

Embedding and sustaining change in technology-enhanced education: lessons learned from a cross-institutional transformation project

Abstract

Tertiary educational institutions, and particularly Universities, face many strategic challenges arising from increasing globalisation, the widening access agenda, demand for more flexible provision, and meeting increasingly diverse students needs while providing an engaging education that equips students for their chosen professions and to be lifelong learners.

We are now in an informed position regarding what current and emerging technologies can potentially offer by way of responding to these challenges. Yet for many institutions, and the educators within them, there remain significant issues around understanding how to approach technology-enhanced education in ways that build upon existing good practice, and in ways that can help us to change and even radically transform learning and teaching so as to better position our institutions to address the aforementioned challenges.

This paper describes the nature and impact of the cross-institutional TESEP (Transforming and Enhancing the Student Experience through Pedagogy) project. TESEP aspired to take forward institutional practice in technology-enhanced education in a truly transformative way, underpinned by a pedagogy-first, technology-second philosophy. Through exploring the pedagogic principles, staff development approaches and strategic initiatives that were central to the project, this paper tackles the core issues TESEP had to address, and through case examples highlights the benefits a project like TESEP might bring. Particular consideration is given to the key lessons that were learned in how to sustain institutional and cross-institutional change beyond the formal lifetime of such an initiative.

Keywords: pedagogy, technology, learner empowerment, strategy, institutional change

Introduction

It may be argued that tertiary education institutions, in the UK and elsewhere, are at something of a crossroads. As a sector we are dealing with a more diverse student population than ever before, bringing with them a rich but challenging range of needs and interests. Widening access, provision for flexible learning and continuing professional development, and the development of collaborative skills, information literacy and other key attributes are high on the agenda due not only to national government directives (e.g. DfES, 2003; Scottish Government, 2007a), but also institutional objectives around responding to greater student diversity and sustaining our institutions.

This is underpinned by the view that education should ultimately be about personal growth and development, not just subject-related qualifications (Ashwin, 2006; Martin and Madigan, 2007), and current thinking around the critical need for universities to rethink and reposition themselves as providers of education if they are to remain relevant and viable in the currently changing social and economic contexts, and continue to be well positioned to contribute to personal, social and economic growth locally, nationally, and internationally (Bell et al, 2009).

The challenges being faced are of course compounded within a context of increasing globalisation, and the increasing proliferation of online technologies. Of the many effects these intertwined phenomena are having, one is in making our institutions consider where their strengths lie in the emerging global education 'market place' (Tiffin and Rajasingham, 2003), while another is in the profound impact technology is having upon how people interact in their everyday lives. As evidenced by the empowering nature of what we can loosely refer to as 'web 2.0' technologies, individuals can now contribute directly to sharing and developing knowledge in ways that were never before possible, while online social

networking tools allow national and transnational groups to form around shared interests (Anderson, 2007; Leadbeater, 2008). The potential for individual and collective social empowerment through online technology is central to the growing 'digital inclusion' movement that is seeing action from governments, charities, organisations and other bodies to improve access to and via technology for greater inclusion in all aspects of society including education. This includes the current Scottish Government, who are seeking to build upon the Digital Inclusion in Partnership strategy of the previous administration (The Scottish Government, 2007b).

Of course, generally speaking educational institutions have long been wise to the potential technology offers in terms of widening access, flexible provision, improving student engagement and achievement, and more recently around internationalising the curriculum. However, without denying the examples of good practice that can be found in our own institutions and across the sector, or the commitment to technology-enhanced education encapsulated within many institutional strategies, how many institutions have really grasped the full potential offered by technology to enhance learning and teaching? In how many institutions is a culture of learning and teaching that makes full use of what current and emerging technologies can offer truly embedded in everyday practice and thinking? To what extent are we rethinking our practices to ensure they are truly forward-facing in terms of addressing and meeting the challenges outlined above, which includes the growing expectation many learners have for good technology-based support (JISC/Ipsos MORI, 2007; Committee of Inquiry into the Changing Learner Experience, 2009)?

