A blueprint for transformational organisational change in higher education: REAP as a case study

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Introduction

In this chapter we discuss a large-scale development project in a higher education institution, the REAP project (Re-engineering Assessment Practices), in relation to transformational organisational change. In earlier papers (Draper and Nicol, 2006: Nicol and Draper, 2008) we discussed innovation at the level of course redesign. Here we focus on change at the level of the whole institution. The following are the questions we wish to address: what are the obstacles to achieving transformational change in teaching and learning across a whole institution?; what were the strengths and weaknesses of the REAP approach in this respect?; what lessons have we learned and what advice would we now give to other HE institutions or to national agencies that fund projects to improve teaching and learning across a whole institution? We first provide some background, identify some barriers to institutional change and give a brief overview of the REAP project. We then discuss aspects of REAP that proved effective in addressing these barriers.

The e-learning Transformation Programme

In 2004 the Scottish Higher Education Funding Council, since renamed the Scottish Funding Council (SFC), launched its e-Learning Transformation Programme. Bids were invited from higher and further education institutions in Scotland for projects that would promote 'transformational' change in teaching and learning facilitated by information and communication technologies (ICT). One definition of transformation given by the SFC was the following:

> *Transformational change will require a conscious and deliberate decision made by one or more institutions to do something differently in a systematic way across the whole institution, on a defined timescale of two or more years.*

In other words, projects funded under the e-learning transformation programme were expected not only to demonstrate enhancements in teaching and learning but also to show the strategic embedding of changes across the whole institution.

Barriers to Transformational Change

The SFC programme was ambitious in seeking changes in teaching and learning that would impact across a whole institution. In the list below we identify some of the obstacles to this kind of internal institutional change. This list owes a debt to Lindquist (1978) but it is derived from our own experience of over twenty years in trying to promote and support academic innovations.

- Major disciplinary differences in teaching and learning
- Isolation of academics from the educational research literature
- Weak linkages between local innovations and strategy developments
- Low levels of senior management buy-in after funding is secured
- Little evidence about the benefits of innovations
- Funding diverted to supporting development activities already underway

A significant barrier to institution-wide change in higher education is the organisation of teaching and learning into departments and disciplines. The lives of academics, their ways of knowing and investigation, their affiliations, career prospects and reward structures are almost all bound up in disciplinary cultures, norms and behaviours. The SFC was interested in projects that involved 'doing something differently in a

systematic way across the whole institution' [i.e. university]. But this seems to require some kind of uniformity of approach, even though most successful educational development projects usually work with, rather than against, the diversity associated with different disciplinary teaching and learning cultures.

A second barrier to institution-wide transformational change is that most academics working in the disciplines are not knowledgeable about research on teaching and learning in higher education. Even if they have read literature on teaching and learning generally or that which exists in their discipline (e.g. Journal of Chemical Engineering Education), they may have little experience in translating educational ideas into effective teaching and learning practices. So a key issue is how to support academic staff in making informed changes in teaching and learning without having to study the educational literature, which is a discipline in itself with its own theories, terminology, discourse and approaches to evidence.

Thirdly, institutional embedding of change implies a strong linkage between local innovations carried out in departments and faculties and institutional strategies and policies for teaching and learning. Yet this linkage has proven difficult to achieve through traditional educational development projects where the motivation for change is normally to address local not institutional needs, which in turn often seem to academic staff involved to be different across disciplines and departments.

Fourthly, senior management buy-in is important if an educational idea is to take root across a whole institution. Senior support is needed to facilitate commitment at decision-making committees and to ensure that any project successes lead to changes in policy and strategy documents and to subsequent action within the institution. Yet senior management support for academic innovation, while often strong at the planning stage when external funding is being sought, also often dissipates after the funding has been secured. In addition, few higher education institutions have organisational structures in place that enable them to learn from, and build on, their own successes in locally developed projects. Indeed a characteristic of most HE institutions is that innovative practices are rarely shared, or even known about, across departmental boundaries.

