Advice on Managing Transformational Change:
Course Redesign using ICT

The Scottish Funding Council's e-Learning Transformation Programme aimed to identify ways of using information and communication technologies (ICT) as a catalyst to transform and improve the quality of teaching and learning in higher and further education. The Scottish Funding Council recognised that making effective use of ICT to support teaching and learning is a major challenge. Firstly, there is little systematic evidence that technology application leads to learning quality improvements or to cost savings. Secondly, the rapid pace of technological change means that investments in ICT can be risky if they do not serve strategic goals. Nonetheless, institutions cannot ignore developments in ICT. Technology permeates all aspects of daily life, including business and leisure pursuits, and students are now coming to university with the expectation that they will learn using technology. This paper provides some pointers to how to harness ICT in support of teaching and learning. The assumed context for the analysis is a scenario where a higher education institution has secured external funding, or is intending to use internal funding, to stimulate further use of technology in support of teaching and learning within courses or modules. This paper draws on findings from the Re-engineering Assessment Practices (REAP) project (www.reap.ac.uk).

Pedagogical Purpose
A key first step in the application of technology to teaching and learning is to identify a clear pedagogical purpose and rationale for each application of ICT. This will help ensure that the application of ICT leads to the enhancement of teaching and learning and not just to an increase in staff time or costs of delivery. The pedagogical rationale should also be aligned with the strategy for teaching and learning within the institution. In the REAP project, the rationale was to redesign assessment practices so that they supported the development of learner self-regulation in first year classes (e.g. through enhanced opportunities for self and peer assessment). A set of assessment principles was defined based on published research: these served both as a framework to redefine the student role in assessment and to evaluate the potential afforded by technology in different disciplines.

A clear understanding of the potential benefits deriving from ICT applications
It is also important that the expected benefits of the technology implementation are defined in advance and are measurable. The Scottish Funding Council identified learning quality improvements and/or cost savings as key goals for the transformation programme. While these goals are measurable (e.g. through exam performance and an analysis of staff time spent on teaching and learning) this is not straightforward. First, providing proof of benefit requires that robust baseline data is collected before new approaches are implemented. Secondly, collecting some data (e.g. measurements of staff time) is complex and requires significant commitment by project participants. Thirdly, some benefits might occur over a longer term (over a few years) rather than during the lifetime of the project. Having a clear pedagogical rationale can add value here: it allows some 'process' measures of effectiveness to be identified that can enrich the evaluation: for example, in REAP it was possible to evaluate enhanced opportunities for self-regulation by analysing increased use of self and peer assessment processes.

Selection of projects
How projects are selected for internal support is a key consideration. It is important that early implementations provide proof of concept of benefits if the intention is to motivate further participation in course redesign within the institution. In REAP, the assessment principles served as criteria for the selection of projects for funding as

well as contributing to the evaluation. Departments were asked to provide a redesign plan identifying their own specific objectives for change and to show how their approach aligns with the overall assessment goals of the project (i.e. to develop learner self-regulation).

One key lesson learned through REAP was that it was better if funding allocated to departments was in two parts and was contingent on specific deliverables. Half the funding was provided at the beginning for the production of a course redesign plan and the second half was given on production of a final case study report of the implementation including an evaluation of the benefits. This strategy meant that the REAP project team had to provide considerable support at the planning stage in supporting the redesign process. However, the payoff was that the redesign plans were more likely to produce the desired outputs. Where possible, implementations should also involve course teams rather than isolated individuals. This is more likely to result in sustainability, a coherent student experience and to efficiency gains.

Types of Support Required

The following are the different kinds of support required in redesigning courses with ICT:

- Project Management: managing a programme where there are multiple course redesigns requires robust project management processes, to evaluate proposals for funding, to manage contractual arrangements, to chase up reports, to organise staff development events, to ensure evaluation data are collected at the right time and where required to produce reports and liaise with funding bodies. Academic staff may not have the skill or the will to carry out such administrative activities. REAP showed that a central project manager did facilitate the smooth operation of such programme activities. Some departments also found it productive to allocate a local project manager to organise meetings of staff, to produce reports, to liaise with the central programme team and to manage other activities.

- Pedagogical support: experience in REAP shows that carrying out a complete redesign of teaching and learning using technology is a complex process. While support in producing redesign plans at the outset has a large payoff (see previous section) departments might also require advice when building on the findings of formative evaluations. A clear pedagogic framework is at the heart of the best module or course redesigns using technology. There is a great deal of research in this area but it is unlikely that academic staff will be familiar with this literature.

- Technological support: the need for technological support can vary at departmental level as some departments have technical assistance. Nonetheless central support can pay dividends in supporting project objectives by training and supporting staff in use of new technologies and by developing guidelines on software applications. Failure to address technological issues can seriously damage motivation and discourage participation in course redesign.

- Evaluation: a coherent approach to evaluation should be adopted with support provided to departments. Most departments do not have the skill or the time to carry out extensive evaluations but if the institution is to build on its successes then there is a need for robust evidence of benefits. Such evaluations should be formative in nature so as to encourage continuous refinement from pilot to full implementation.

- Project Funding: while funding is usually required to legitimise change in modules and courses, the level of funding required need not be high. In the REAP project the sum required to pilot module innovations was around £7-

12k depending on need. Contrary to common belief such monies were rarely used to release staff time as those teaching courses generally had to be involved in their redesign. Experience indicates that funding was generally used to employ a local project manager, to buy equipment or software licenses, to provide local technical support or specialised training or to develop content.

Sustainability and Embedding

While the operational context is critical to the choice of tactics to ensure embedding and sustainability, a number of factors can increase their likelihood. These include

- A widely discussed and shared institutional strategy for teaching and learning (and e-learning)
- Linking local implementations to a strategic driver and to recognised needs within the institution (e.g. reduce the assessment burden, enhance group working, provide greater support in the first year)
- Involving all members of a course team in the redesign.
- Involving a range of disciplines in redesigns to demonstrate broad applicability of findings
- Support for staff to help them make educationally sound choices about the use of technology in redesigns.
- Evidence based evaluation where proof of concept can be demonstrated
- Common evaluation criteria across all redesigns – this ensures that the reasons for successes and failures of individual designs can be identified
- Having a roll-out strategy that builds on the successes of initial implementations.
- Sharing success stories across the institution including the provision of opportunities for personal dissemination by those teaching redesigned courses.
- Explicit senior management support including project reporting at a senior level.
- Providing user centred services that make it easy for staff to adopt new approaches (e.g. in REAP, providing a one-stop shop where advice on all the issues associated with the use of electronic voting technologies could be acquired).
- Central institutional support for new software applications and for their integration with other systems may be required longer term, depending on the institution.

In the REAP project, one institution used a revision of its assessment strategy to guide local course redesigns (a top-down approach) and then evaluated the redesigns in relation to the strategy. In another, the success of the local implementations led to a review of the assessment strategy (bottom-up), with this review guiding further implementations. While the initial trajectory for change differed across these institutions, synergy at both organisational levels helps strengthen and promote long term embedding and sustainability.

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