The heightened interest in technology-enhanced education and institutional transformation over the last two years in particular (e.g. Mayes et al, 2009; and the Joint Information Systems Committee's Transforming Curriculum Design and Curriculum Delivery through Technology programmes) suggests that we still have some way to go. Commencing in 2005, as part of the Scottish Funding Council's e-Learning Transformation programme, the TESEP (Transforming and Enhancing the Student Experience through Pedagogy) project was part of the early wave of initiatives in the UK to take the view that embedding truly learner centred technology-enhanced approaches to learning and teaching within institutional culture was perhaps the ultimate challenge, but one that in the light of the factors highlighted above no modern educational institution could really afford to ignore.

Overview of the TESEP Project

TESEP commenced in 2005 and officially ran until 2007, although exit activities including dissemination events officially continued into late 2008. TESEP was undertaken in partnership between Edinburgh Napier University, Lauder (now Carnegie) College, and Edinburgh's Telford College, and was one of six cross-institutional projects funded by the Scottish Funding Council as part of their £6 million e-learning transformation programme.

The main focus of TESEP was to build upon existing good practice within the three institutions by supporting the development of technology-enhanced approaches that were creative, strongly focused on learners and their development, and sensitive to strategic aims and aspirations. Many of the strategic aims and aspirations, particularly around tackling the challenges already highlighted, were common across all three partners, although each partner also had particular local challenges they wished to tackle through TESEP.

TESEP was particularly concerned with approaches that could encompass but looked beyond institutional VLEs towards the role emerging technologies could play in enhancing and, wherever possible, transforming the learning and teaching experience in ways that were sensitive to current and future students, the tutor and their subject, and institutional needs.

The TESEP partnership also provided a means to build upon existing joint initiatives (e.g. FE-HE articulation arrangements) and strengthen the relationship between Edinburgh Napier University and the FE partner institutions. More importantly it offered an opportunity to understand what the kinds of approaches TESEP was focused upon could offer across a very broad spectrum of subject areas, student cohorts, and levels of teaching and learning.

The work of TESEP was undertaken in three main phases between 2005 and 2007. Phase 1 saw the detailed scoping of the project itself, the formation of the cross-institutional steering and project management groups, and the formation of the 'expert group' who would implement the project and provide staff development support to those seconded to TESEP as practitioners. The seconding of staff was the focus of Phase 2, in which a range of FE and HE lecturers from across the three institutions were brought into TESEP for one or two days a week to work on 'pathfinder projects' that involved redesigning one of their own courses (e.g. a module or FE unit) to embody the pedagogical ethos and principles adopted by TESEP, before implementing and then evaluating the impact of the redesigned approach.

A cascading process of further internal staff development, and internal and external dissemination, was the focus of Phase 3 which concluded late in 2008 with a sector-wide event. However the later stages of TESEP were also dedicated to detailed forward planning to ensure that the foundations laid by TESEP continued to provide a strong platform for change and development in technology-enhanced education. This forward planning, including the actions it led to post-project, was in part about recognising that funded change initiatives often stall once the funded period has concluded, and individual obligations to the project are seen to have been officially fulfilled, unless deliberate measures are taken to embed the kinds of change being strived for within institutional culture and processes.

Pedagogic ethos and principles

From a pedagogical perspective, the approach to learning and teaching that was advocated within TESEP can broadly be thought of as socio-constructivist, emphasising both the need for greater learner autonomy and control, and engagement in learning communities characterised by peer-to-peer learning and support where peers may be learners on the same course, or peers in a wider local and global contexts (Mayes, 2007). This latter possibility hints at one clear role for emerging technologies to play in enhancing the learning experience. Ultimately though, the interest in technology within TESEP was as an enabling factor that would help facilitate learning that was as deep as possible, was personally relevant, helped foster the development of the skills required in the professional sector, and which was sensitive to the ways in which knowledge is being created and shared today.

While Mayes (2007) provides a thorough explanation of the theoretical grounding for TESEP's pedagogical position, the approach the practitioners were encouraged to embed in the redesign of their courses was encapsulated in the following five pedagogic principles:

- *Ensure every learner is as active as possible:* In designing tasks ask yourself how can we challenge learners to think more deeply about what it is they are learning?
- *Design frequent formative assessment:* Encourage learners to test their understanding regularly and receive responsive feedback including from peers.
- *Put emphasis on peers learning together:* Create small groups who will work together to produce something – a report, a lesson, a demonstration. Consider where groups can teach each about their chosen topics. Try to engender a sense of ownership
- *Consider whether learning tasks can be personalised:* Allow the individual learner, or a small group, choice over what is to be achieved. Negotiate with learners wherever possible. Aim for project/resource/discussion-based learning – not direct instruction.
- *Consider how technology can help to achieve these principles:* Online, learners can be actively carrying out tasks, taking formative tests, producing class resources or

group outputs, discovering new content for themselves, and through social software discussing and sharing all this with each other, the tutor, and other peers and experts.