Fifthly, while it is easy to recruit early adopters to projects where funding is available, it is much more difficult to bring the late majority on board if the project is not perceived as successful. One reason for this is that most projects are not systematically evaluated and thus provide little good evidence of benefit. This makes it difficult to persuade others across the institution, and particularly those from different disciplines, to get involved or for senior managers to use the findings convincingly to inform strategic developments. A final issue is that many funded projects get sidetracked away from their original goals. Instead of using the funding to carry out project activities, those receiving funds in departments use them to advance improvements in projects they were already engaged in before the new funding stream became available. In part, this can be attributed to the project goals not being tightly defined with the result that the scope of what is considered by some as legitimate project activities is too broad.

Overview of the REAP project

The REAP (Reengineering Assessment Practices) project was one of six projects funded by SFC. REAP was a collaboration across three HE institutions - the University of Strathclyde (lead institution), Glasgow Caledonian University and the University of Glasgow. The REAP project set out to redesign assessment and feedback practices in departments and faculties across the three institutions with the explicit aim of developing in students the ability to monitor, manage and regulate their own learning.

This chapter focuses on the University of Strathclyde, as the work in this institution is most relevant to our present focus on institution-wide change. At Strathclyde, the REAP project involved the planned and supported redesign of assessment and feedback practices in nine large first-year modules and one third-year module with student numbers ranging from 190-560. Course teams from nine different departments representing disciplines across five faculties carried out the redesigns. By course team, we mean a group of academic and support staff responsible for the delivery of a module. The spread of departments across all faculties had a dual purpose: to demonstrate that the models developed through REAP could be applied within any disciplinary area and to ensure impact across the whole institution.

The REAP redesigns involved changes such as shifting some of the responsibility for assessment and feedback from academic staff to students, enhancing opportunities for students to monitor and self-assess their own learning and to participate in assessment processes such as peer feedback and dialogue. All the redesigns were systematically evaluated in relation to input (staff time), process (changes in methods of teaching and learning) and output measures (exam results, student and staff perceptions). Of the ten redesigned modules, six showed measurable gains in student attainment, including improvements in the overall exam pass mark of between 6% and 16% and a reduction in the number of students failing exams. None of the redesigns increased teacher workload, after allowing for the cost-to-change, and some selected redesigns showed reduced teacher workload. Student satisfaction was high across all implementations and academics were also positive about the teaching benefits to the department. Table 1 provides a brief description of three.

EXAMPLES OF FIRST YEAR REDESIGNS

- **Psychology (560 students)**. Lectures were cut by half and replaced by a series of six structured online collaborative essay-writing tasks over the year. Student groups took responsibility for their own working methods and feedback was provided from multiple sources (through model answers, peer dialogue and the teacher). A significant overall improvement was evidenced in the quality of written essays, in the end of year exam marks and in student satisfaction. Many students requested this format for other first-year classes.
- **Mechanical Engineering (250 students)**. Electronic voting technology was used to support interactive peer dialogue and feedback in lectures, online testing was used to enable 'just-in-time' responsive teaching and an online homework system enabled independent learning. This redesign led to a 60% reduction in staff assessment workload, improved retention and raised achievement of weaker students.
- **French (200 students)**. Introduced regular online formative self-testing linked to summative tests, reduced tutorials by 50% and replaced with online tasks. Enhanced face-to-face contact with electronic voting technology. Reported a reduced exam failure rate (12% to 2.8%). Students reported that the online tasks established important study habits necessary for language learning.

Table 1: Brief descriptions of key elements in three course designs drawn from REAP

As the project progressed, REAP ideas began to spread across the university as evidenced by recruitment of new course teams, discussions in departments and faculty committees, and through a new university policy for assessment and feedback. This policy, which was approved by Senate, was derived directly from the REAP project but was also informed by, and refined through, extensive consultations across the whole institution. REAP funding ended in 2007 but its legacy remains. At the present time many whole departments and faculty groups are redesigning modules and programmes using these principles. In addition, further work is taking place in collaboration with Registry and the Planning office to modify and align course validation and approval processes to the underlying educational ideas embedded in the assessment policy document. More recently, resources are being piloted and developed to support staff development in course redesign with a focus on assessment and feedback.

The REAP findings have also attracted considerable attention across the HE sector. Many other UK universities have adopted or adapted the REAP principles for course redesign and embedded them in strategy documents. Numerous UK projects have secured research funding based on plans to implement the REAP principles. REAP findings have also been shared with institutions in Europe, Australia and the US with some institutions formally using REAP principles to steer development activities.

