ABSTRACT

Examines the educational objectives that underpin the process of assessment. Reviews earlier initiatives for the integration of self-assessment and reflective practice across a construction management curriculum delivered using integrated problem-based learning. Reports the most recent student perceptions of reflective self-assessment. Describes the subsequent development of a structured assessment instrument for implementation in 2004 across the entire programme, evolved to satisfy the requirements of university quality assurance procedures and to encourage the development of students reflective practice and innovation.

Keywords: Problem-based learning, reflective self-assessment, integration.

INTRODUCTION

- The University of Newcastle Bachelor of Construction Management (Building) Degree uses an Integrated Problem Based Learning (IPBL) approach to delivery of the curriculum, with the intention of facilitating the students growth as life long learners and problem solvers. The particular form of IPBL used integrates the dual practices of *Self-Assessment* and *Critical Reflection* into the assessment process, to achieve:
 - Evaluation of the *quality* of students learning by the university,
 - Development of the students ability to function at the highest professional level upon graduation, and
 - Their development as Life Long Learners

(Chen et al, 1999).

During 2002 the authors piloted an initiative to structure these processes by developing a prescriptive marking scheme intended to foster the development of self assessment and reflection (Brewer et al, 2003). The following year this was

substantially refined to map skills development against subject outcomes, providing a matrix that allowed the student to self-assess their achievement (Brewer et al, 2003). Concurrently another initiative was undertaken to record generic skills development within the construction curriculum (McKee et al, 2003) using a range of performance descriptors developed by the university for use in an on-line recording tool, known as NU-Rapid.

The following account reports on student perceptions of their use, then describes the process by which these two initiatives have been combined in a single assessment process known as reflective self-assessment (RSA).

PROBLEM CONTEXT

A two-stage assessment process was introduced across the programme several years ago where each subject consisted of descriptions of the competencies to be demonstrated and the context in which this would take place, usually achieved through a structured report. Each subject was driven by a scenario (Learning Challenge) that triggered deep learning (McGeorge, 1996), giving students sufficient opportunity to innovate (Illinois Mathematics and Science Academy, 1996).

The students solution to the problem thus represented the culmination of a process of experiential learning, contextualised in a professional setting, wherein they would satisfy the predefined competencies. A process of formative assessment would then take place, generating feedback via tutorials, trial submissions and self-or guided assessments (Prideaux and Farmer, 1994), which supported the students in the development of their formal submission.

As part of their formal submission, the students would complete a self-assessment checklist, documenting the methodology they had applied to satisfy the challenge, learning objectives and assessment criteria. The assessor would subsequently return the checklist to the student with summative feedback, identifying attained criteria, providing an indication of the quality of the submitted work and, if appropriate, guidance for remediation. This process was thought to enhance student self-esteem through provision of a framework for self-direction and decision-making (Alverno College Faculty, 1985).

The second stage of the assessment process gauged evidence of performance provided by the student against a set of defined higher order competences, including;

- Critical reasoning and reflection
- Conceptualisation
- Innovative thinking
- Creative problem-solving
- Transfer of skills and knowledge
- Extended learning
- Synergistic performance
- Appropriate professional values, attitudes and ethics.

Students were only eligible for second stage assessment after achieving the first stage assessment requirements. This process rewarded the excellence of each individual student and resulted in the award of grades.

PROBLEM ISSUES AND PROPOSED SOLUTIONS

Through the process of program and course evaluation a number of issues became apparent. Underlying many of the problems was the disparity between the student's secondary school experiences and the assessment regime used throughout this program, designed to empower the learner: the consequent shift from teacher-centred learning to student-centred learning was identified as a difficult transition (Brewer et al, 2000)

The original model of self-assessment asked the students to link study areas to the context in which they satisfied them. The complete lack of structure was regarded as empowering by a minority of highly motivated students, but as bewildering by the majority, resulting in highly variable quality of responses (Brewer et al, 2001). The development of a matrix detailing all of the required objectives, the completion of which was left to the students' own devising, was regarded as providing enough structure to give direction whilst generating appropriate opportunities for innovative responses (Gameson and Chen, 2000).