The overarching aim of putting these principles into practice is to put 'learners in control', which was the strapline for the TESEP project. While not new, the concept of putting learners in control, and of learner empowerment, was not at the time a mainstream idea and was, as it still is, a challenging one to address. Within TESEP the idea of 'learners in control' raised many questions around how much learner control is desirable, and what the practical implications are for tutor and student roles. In applying the above principles in their chosen courses, the practitioners and the TESEP team worked together to find some of the answers to these questions, and to model how these principles may manifest themselves in real courses. This process was supported through a multi-faceted staff development programme.

Learner centred staff development

The FE and HE practitioners who were seconded to TESEP in Phase 2 were drawn from subject areas that included Art, Law, Joinery, Healthcare, Computing, Building, Engineering, Music and Drama. As tutors, they were supporting students on courses that spanned SCQF levels 4 through to 10, and with the range of students being supported including high school entrants, apprentices, mature students, direct entrants, and international students.

Asides from their subject disciplines and the level they taught at, the practitioners were also a very diverse group in terms of teaching experience, preferences for different teaching approaches, and IT literacy. In working with such a diverse group of educators, and considering the rationale for the TESEP project, there was a strong commitment from the outset to supporting the seconded practitioners through a staff development process that was in itself truly learner-centered, and which modelled the pedagogic principles at the centre of TESEP as well as modelling appropriate, creative and effective uses of current and emerging technologies to support the learning experience.

Recent years have seen an increasing call for staff development in learning and teaching that is more responsive to individual needs, is available when most needed, and which in terms of new approaches is sensitive to what academics are likely to find most challenging in grasping the potential for their own practice. In relation to what educational technology can offer, Littlejohn (2002) was an early advocate for staff development that placed 'the message before the medium', while others have since highlighted the need for tutors to experience online teaching and learning as a learner (e.g. Oliver and Dempster, 2003; Westerman and Barry, 2009) if our tutors, and our institutions, are to truly understand and benefit from the ways in which technology can enhance and radically change learning and teaching practice.

With similar concerns in mind, the staff development support provided for the Phase 2 practitioners manifested itself in various ways. The starting point was a dialogue with each individual about their teaching and learning experience, how they came to be involved in TESEP, and what they most hoped to gain. This informed the design and facilitation of initial staff development support, although the group quickly came to play a role in collectively deciding upon the focus of workshops and online sessions. Collaborative learning was facilitated within cross-institutional mentor groups and supported in hands-on workshops that were often highly inquiry-based in nature, and in the online community resource set-up for the practitioners (Figure 1). The online community featured ongoing pedagogic and practical discussions, with experts from within and beyond the partner institutions, including notable national and international experts, participating online as 'critical friends' and often as online 'hot seat' guests. It also featured links to the reflective blogs many of the practitioners were maintaining as means of documenting and reflecting on their journey, and links to various tools and models that TESEP had developed to support the work of the practitioners.



Figure 1. Online community resource for TESEP practitioners

Mirroring a staff support model that came to be adapted within the partner institutions post-project, each practitioner was also assigned a mentor from within the TESEP 'expert group' who acted as their personal point of contact and provided individualised support throughout the course redesign, implementation and evaluation process.

While successful, the staff development approach outlined here was challenging. It certainly enabled the Phase 2 practitioners to understand the aims of TESEP and enhance their own chosen course in a relatively short period of time (typically 1 trimester), but was labour intensive to facilitate. This pointed towards the need to marry a learner-centered approach to staff development, and the broader aims TESEP had around technology-enhanced education, to existing communities and initiatives wherever possible. This subsequently became a major focus of the work TESEP undertook in the partner institutions.