The REAP Approach to Transformational Organisational Change

REAP had significant educational success within the University of Strathclyde as measured in improved learning achievements, high levels of student satisfaction across a number of redesigned courses and, in some cases, reduced teacher workload. REAP also demonstrated successful organisational change as indicated by the number of courses redesigned across the institution (at least two in each faculty); changes in the institutional strategy for assessment and feedback; and explicit reference back to the REAP project in ongoing developments in departments, faculties and the institution (e.g. quality enhancement, credit restructuring). So what were the key features of the REAP approach which contributed to its success in moving beyond individual courses to change at the institutional level?

Three features were important in REAP. Firstly, the project started with a conceptual foundation which brought together a theoretical analysis of the problem domain of assessment and feedback at a number of levels, published empirical findings and a range of exemplars of good practice. Secondly, from this analysis we formulated a set of short summary statements that were used to communicate what the REAP project was about and to gain commitment from a range of different stakeholders. Thirdly, key elements of the conceptual framework were used to guide and support a range of implementation activities across the institution. In the next section we discuss the conceptual groundwork behind REAP. In later sections we describe the deployment of REAP ideas, rhetorically and pragmatically.

Conceptual groundwork
The conceptual basis of REAP was first articulated in the paper by Nicol and Macfarlane-Dick (2006) which laid out an educational argument for redesigning assessment and feedback practices. That paper identified a goal for assessment and feedback, a range of bottlenecks in practice based on a review of the research literature and a set of guiding educational principles. It also made suggestions about how these principles might be used to improve practice.

The REAP proposal to the SFC built on Nicol and Macfarlane-Dick (2006) and on a wider pool of published research. It also drew on educational development work at the University of Strathclyde over a number of years. The core conceptual groundwork carried out before the REAP project began included (i) the identification and analysis of a problem domain, (ii) the articulation of a clear project aspiration and (iii) the formulation of a set of educational principles.

The Problem Domain
In REAP, assessment and feedback was chosen as the focus for development because it is recognisable as an area of concern to most stakeholders in higher education. Most teachers are neither pleased with the results of the feedback they provide nor with the workload that marking and feedback involves: and this is particularly true with large first year classes. Students are also dissatisfied with assessment and feedback as shown by the UK National Student Survey where this subscale receives the lowest ratings. Many other learning and teaching issues in HE can be related to bottlenecks in assessment and feedback.

The Aspiration of REAP
An innovation project that is aimed at changing ways of doing things across a whole institution benefits if there is a message, vision or aspiration that has meaning and can be acted on across a range of disciplines. This educational aspiration provides the overall rationale for development activities and for some stakeholders it gives a sense of value and coherence to the project. An aspiration is a long-range goal (or ideal), something that most people believe is important, an outcome that if achieved would be grander than the project itself. A large project might, for example, have as its aspiration to enhance critical thinking or to foster an inquiry-based approach across the whole institution.

The educational aspiration in REAP was 'self-regulation': the long-range aim was to help develop in students' the ability to monitor, evaluate and regulate their own learning processes. In REAP this aspiration

was also linked to practice, to 'what teachers do'. The REAP proposal to the SFC in 2004 expressed this in the following way:

> *The educational purpose of the REAP project is to develop students' capacity to self-regulate their learning. This will be achieved through the enhancement of teaching and learning practices that support reflection, self and peer assessment and through devising higher quality, and more strategically aligned, assessment and teacher feedback.*
> (p5, REAP proposal, 2004)

In most HE institutions, as at the University of Strathclyde, the development of learner autonomy or independence is a stated aspiration or core value within the teaching and learning strategy. However, institutional strategies rarely say how autonomy is to be developed. This linking of project aspiration to the academic strategy was a distinctive feature of REAP.

The Assessment and Feedback Principles

Teachers need to be able to translate educational ideas into actual teaching and learning practices in their discipline if the educational aspiration is to have any meaning and if change is to transcend disciplinary boundaries. This was a key purpose of the eleven assessment and feedback principles shown in Table 2. These eleven principles define pedagogical basis of REAP. They are deliberately expressed as short phrases or statements that point towards practical action rather than being too abstract. Each principle is backed by substantial research evidence about how their application improves student learning.