As previously noted, equal importance has been attached to the development and assessment of the student's learning processes (Gibbs, 1995), reflected in the two-stage assessment process used. The pilot RSA acknowledged that, by placing a period of reflection at the end of the formal assessment period, some students were unable to see the link between it and the ongoing reflective process intuitively used by industry practitioners. Accordingly, the artifice of a separate period of reflection was abandoned and the students encouraged to reflect on an ongoing basis, detailing their thoughts in a reflective statement that accompanied the submission of their RSA (Brewer et al, 2003).

The authors previous prescriptive marking schemes were felt to restrict scope for the individual student to demonstrate innovation and creativity in their work, being both too wide-ranging and inconsistent with the competence-based ethos of the programme. In the pilot RSA it was decided that the students would assess their own performance against generic performance descriptors, indicating the level at which they felt they performed.

RESULTS

The effect of these assessment changes upon student learning was evaluated using a multiple perspective evaluation process that utilised:

- Student Evaluation of Course (SEC) survey: a compulsory instrument issued by the University as part of its quality assurance mechanism. This contains a

number of standard questions to investigate specific issues of interest to the University. A number of the questions relate to assessment issues.

- Student Evaluation of Teaching (SET) survey: a voluntary instrument provided by the University as part of its quality assurance and promotions mechanisms. This consists of a number of questions picked from a standard question bank, (of 400 questions) but can be added to/modified by the teacher to investigate specific issues of interest.
- Discussions during and after the annual discipline staff retreat.
- Student results and demonstration of reflective practice evinced in the RSA. These were analysed against prior student norms of reflective practice, contained in previous reflective documents.

The process of evaluation was monitored by a number of staff of the discipline for the purpose of validation of the findings against staff perceptions.

This paper utilises data from the last three sources as they relate directly to the changes implemented on this occasion.

There follows a summary of the SET questions specifically targeted at investigating the effects of the changes introduced in this phase, together with the results obtained. Questions 1 – 4 were taken from the standard bank of questions, whilst questions 5 – 8 were specifically designed for this application. Responses to Questions 1 – 7 were graded on a five point Likert scale where 1 = strongly disagree (with the statement) and 5 = strongly agree (with the statement). Question 8 required a simple Yes/No response. Question 9 elicited free responses to the question “What is the best thing about this course?” The survey achieved a 67% response rate in a class of 51 students.

Q1. Assessment in this course sets a suitably high standard	M = 4.3. SD = 0.666
Q2. The feedback on assessment in this course helps me learn	M = 3.9. SD = 0.683.
Q3. Assignments have been interesting.	M = 3.8. SD = 0.706.
Q4. Assignments help me learn in this course.	M = 4.3. SD = 0.559.
Q5. The grading of work is fair.	M = 3.7. SD = 0.559.
Q6. The assessment requirements of this course are clear.	M = 3.8. SD = 0.821.
Q7. I have learned to make connections between this course and others.	M = 3.9. SD = 0.631
Q8. Did you see value in the new assessment structure?	Yes = 64%. No = 36%.

DISCUSSION

There were three points of note identified in the survey results:

- The assignments and their assessment stimulated learning.
- The assessment process was regarded as both taxing and fair.
- A significant majority of students valued the new assessment procedure.

These points were further illuminated by the responses to Question 9, sometimes in ways that could not be inferred from the structured question responses, raising further

issues for course designers to consider. When asked, “What is the best thing about this course?”,

the feedback from the students indicated that the range of activities, both formative and summative, assisted their learning, both in this subject and for the future.

A strong theme emerged in terms of individual empowerment, both actual and perceived:

- “Free to explore different approaches to problems.”
- “Complete freedom and autonomy to complete the 3 reports and presentations in any direction we wanted.”
- “This course drives you to venture into areas that you thought were untouched. With self-discipline learning can be very successful.”