Transformation as a troublesome concept

As previously stated, the overarching aim of embedding the five pedagogic principles underpinning TESEP within the learning and teaching practice of the partner institutions was to put 'learners in control'. However, as also indicated, the concept of putting learners in control, and the related notions of empowerment and transformation, are challenging to address and were met by many important questions from practitioners around how much learner control is desirable or appropriate, what the balance between tutor-led and student-led activities should be, the role technology would play, and what the kinds of changes to learning and teaching being advocated by TESEP might look like. In the early stages of TESEP it became apparent, through initial discussions with lecturers, subject leaders and senior managers, that transformation as discussed in relation to learning and teaching is a troublesome concept that is both open to misinterpretation, and can carry negative connotations around existing practice not being good or innovative enough.

To help address these very legitimate concerns, and to make the possibilities clearer particularly in relation to what TESEP might mean for the tutor and their students, the TESEP 3E Approach was developed (Smyth, 2007). This model envisaged, with examples, the kind of transformation in learning and teaching encapsulated within the TESEP ethos as involving a continuum of enhanced, extended and empowered learning opportunities.

Shown in overview form in Figure 2, the 3E Approach tries to clarify the kinds of ways in which it is possible to make changes to teaching practice that provide learners with more control over their learning, and the role that technology can play in supporting this process. In doing this, it attempts to show that transformation in learning and teaching practice can be seen as an iterative process for the tutor and their students, involving progressive changes that move the learner further towards finding, using, creating and sharing knowledge in ways that reflect the kinds of individual and collective responsibilities they will have in the professional and broader societal contexts they are preparing for.