Good feedback practice should:
1. Help clarify what good performance is (goals, criteria, standards);
2. Facilitate the development of self-assessment and reflection in learning;
3. Deliver high quality information to students about their learning: that helps them self-correct
4. Encourage teacher-student and peer dialogue around learning;
5. Encourage positive motivational beliefs and self-esteem:
6. Provide opportunities to act on feedback;
7. Provide information to teachers that can be used to help shape their teaching (to student needs)

Effective assessment tasks should:
8. Capture sufficient study time in and out of class;
9. Distribute student effort evenly across topics and weeks
10. Engage students in productive learning activity
11. Communicate clear and high expectations to students.

Table 2: Principles of good assessment and feedback design (based on Nicol and Macfarlane-Dick (2006) and Gibbs and Simpson (2004)).

Principles (8-11) are essentially about 'time on task' (Nicol, 2009). Research shows that the more time students spend studying in and out of class, the more they learn (Gibbs and Simpson, 2004). Importantly, time on task is not just about active engagement in learning: research shows that time on task also triggers the conditions whereby students reflect on their own learning and get informal feedback from discussion with peers. In REAP these four principles meant redesigning first-year modules so they encouraged regular and structured learning activities: for example, replacing one or two large assignments at the end of the academic year (e.g. a large essay) with series of small regular assignments (e.g. 500-word essay) throughout the year.

The seven feedback principles (1-7) are primarily about designing learning in ways that that would give students practice in managing and evaluating aspects of their own learning (Nicol and Macfarlane-Dick, 2006). Redesigns might involve students' constructing a better understanding of assessment criteria through analysis of model answers, creating structured opportunities for reflection and self-assessment, giving peer feedback on a piece of work or organising assignments in ways that ensure that feedback is used to make improvements in subsequent work.

The 'time on task' principles provide steers to students about how much work to do and when, whereas the seven feedback principles provide steers about the kinds of work required if students are to become better at regulating their own learning. While the principles can be applied separately, different combinations are required in different contexts (e.g. first-year versus later years of an undergraduate degree).

During the REAP project the conceptual resources were further developed and continually improved through contributions in many different formats including research papers, presentations, publicity materials, short and long reasoned arguments for each principle, over 100 examples of their implementation, audio files and conference materials. Some of these resources highlighted the principles and the research and linked these to examples of practice while others highlighted assessment bottlenecks and discussed how these might be addressed by application of the principles (see, Nicol, 2009).

Rhetorical Resources
The success of the REAP project, or any similar institution-wide project, requires repeated acts of persuasion with regard to stakeholders across the whole institution and beyond. It is therefore essential to develop a way of presenting the messages behind a project in a convincing way that will ensure buy-in. In REAP, we used the three fundamental components of the conceptual framework described above, namely,

- The problem domain (i.e. assessment and feedback).

- The deep and worthwhile educational aspiration (i.e. the development of learner self-regulation).

- The underpinning educational principles (i.e. the eleven assessment and feedback statements shown in Table 1.)

as entry points or rhetorical resources, rhetoric being the act of persuasion.

Our experience in recruiting course teams, in canvassing senior management support and in numerous dissemination activities was that these entry points or, more accurately, headline summaries and the different arguments embedded in them helped capture attention and gain commitment. The problem domain and the eleven principles are perhaps most striking in that they attracted considerable interest during discussions and presentations. Importantly, while deeper messages, arguments and resources could be accessed if academics or other stakeholders chose to drill down to deeper levels within the complex resource base, it was the headline arguments or summaries that were important in attracting initial attention and interest, and also as memory aids that stakeholders often return to repeatedly.

While these rhetorical resources were deployed in different ways at different times to secure buy-in from stakeholders with quite different needs, exactly how stakeholders responded to these headline arguments and in what combination is not clear. However, the following illustrate some possibilities based on experience.

