Re-engineering Assessment Practices in Scottish Higher Education

The goals of the REAP project

The Re-engineering Assessment Practices (REAP) project involved the implementation and evaluation of new models of assessment practice supported by technology in large cohort first year classes across three Scottish Higher Education institutions – the University of Strathclyde (lead), Glasgow Caledonian University Business School and the University of Glasgow. It has also examined how to embed new assessment practices within institutional strategies and within quality enhancement processes. REAP was one of six projects funded by the Scottish Funding Council under its e-learning transformation programme.

Assessment in REAP is broadly defined to include tutor, peer and self-assessment and feedback processes both formal and informal. In practice, professionals not only assess their own learning but they often also form the criteria against which to evaluate progress. In the REAP project, the goal has been to re-design assessment in first year modules to enhance the development of learner self-regulation and the skills required for lifelong learning.

REAP Course Redesigns

Across the three participating institutions over the period 2005-7, nineteen class redesigns were implemented and evaluated, primarily large enrolment first year classes with numbers per class ranging from 160-900 students. Overall about 6000 students participated. The redesigns spanned a considerable range of disciplines (sciences, engineering, arts, education and social sciences) and teaching and learning contexts. Each redesign addressed different local drivers for change, involved different technologies and involved a different balance of local and central support. The technologies utilised to support redesigns included podcasts, blogs, electronic voting systems, online tests, e-portfolios, discussion boards, simulations, intelligent homework systems and feedback software. The institutional contexts also differed with the project including an ancient university, a nineteen-sixties university and a new post-92 university. Also, in one institution the redesigns all took place in the same faculty (Glasgow Caledonian Business School) following a top-down management trajectory whereas in another they spanned all five faculties (the University of Strathclyde) and involved a more bottom-up process of change. This diversity was intended to ensure that any findings would have wide applicability across the HE sector.

Evaluation

A key assumption underpinning the REAP project is that if we wish to enable students to develop as self-regulating learners they must be given a more active role in assessment processes. Within REAP a set of assessment principles were defined (Nicol and Macfarlane-Dick, 2004) and developed (Nicol, 2006) and used to evaluate opportunities for enhanced learner responsibility in assessment processes brought about by the assessment redesigns. Also evaluated were:

- the workload burden on staff;
- learning gains (improved exam performance);
- the added value of technology applications in different contexts;
- improvements in relation to the departments own specific objectives from change.

The REAP team supported all the evaluations using a range of methodologies. These included focus groups (staff teams and students), questionnaires to students, analysis of exam results as well as changes in relation to REAP assessment

principles. An assessment and feedback experience questionnaire has also been developed and piloted.

Achievements: learning and workload gains

The evaluation data from the redesigned modules are still being analysed. However, the following represent some of the key findings to date:

- Some assessment redesigns involved the replacement of face-to-face activities with online tasks where students could practise specific skills at their own pace. Such redesigns were characterised by reductions in staff workload without any loss (and often gains) in learning quality. For example, in French, tutorials were reduced by 50% and replaced with online tasks: a saving of 200 hours in staff time was shown while the exam failure rate was still reduced from 24% to 4.6% compared with 2005/6. Mechanical Engineering used an online homework package to reduce homework assessment workload – this department saved 102 hours in staff time over the year without any drop in exam performance.

- In many cases, the redesigns did not involve a reduction in academic workload. Instead, there was a redistribution of effort with staff spending more time supporting learner-led interaction with content with less time being spent on lecturing or traditional assessment activities. For example, Psychology reduced lectures by 50% but used that time to support student interaction through online essay writing tasks with facilitated and monitored peer feedback. Students spent more 'time on task' and the mean exam mark improved from 51.1% in 2005/6 to 57.4% in 2006/7. In Educational and Professional Studies time spent by teachers on assessment activities was reduced while peer feedback processes were given increased support. Here a 10.4% gain in overall exam marks was evinced compared to 2005/6.

- A key purpose behind the assessment redesigns was to support the development of learner responsibility in first year classes. Many approaches were used to encourage students to actively engage with, and take some ownership of, assessment criteria including discussions of criteria before engaging in learning tasks, peer identification of criteria and model answers. Opportunities for active self and peer assessment also took a variety of forms including online multiple choice tests, peer review processes, students self-assessing their skills and producing a development plan and students predicting their grade for a submitted assignment. For example, in Business Management, students generated their own multiple-choice questions, which were then delivered in class using electronic voting technology. This procedure encouraged active engagement with assessment criteria and helped students identify gaps in their own understanding.

- Students generally reported positive reactions to these modes of assessment and learning which give a focus for the development of lifelong learning skills. Also, most redesigns led to enhanced support and formative feedback on learning in first year classes. The literature on retention shows positive effects from such interventions.