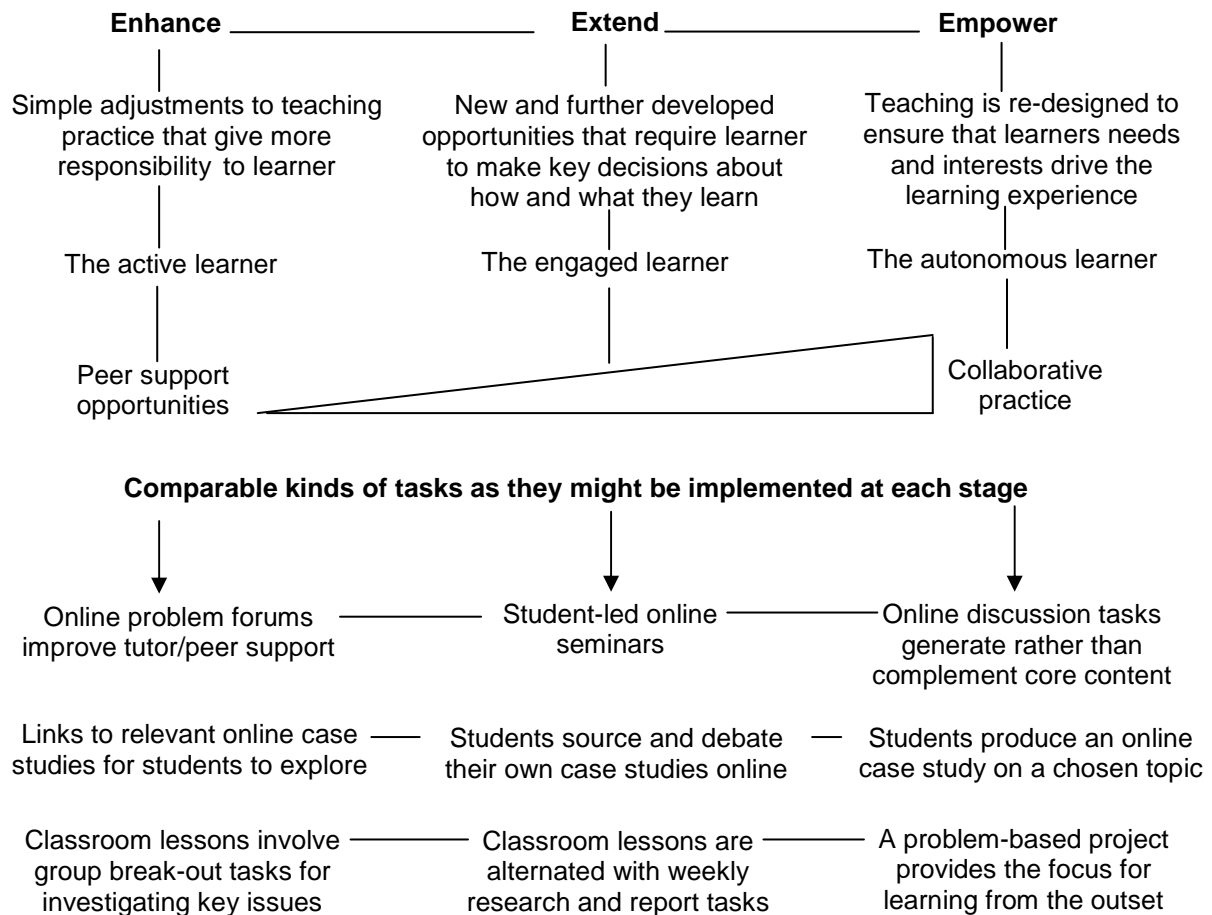


Figure 2. TESEP 3E (Enhance, Extend, Empower) Approach

In this respect the 3E Approach can be seen as a ‘framework’ within which to think about the design of a course and progression within it, although an equally important point is that any course could offer a mix of opportunities at any of the 3E stages based on what is appropriate for the subject, student group, tutor and desired outcomes in question. This point about appropriateness is a critical one, as is the view that while the Empower stage may be viewed as the ideal to aim for, changes in practice at any of the stages are equally valuable when viewing transformation in learning and teaching as a developmental journey.

There are clear parallels within the 3E Approach with long established pedagogical theories and concepts, particularly around cognitive apprenticeship and scaffolding (Brown et al, 1989; Collins et al, 1991) where there is a clear emphasis on increasing learner control and autonomy. The literature is also rich with models and frameworks designed to help practitioners interpret and implement specific pedagogical concepts and approaches, for example Biggs’ model of Constructive Alignment (Biggs and Tang, 2003) and Van Merriënboer’s 4C/ID four component instructional design model (Van Merriënboer et al,

2002). In both theoretical underpinning and a focus on practical applicability, the 3E Approach is on well established ground then. Perhaps because of this it proved to be a valuable means for articulating and exploring the aims of TESEP with the practitioners, who seemed to feel the basic model and the associated guidance around how to use it to inform course design was an accessible way to engage with the ideas it encapsulated.

Building upon the early lesson learned that there is a danger when advocating any change in learning and teaching practice of alienating those who are already doing good things in the classroom or online, when in Phase 3 TESEP was opened up to a second wave of practitioners the 3E Approach become part of a more concerted effort to make sure the opportunity offered through TESEP was seen as *an opportunity to build upon existing good practice and find ways to make what was already working well even better.*

Transformation in progress

By the end of Phase 3 of TESEP, around 50 practitioners from across the three partners had been supported directly in enhancing one or more courses through being formally seconded to TESEP, or being a member of course team or academic unit that was being supported directly. Through the wider internal cascading and dissemination initiatives that will be outlined, many more practitioners within and beyond the partner institutions have been introduced to the ideas of TESEP and engaged in utilising them directly.

To provide a sense of the kinds of enhancements that the Phase 2 and Phase 3 practitioners made in redesigning their courses, examples from across FE and HE subject areas include:

- The redesign of an undergraduate Legal Research Methods module from being largely lecture-based to involving inquiry-based activity, with students investigating case studies, using blogs and wikis to compile case notes online, and participating in online discussion of what they had discovered
- Beginner level college language students studying Spanish improving their written and verbal skills by connecting online with Spanish speaking English language class students from across the globe
- Joinery apprenticeship students using mobile phones to capture the work they were doing on placement, posting images online to seek tutor and peer advice and discussing technique on the institutional VLE
- Drama students using a blended approach involving print and online resources to research and share findings about the work of particular playwrights, in preparation for further classroom activities
- Nursing students in a very large cohort being meaningfully supported in problem-based learning through harnessing online communication tools and resources to work in learning sets

The levels of sophistication regarding learner autonomy, collaboration and embedded technology in these examples varies, due to where the tutors started from and what was appropriate for their learners. However while increased motivation, participation and quality of learning were outcomes of these and other TESEP 'pathfinder' courses, it was encouraging to see the impact upon the learning experience that even a fairly simple shift towards learner autonomy could bring, as in the Joinery and Drama courses.