We found that some academics with practical teaching concerns were best persuaded to participate in the project by expressions of the problem domain (assessment and feedback). These academics might already have identified problems (e.g. giving feedback to large numbers, poor time management) that they wished to address. However, later on, they might find value in the eleven assessment principles especially when they realise that behind each principle are practical approaches that might help address their problems. The successful applications, documented in the research literature, might also be convincing as would the realisation that implementing these ideas is just be a stop-gap measure to address immediate problems but

instead actually helps realise a longer-term educational goal, the development of learner autonomy. Other academics might initially be attracted by the principles and their educational power especially if they hear how others have applied them: for example, many academics have been attracted to the idea that when students spend regular time on task that they are more likely to self-identify areas worthy of further study and to discuss their work with peers.

Still others, for example a Vice-Chancellor, might be more interested in promoting a general educational aim (or graduate attribute) across the whole institution and might be persuaded first by the aspiration of self-regulation then by the principles perceived as practical ways of developing this. The target of assessment and feedback might then be seen as the aspect of courses in which this development would be best pursued.

As noted earlier, we gave numerous keynotes, presentations and workshops on REAP both internally and externally. What happened at these events also provides insight into the way academics responded to these rhetorical resources. For example, at the end of a presentation, participants would often approach us to discuss ideas that had been triggered by the presentation. They wished to discuss, for example, how they might apply the assessment and feedback principles in their own contexts. Importantly, the ideas they formulated would often go beyond what we could have suggested, given our lack of knowledge of their teaching and disciplinary context. In other words, disseminating REAP ideas was not about transmitting a suggestion, a principle or a way of addressing problems, which is then fully understood. Rather understanding required a constructive act by the recipient: something would come out of the conversation that neither party "had" or could construct by themselves.

This experience, which was repeated at almost every presentation no matter which of the REAP team presented, reinforced our belief that certain elements of the REAP message were captivating to a wide stakeholder group from across many disciplines. Moreover the different entry points and the level of specificity versus generality in the format of the principles were effective in drawing stakeholders into the process of making practical sense of the ideas. That is, a degree of indeterminacy is actually part of the effectiveness of these resources as rhetorical devices.

Using the conceptual resources to support changes in practice
How the conceptual resources underpinning REAP were used in working with course teams and other stakeholders in the institution was as important as the way they were deployed to canvass and maintain commitment. The educational success of REAP depended not just on being able to recruit course teams but also on being able to maintain their active engagement in the course redesign process. In other words, making a decision to participate is not the same as actually participating in change-making activities. Moreover, whatever success was achieved through the redesigns this should have an impact beyond the local course teams and lead to changes at other institutional levels. Showing an institution-wide impact was a stated goal of the SFC funding. Four activities underpinned developments intended to achieve these goals.

- A tight-loose approach to course redesign was supported within each disciplinary area.

- Local project funding was tightly linked to the application of the assessment and feedback principles.

- An evidence base was developed to support diffusion of the project messages to a wider group of stakeholders.

- Internal and external dissemination was deliberately used to multiply commitment from stakeholders across the institution.

A Tight-Loose Approach

The REAP project team (which had educational and technical expertise) worked collaboratively with departmental course teams to achieve multiple changes but with a substantial common element right across the institution. The format of the conceptual resources was important in maintaining commonality as well as supporting this collaboration. Especially relevant here were the assessment and feedback principles and the analysis of bottlenecks in the problem domain.

Firstly, the assessment and feedback principles were not promoted as a fixed template or set of rules to be followed. Rather, course teams were encouraged to, and did, adapt the principles to their own disciplinary context. The implementation process might be described as 'tight-loose': course teams were encouraged to maintain fidelity to the pedagogy behind each principle (tight) but they were also encouraged to tailor the application of the principles to their own disciplinary context (loose). For example, a self-assessment technique that worked well in pharmacy might look quite different from self-assessment in psychology. The tight-loose strategy ensured both commonality and diversity across the redesigns in the disciplines. In effect, it provided a way of addressing salient differences across disciplines while using a common underlying educational framework.

Secondly, we provided a range of examples of the implementation of each principle in different disciplines. This helped academics understand how the educational principles could easily be translated into specific disciplinary contexts. Like other learners, academics in a discipline are more likely to grasp what is required if the same concept or principle is supported by many examples of application. (Indeed, this idea might be seen derivation of the first feedback principle in Table 1 - help clarify what good performance is.)