During REAP we observed local patterns within the redesigns that we believe are potentially important to the achievement of learning enhancement and/or to efficiency gains. Again this data is preliminary with many redesigns incorporating more than one of these aspects:

- *solo-group processes*, characterised by alternating phases of solo work and group dialogue around learning tasks, often linked to the use of discussion boards or e-portfolio tools;
- *online skills practice*, characterised by feedback on demand through software simulations, intelligent homework systems or online objective tests, often associated with a reduction in teacher feedback or marking workload;
- *enhanced classroom feedback processes,* specifically linked to the use of questioning and electronic voting systems in face-to-face classes;
- *community support processes* where enhanced opportunities for online social interaction (e.g. a discussion board) often triggers shared learning and the development of learning communities;
- *peer scaffolding processes*, where discussion boards support teacher-monitored peer feedback with large numbers (e.g. over 500) often without teacher workload increases.

Dissemination

A wide range of outputs are available on the REAP website (www.reap.ac.uk) including:

- Case studies telling the stories of assessment redesigns for most classes/modules including matrices analysing each implementation against the assessment principles.
- Extensive evaluation data from each redesign.
- Links to institutional strategy resources.
- Guides and resources on use of electronic voting systems, e-portfolios and other software tools.
- Conference presentations (over 40), publications (8 papers) and reports deriving from the REAP project.
- A range of materials from the REAP Online International Conference on '*Assessment for Learner Responsibility*' held from 29-31st May 2007 have also been archived. This includes conference keynotes, a further 35 cases studies of technology-supported assessment course designs, the outputs of synchronous and asynchronous discussions of keynotes and case studies. 400 delegates from 32 countries participated in this conference.

Achievements: Strategic Developments at Institutional Level

The REAP project tested two different trajectories in relation to strategic developments at institutional level – top-down and bottom-up. At the Caledonian Business School (CBS) the REAP assessment principles were incorporated into the CBS Teaching, Learning and Assessment strategy and were subsequently used to review all undergraduate modules. In contrast, at the University of Strathclyde, the REAP developments were led from a local bottom-up level with a range of class redesigns in each of the five faculties. However, the success of these local developments has now led the Deputy Principal, Convenor of Academic Committee, to request a strategic review of Strathclyde's assessment policy including the role of technology. An institution-wide working group, chaired by the REAP Director, has now embedded the principles in assessment policy with examples of technology applications. Future work will use this policy as a tool for quality enhancement of future assessment and to support further redesigns across the University.

Lessons Learned

The following are some lessons that might help those wishing to replicate these developments in their own institution:

- The benefits deriving from ICT in education are not automatic and are more likely to be achieved by redesigning classes and courses with particular objectives in mind. Clear pedagogical objectives linked to a robust rationale should underpin development activities. In the REAP project, the objective was to increase learner-self regulation. This objective was defined in relation to a set of assessment principles drawn from the research literature. These principles guided the selection of local departmental projects for funding, were used as the basis for redesigns and formed part of the criteria underpinning the evaluation.

- As well as pedagogical objectives there are usually practical objectives such as demonstrating cost saving or efficiencies gains through course redesign. You are more likely to achieve these benefits from redesigns with technology if the redesigns are carried out with the desired benefits clearly in mind in advance of implementation (learning gains, cost savings) and when these objectives are iteratively addressed during ongoing formative evaluation.

- A coherent approach to evaluation should be adopted with considerable support provided to departments. Most academics do not have the skill or the time to carry out evaluations but if the institution is to build on successes then evidence must be forthcoming. Such evaluations should be formative in nature so as to encourage continual refinement from pilot to full implementation.

- Where possible, implementations should involve course teams rather than isolated individuals. This will promote sustainability and is more likely to lead to a coherent student experience and efficiency gains.

- Consideration should also be given to the possible benefits deriving from linking local redesign implementations to strategic developments. In two of the participating institutions, the REAP assessment principles were incorporated into the institutions' teaching, learning and assessment strategies. The aim was to build on local developments.

- Findings should be widely disseminated within the institution and externally. Internal dissemination helps create a culture of continuous development whereas external dissemination ensures that implementations are compared against current national and international developments. Also, importantly external dissemination and recognition often has a positive backwash effect on the participating institutions.

Conclusion

The REAP project has demonstrated new ways of engaging students as active agents in learning. It has provided 'proof of concept' that technology can support learning and workload gains in large classes when assessment design and e-tools are tightly coupled. Examples of transformation have been shown across a diverse range of courses and disciplinary contexts and across more than one institution. These findings suggest that these processes of transformation are a plausible prospect more generally in the HE sector.

For further information see, www.reap.ac.uk
David Nicol, July 2007.