For the Joinery lecturer, getting students to photograph work done on placement and upload it to the VLE not only helped him support his students remotely, it also encouraged increased engagement in the placement and better attendance by some students. The Drama lecturer's main shift was to limit the amount of direct classroom teaching, and get students to collaboratively research actors and directors using print and online reference materials. The

result was that *“the students came to class the next week and told me everything I would have explained about Stanislavski and more...and it was right, and they had understood it”*.

Evaluation of the teaching and learning experience was central to the work of TESEP, and involved reflective tutor diaries, video case studies, student focus groups, and other means that are detailed in full on the TESEP project website (<http://www2.napier.ac.uk/transform>). Overall the student experience of learning in the kinds of ways described above was very positive indeed, with typical comments including “I learned things on my own but I never imagined how much great and relevant information I would gain from my peers” and “We were being trusted to learn, that made me much more interested and motivated”.

Feedback from tutors was similarly positive, and many commented on how much more engaged their students were in their subject, the quality of their work, and also how teaching in a way that was underpinned by the TESEP principles made their own role more enjoyable. However several commented on the difficulties some students had in assuming more control for their learning, especially at the outset, and as one practitioner commented “Having students learn in this way is the way forward...but introducing it when they are in their third year is two years too late”.

This points towards a fundamental concern in introducing new ways of teaching that confound what students expect or are used to, which is around how students are inducted and orientated to learning and teaching in our colleges and universities. The challenge here is to rethink what induction can and should mean, to find ways to empower learners to be empowered, and to help them develop from the outset the digital and other literacies they will require (Mayes and Fowler, 2006). This challenge, and the related challenge of staff induction for new lecturers, were tackled by TESEP in work it both undertook and commissioned including a series of student and staff induction resources.

Impact measurement

While the main focus of this paper is the work undertaken within TESEP to embed and sustain change, it is worth further outlining the approach taken to evaluating the impact the project had during the formal funded period of activity. The TESEP project took the view that change in learning and teaching practice could be gauged on a number of levels including shifts in outlook and practice on the part of the practitioner; changes in course design and delivery; impact on the nature and quality of the student experience; engagement and practice within the departments and schools where seconded practitioners were based; and changes across the partner institutions. A strong emphasis was placed on capturing the ‘stories’ and developmental journeys occurring at each of these levels, part of the rationale here being that while large scale change clearly observable across institutional culture and practice would not be achieved within the funded period of the project, the process and nature of the change happening during the lifetime of the project certainly could be captured.

To this end a number of methods were employed. At the practitioner level, all the tutors seconded to TESEP in Phase 2 kept reflective diaries including blogs from the outset. They were also provided with course redesign tools (including My TESEP Model) to articulate how the course they were to work on was currently taught and supported, and how it would work when re-designed according to the TESEP principles. This provided a means of before and after comparison that could be supplemented by the student feedback that the tutors (and TESEP evaluation team) gathered relating to the student experience. Video played a central part in capturing the experiences of the tutors, their students, and other stakeholders involved in the TESEP project including the project team, departmental heads, and senior managers within the institutions. An anthropological documentary filmmaker was responsible for all the video capture, aided by a member of the evaluation team as interviewer. The video material formed the basis of an extensive series of online interactive case studies that

feature on the project website, and which include practitioner case studies, institutional case studies, and an interactive evaluation report relating to the project itself.

As part of the process of evaluating the impact within the partner institutions, a 'transformation index' was developed. This defined a number of criteria at strategic, academic manager, and practitioner levels against which progress could be mapped to various continua of change. For example, the criteria on the continuum for the strategic element of the transformation index included:

1. No institutional e-learning strategy based on pedagogy
2. E-learning featured in L&T strategy with some targets
3. Clearly defined strategies for e-learning fully embedded within L&T strategy
4. Culture of e-learning innovation promoted across the institution. Direct support for Departments that develop online delivery of courses. Policy of giving recognition to staff who engage with e-learning development.
5. Institution actively seeks collaborations and developments with other institutions or organisations

Other key aspects of the evaluation strategy included a comparison of the student experience within the TESEP project against the findings of the JISC 'Learner Experience' projects running at the time. The TESEP evaluation reports, and a further explanation of the evaluation approach outlined above, are also available on the project website.