Thirdly, we did not require that all of the assessment and feedback principles be embodied in each course redesign or that each principle be applied to the same extent. The principles are inter-dependent and overlapping in their effects and they tend to operate as building blocks for each other. For example, implementing self-assessment (principle 2) encourages students to pay more attention to goals and criteria (principle 1) or enacting regular and distributed learning tasks (principle 8 and 9) creates more opportunities for students to reflect on and evaluate their own learning (principle 2).

Fourthly, different approaches were adopted while working with course teams. This was largely determined by the perceptions and needs of course teams themselves. As noted earlier, some academics might be attracted by the principles, the thinking behind them and how they might be applied whereas others came with problems they wished to tackle in their own courses uppermost in their minds. In REAP, considerable work was carried out before and during the project in relating the application of the principles to common teaching and learning issues and in constructing resources to articulate this (e.g. through analysed examples of practice).

Table 3 shows one representation of the problem-principles relationship. However it should be noted that this is a simplification, as it seems to point to a one-to-one mapping of solutions and principles. As indicated earlier, it is better to think of the principles as interdependent and whole course design as involving a complex interaction of many components.

Overall, much remains to be learned about what the optimal format is for rhetorical devices like these. For instance, in Table 3 the remedies to consider in the target domain are listed alongside the common problems. This seems to highlight the problems faced by staff and would mesh better with the idea of immediate practical action: *Do you have any of these problems? If so, here are some solutions to consider for your context*. On the other hand, having a single way of presenting these ideas might leave less space for the innovative jumps we have seen and benefited from so far in the REAP project.

Assessment and feedback issues	Remedies (drawn from the principles)
• Learners don't understand the assessment criteria so they under-perform • Learners don't get sufficient or rich enough feedback • Learners (perceive they) don't have an opportunity to act on feedback • Learners appear dependent on their teachers • Learners are doing little work most of the time • Teachers don't get enough information to adapt teaching to learner needs	• Active engagement with criteria and standards • Collaborative projects and peer critiquing • Sequencing assessment tasks or drafts and redrafts • Asking students to reflect on the strengths/weaknesses in own work • Lots of assignments evenly spread throughout the year • Online tests or one-minute papers

Table 3: Relating problems to solutions using assessment and feedback principles.

As well as addressing concerns like those above, the assessment and feedback principles could also in practice shown to address some wider structural problems such as larger student numbers.

In summary, while the assessment and feedback principles enabled course teams to address their own needs, their application across all the redesigns enabled the REAP team to maintain coherence across all the course redesigns and with the strategic level.

Linking funding to application of principles
In the first year of REAP five course teams engaged in module redesign and in the second year a further five teams participated. Each course team was given a grant although we did not stipulate how funds should be spent. Funds were used variously to pay for project support (e.g. employ a part-time local project manager), to buy technology (e.g. an electronic voting system) or to develop online resources. Overall these costs were not as high as we had anticipated: for example, most redesigns involved innovative uses of technologies already available within the institution.

Importantly, what emerged during auditing was that the funding allocated to the first five course teams was over-generous. Few of the course teams had spent their allocated grant: in discussions it seemed that for many the funding was more of a legitimiser than a necessity. Funding allowed groups to legitimately engage in redesign activities and to justify the time they spent to heads of department and others, rather as a research grant legitimises the spending of time on research. These findings led us to rethink the management and funding of the round two redesigns.

In round two, funding was reduced and was more closely aligned to the use of the rhetorical resources. The grant was paid in two instalments. We asked course teams to produce a plan describing how they currently taught the module, the issues they wished to address in the target domain and the changes they proposed to make. To receive the first instalment the REAP team had to be convinced that the redesign while addressing the course team's needs also embodied REAP principles and that it could be successfully implemented. However, it was made clear that the REAP team was prepared to work closely with the course teams and would provide as much advice on learning design as was required to produce a convincing plan. A second instalment was released when a final report was received which had to include an evaluation of the project outcomes. In this way, funding support was used to 'buy' the deliverables required by the REAP team. By requiring a well-thought out plan we reduced the likelihood of failure at the implementation stage. Also, by requesting alignment to the principles we raised awareness about their educational value as a tool for course redesign.