The authors noted the paradox that the students experienced freedom and empowerment during a subject that required rigid conformity to academic process and imposed increased structure upon the self-assessment process.

It was noticeable that learning new research skills were linked to the PBL approach, which in turn was associated with industry focus:

- “... having to learn how to research and also the knowledge gained from the research.....”
- “...provides me with the foundations of doing research.”
- “The ability to study in a way that is closely representative to the way in which the industry works....relate concepts to knowledge in a way that is not regurgitation.”

The authors found the students reaffirmation of the benefits of PBL reassuring in terms of retaining this method of delivery for the future. It was apparent that many students recognised the benefit of developing their learning skills for application far into their future:

- “Understand how (PBL) works and the approach required to solve problems.”
- “Open learning format, the need to justify learning.”
- “I have...gained skills that will allow me to continually learn through self teaching.”

And in terms of general subject structure:

- “Having the draft submission as a goal for completion is good as we are able to make the final submission better. This helps by minimising the stress come submission time and less remedial to do.”
- “Structure was well defined and easy to understand.”
- “Interesting. Motivating.”

DEVELOPMENT OF THE CURRENT MODEL OF RSA

The current model of reflective self-assessment is the culmination of development through three previous versions, each one investigated in terms of student perceptions,

staff feedback and grade profile. It builds upon the specific experiences documented in the previous section and those of students using NU-Rapid to track the development of their generic skills (McKee et al, 2003). In particular, it incorporates refinements in the areas of encouraging draft submissions, structuring the reflective process and encouraging extended performance.

It was agreed that one aspect of student behaviour brought from secondary education was the notion that incomplete drafts of their work would lock-in the deficit exposed in weaknesses in their thinking, inevitably reflecting poorly in their final grade. Additionally, many students also cited pressure of work for their failure to engage in draft development activity. The majority of students also viewed the reflective period at the end of each subject as synonymous with a period for remediation, in effect rendering the final submission a 'draft'. In its original format, the RSA utilised a tranche of marks as reward for participation in the formative process, but this was found to generate meaningless activity from some students: it was felt that the real reward was contained in the benefit accrued from interaction with the assessor. The draft submission process has always been regarded as an essential part of experiential learning. Consequently, it was decided to attach a penalty weighting to the final grade in the event of a student's failure to submit draft work, as a more appropriate inducement to engage.

Reflection on the learning process has been a central tenet of the programme. In the original RSA it was required that the student's self-assessment of performance was supported by a reflective statement, outlining their thoughts upon the learning processes that they had undertaken, and lessons learned for the future. Whilst this change streamlined the assessment process it didn't produce appreciable improvements in the quality of reflection. The subsequent incorporation of a number of generic topics relating to core skill development (together with performance descriptors against which the student could self-assess their progress) has been demonstrated to be an improvement that provides structured triggers for reflection (McKee et al, 2003). Future mapping of core skill development across the curriculum, using skill descriptors and performance statements defined in the University's core skill framework (Sher et al, 2002) will see their progressive attainment.

The focus of assessment (and the consequent focus of learning) is now therefore constrained to three areas, namely, acquisition of basic competence (satisfaction of all curriculum competences), demonstration of superior performance (as specified by the assessor and evinced in submissions) and targeted core skills development (as selected by the assessor, but defined by the university).

CONCLUSIONS

This paper has examined the educational principles that underpin assessment development for the Bachelor of Construction Management (Building) degree programme, providing the rationale for developing the student's ability to reflect and self-assess. It has reviewed earlier initiatives for the integration of self-assessment and reflective practice, explaining the philosophical drivers and practical considerations that have resulted in developments in the assessment process. It has reported the results of the most recent survey of student perceptions of the reflective self-assessment instrument and described the subsequent development of a new structured assessment instrument for implementation in 2004 across the entire programme. It has highlighted the ways in which it has evolved to satisfy twin imperatives, namely satisfying the requirements of university quality assurance procedures and encouraging the development of reflective practice and innovation by students.

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