Strategies for sustaining change

Had TESEP concluded at the end of Phase 3 having only undertaken the staff development and course redesign work that has been described, then the project would have succeeded in enhancing learning and teaching practice for pockets of practitioners, and their students, in specific areas across the partner institutions. While this in itself would be a valuable outcome, the intention was to try and initiate a self-sustaining process of change around technology-enhanced education that would continue beyond the end of the project itself.

TESEP attempted to do this through a series of actions and initiatives around institutional leadership and change, cascading curriculum delivery models and approaches, continuing professional development, and external engagement and linkages.

Institutional leadership and change

Change initiatives in teaching and learning require commitment at every level of an institution, but must be endorsed at the senior level for the possibilities on offer to be realised (Ashwin, 2006; Blackwell and Blackmore, 2003). The TESEP project was in the fortunate position of being directed by one of the Vice Principals of the FE partners, with the Steering Group chaired by the Senior Vice Principal at Edinburgh Napier. Both held a common vision of what the project should set out to achieve, and both were pro-active in bringing on board senior colleagues including Associate Deans who could motion action in their respective areas. Without this in place, TESEP would arguably only have been a time-limited large project as opposed to an initiative for genuinely enhancing learning and teaching in the long term. The Vice Principals saw the potential to use the principles and pedagogic framework developed during TESEP to underpin strategic institutional changes to academic structures and learning, teaching and assessment practices being planned more generally in the institutions. By the end of the project it was clear steps should be taken to harness this enthusiasm and plan for the future, and as the partner institutions were exiting the project a short-life working group involving senior managers from all partners worked with the project team to create an action plan which aimed to embed the outcomes/deliverables from the project into the key strategic change initiatives that were being planned.

As a result a number of institutional changes have been implemented across the partners that have used TESEP to inform or guide their introduction. Examples include:

- Edinburgh Napier University changed its academic framework from a 15 to 20 credit modular system. The guidance and support offered to staff during this period was based on the TESEP Principles and 3E Approach model. This has ensured that academic staff, in the move from 15 to 20 credits, have not simply reviewed programme structures, but have also reviewed and changed course delivery models which now evidence increased use of technology in their delivery models.
- In preparing to move to a new VLE, Edinburgh Napier will be introducing a new 'benchmark framework' for the use of technology (including institutional tools and social software) in modules. Based on the 3E Approach, this will promote as a starting point all modules having an 'active minimum presence' that makes use of two or three 'enhance' level activities as appropriate to the nature of each module.
- Both Carnegie College and Edinburgh's Telford College have re-structured their teaching departments and learning and teaching support functions. The learning and teaching models being promoted by support teams are designed using TESEP Principles and the 3E Approach, in adapted form to meet specific institutional needs.

Cascading curriculum delivery models and approaches

As it was clear from the outset that TESEP would not transform curriculum delivery in two years, it was important to ensure that the expertise gained during the project and the support available during the project continued to act as a catalyst for change (albeit in a different format) to ensure the work begun would continue to be cascaded to others.

Examples of the support structures have emerged to sustain TESEP's work include:

- The role of Online Learning Advocates (OLAs) funded initially from the project at Edinburgh Napier University has been formalised in several Schools. This has resulted in an academic who was involved in TESEP, or who has been supported through staff development initiatives that have come out of TESEP, being in place as a local champion to promote and support change within their School.
- At Edinburgh Napier University, a Special Interest Group in technology-enhanced learning and teaching has been formed within the Teaching Fellows Community, and is being led by one of the staff who was a member of the TESEP expert group.
- A new learning and teaching support department (Curriculum Innovation in Learning and Teaching) has been created at Carnegie College. This team supports academic staff across the college using a variety of workshops, resources and one-to-one support. A new Curriculum Innovation Portal has been developed that provides teaching staff with a one-stop-shop that is full of ideas and resources (e.g. CILT Research Updates, How2 Comics, How2 Videos) that support and encourage staff to continue to review and change their curriculum delivery models.
- The TESEP model has been used at the Royal Scottish Academy of Music and Drama (RSAMD) to design the delivery model for a new Postgraduate Certificate in Higher Arts Education. The programme was delivered for the first time in 2007 and is now in its third year. The programme is accredited by the HE Academy. As a result of their exposure to this course, teaching staff at the Academy are in turn adopting

TESEP principles to re-design the delivery models for their own modules across a range of arts disciplines including music and performing arts.