Building an evidence base
A transformational project is measured by its practical achievements. REAP is one of the few UK large-scale projects to produce substantial data (e.g. exam results) showing that module redesign using technology can improve student learning without increasing costs. Twigg (2003) has shown this in the USA although under different conditions.

In evaluating the REAP project we commissioned an independent team to work collaboratively with course teams to devise suitable evaluation plans. The evaluation team then implemented this plan: they administered questionnaires, held focus groups and interviews with students, teachers and support staff and analysed course documentation. They also wrote reports for departments that were subsequently discussed in teaching and learning committees. This contrasts sharply with the action-research approach favoured within many educational development projects where the teachers themselves carry out all the evaluation.

Course teams collaborated in the evaluation process, which was both formative and summative. They provided qualitative information about the module *before* and *after* the redesigns, data on exam pass rates, on student retention, progression and attendance as well as data on whether the redesign took up more staff time. Most course teams also piloted their innovation before scaling up activities to include all students taking the module. Formative data was collected to inform this scaling up.

The evaluation team were also able to collect data that directly related to the change process, rather than only about learning gains and student satisfaction. This was achieved by comparing every module redesign against what it replaced using the 11 assessment and feedback principles. This information showed, the ways in which each redesign had increased opportunities for self-assessment, for peer dialogue etc. Taken together across all the modules this provides measures of changes in educational processes across the whole institution.

The production of an evidence base added to the credibility of the principles and the framework of resources surrounding the REAP project. Such evidence of educational and cost-effectiveness was important in recruiting subsequent course teams beyond the first round and in raising the profile of the project in the minds of senior staff. We have become convinced through REAP that collecting evidence is essential for the embedding of change and in encouraging others to adopt a similar approach.

Multiplying institutional commitment through dissemination
A key goal of the REAP project was to create lasting change at institutional level. Working with course teams across disciplines in relation to a common set of principles or problems was one strand of this work: another was getting senior managers to support the project and to make changes in institutional policy and procedures to ensure long-term sustainability. Our dissemination strategy was intended to address both these local and strategic levels.

Internally, we created opportunities so that the early dissemination of project outputs would influence and spread to other departments. To achieve this, we asked the course teams involved in the REAP implementations to share their findings at informal "brown bag" lunches, at internal dissemination events and at internal teaching and learning conferences. This worked better than expected: some course teams were so enthused by the results of their redesign that they acted as advocates for REAP through their own departmental and faculty committees and through personal contacts in other departments. For many academics the REAP redesigns had revitalised their own experience of teaching. Some made presentations outside at conferences both in the UK and abroad. Also, whereas in round one, the course teams were selected by the REAP team because they already had a track record of teaching innovation, round two course teams were self-selected: and this was very likely the result of the high visibility of REAP across the university.

External dissemination involved systematically lodging all developing outputs from REAP on the website as the project progressed including the redesign plans, the evaluations, publicity materials, all publications and

external presentations. The REAP team also made more than three external presentations per month over 18 month period. Papers were published in journals and publicity materials were produced to disseminate the project at a range of external events.

A centrepiece event of the REAP project was an online international conference which attracted over 400 participants from 32 countries. This was an extremely effective platform for the dissemination and discussion of the REAP findings and for the collection of new case examples.

This external dissemination also had a powerful effect internally. Not only was there a buzz about REAP within the institution but also when academics or senior managers attended external events they also reported hearing positive feedback about REAP. This strategy helped address the common concern that 'A prophet is without honour in his own country'. Arguably, the external feedback had as powerful an effect as the evidence of internal change in getting senior managers on board.

The success of REAP certainly led senior management to request that a new assessment policy be developed. Importantly, developing the assessment policy document involved further elaboration of the resources developed in the REAP project. That document contains a short description in plain language of meaning of each assessment and feedback principle, which was agreed by staff from across the faculties and with students. It also contains over 80 examples of how the principles have been implemented across different disciplines. The policy document also refers to self-regulation and highlights its important in the university academic strategy.

Discussion

We began this paper by identifying six barriers to transformational organisational change in higher education.

- Major disciplinary differences in teaching and learning
- Isolation of academics from the educational research literature
- Weak linkages between local innovations and strategy developments
- Low levels of senior management buy-in after funding is secured
- Little evidence about the benefits of innovations
- Funding diverted to supporting development activities already underway

The main difficulty in achieving a coordinated change across a university is the fundamental division of HE into disciplines which deal with widely differing kinds of knowledge, and which in turn results in apparently very different forms of teaching and learning. REAP addressed this through the use of a common set of principles to support redesign and by working with project teams to help them apply the principles in their own disciplinary context.

The isolation of academics from the educational research was addressed by providing multiple gateways into that literature. On the one hand, we made available to academics multiple entry points through carefully formulated summary ideas (the principles) and through examples of practice. They could also drill down deeper into the network of concepts and arguments surrounding assessment research and access further detail when needed.

The normally weak linkages between local innovations and institution-wide strategies were overcome in this project by basing it on a single set of educational ideas, and by tying each separate course redesign to that set. We also ensured that funding didn't drift towards activities that were useful locally but not to the institution-wide nature of the project. Requiring that useful evidence was collected from every course redesign made embedding of the changes more likely, made it more likely that more course teams would decide to become involved, and more likely that senior management buy-in would persist, and indeed increase, after the original project funding was secured. Finally, the dissemination activities ensured that the evidence and other celebrations of success had as wide an impact as possible, internally as well as externally.

Conclusion

In this final section, based on our experience in the REAP project, we propose a blueprint (or, dare we suggest, a set of principles) for how to construct a large-scale project that generates transformational organisational change across a higher education institution.

A large project that depends on communication, persuasion and coordination across a whole institution would benefit from having its conceptual groundwork and structure well worked out in advance. At the very least, the project should identify and analyse a problem domain, formulate a deep and worthwhile aspiration and develop a set of educational principles backed by research. These components would provide entry points or headline summaries that will enable the communication of the project messages successfully to stakeholders, for example, academics, senior managers and funding bodies. Behind these summary messages however interested stakeholders should be able to drill down deeper if they wish.

These same conceptual resources will be needed to support academics as they engage in redesign activities. Such activities will invariably involve academics in deeper elaboration of the principles and of the problem domain. Four further activities would be required to ensure a high probability of achieving the goal of transformational organisational change. Specifically, a tight-loose approach should be adopted in working with teams engaged in course redesign, project funding should be linked to the core educational principles, an evidence bases should be developed, and internal and external dissemination should be used to bring new teams on board and to gain continuing commitment from senior managers. These recommendations are restated here in a slightly different way:

1. Focus the project on a widely recognised problem area
2. Ensure that there is a long-range and worthwhile educational aspiration that is grander than the goals of the project itself and that is related to the strategy
3. Develop a set of simple practice-oriented principles based on research that specify but do not over-specify what needs to be done
4. Support academics in implementing the principles in their own disciplinary context using a tight-loose methodology.
5. Tightly link project funding to the use of the principles in redesigns
6. Build a convincing evidence base to support diffusion of innovations and their successes to a variety of stakeholders
7. Multiply institutional commitment through co-ordinated internal and external dissemination.

In the Appendix we provide some first drafts of the three rhetorical resources as they might be designed for other potential large-scale projects.

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APPENDIX: Applying the rhetorical format to other project topics

<u>Example 1</u>

Problem domain: The first year student experience
Aspiration: More academically meaningful activities and experiences
Possible Principles:
1. Organise a group project in the first week
2. Have students work together in the same groups throughout the year
3. Encourage students to form their own study groups
4. Ensure personal contact with a permanent member of academic staff
5. Use motivating assessments that draw on real life scenarios
6. Communicate high expectations
7. Ensure feedback on early learning activities

<u>Example 2</u>

Problem domain: Critical thinking across the disciplines
Aspiration: To have all learners understand when a critical approach is inappropriate and when useful.
Possible Principles:
1. Support students in articulating the benefits of critical thinking
2. Drill learners on the surface markers of critical thinking (e.g. reasons, counterarguments, points of view)
3. Give experiences of critical thinking in a variety of tasks where the immediate benefit can be seen.
4. Instil the habit in students of writing down not just conclusions but reasons
5. Provide opportunities for learners to identify logical inconsistencies in what they and others write