Continuing Professional Development

It was recognised within TESEP that it was essential to underpin curriculum delivery changes with just-in-time staff/professional development. Furthermore it was recognised that the TESEP Principles and 3E Approach could be used to re-design staff development delivery models. In exiting the project, the TESEP team produced a suite of resources that demonstrated how TESEP principles could be used to re-design staff development models, and which included staff development materials which are available online to re-use and tailor. In addition, a number of staff programmes have been developed that evidence how TESEP principles and the 3E Approach are being sustained in practice:

- Edinburgh Napier University developed a new MSc in Blended and Online Education (<http://www2.napier.ac.uk/ed/boe>). This course has been designed entirely using the 3E Approach Framework (as detailed further in Smyth, 2009). Learners are offered choice and negotiation in every task undertaken, and an important part of the programme ethos is learners as co-tutors and tutors as co-learners. As many of the of the students on the programme are educators themselves, from over twenty-five FE and HE institutions across Europe, as a result of their work on the course they are in turn adapting TESEP principles to their own technology-enhanced teaching.
- Carnegie College has developed an HN Unit accredited by SQA (Scottish Qualifications Authority) in Using Technology in Learning and Teaching.
- Forth Valley College have developed an HN Unit for staff on Using ICT for Learning and Teaching, and much of the content of this is based on utilising the 3E Approach.
- Edinburgh Napier University are now, for the second year running, offering fees-waived places for nominated staff to complete the 3 core modules of the MSc Blended and Online Education (these modules form the basis of the SEDA accredited Pg Cert BOE). This will ensure that the nominated staff, who on completion will assume the kind of OLA role previously described, have a sound knowledge and understanding of the TESEP principles and 3E Approach and use them when providing support to other staff re-designing their curriculum delivery models

External engagement and linkages

As the funded period of TESEP was drawing to a close, the dissemination activities undertaken to date had indicated that there was a lot of interest in what TESEP had set out to do, and that there was a wider contribution to the debate around learning, teaching, technology and institutional change that the project could make a contribution to. Members of the TESEP team remain active in contributing to dialogue in the sector. Examples include:

- Presenting the work of TESEP to the Committee of Inquiry into the Changing Learner Experience (2009) to help inform their Higher Education in a Web 2.0 World report.
- Contributing a chapter (Comrie et al, 2009) to the recent Higher Education Academy book Transforming Higher education through Technology Enhanced Learning
- Organising a national symposium on the theme of Learners in the Co-creation of Knowledge (<http://www2.napier.ac.uk/transform/lick08.htm>), an outcome of which was establishing interest in setting up a Research Interest Group (RIG) in this area.

- The Learners in the Co-creation of Knowledge RIG was established in 2009 at an open meeting hosted at De Montfort University at which the aims and scope of the group were fleshed out. The group aims to facilitate research into the pedagogical, cultural, social and political implications of networked technologies in post-compulsory education. An online networking space for the group has been established (<http://lickrig.wetpaint.com/>). A second open meeting took place in summer 2010 with a view to organising a second national event in 2011.
- The work of TESEP and University of Bolton's similarly focused SPLICE project (<http://www.bolton.ac.uk/researchandenterprise/projects/splice/>) has informed a series of strategy workshops in Taking Forward Change in Technology-Enhanced Education for institutional teams of stakeholders that ran across the UK in March 2010. A concluding one day conference was held in June 2010 and published outputs of the initiative are currently being prepared to share with the sector in 2011 (<http://strategycascade.wordpress.com/>)
- The TESEP Project Director is presently directing a new initiative involving all the colleges and HEIs in the South East of Scotland. ELRAH (Edinburgh, Lothians, Fife and Borders Regional Articulation Hub) is exploring ways in which, through innovative curriculum design, educational institutions and industry can work collaboratively to create innovative educational models. The Hub has been active for eighteen months, and innovative collaborations are emerging that provide new ways of enabling people to access higher education. These models are being influenced by TESEP principles, and include a new BA in Acting for Stage and Screen, and BDES Digital Arts.

Concluding thoughts

Transformational institutional change in learning and teaching is not possible within the funded lifetime of a two year project like TESEP. However what TESEP has confirmed for Edinburgh Napier and the partner institutions is that it is certainly possible within two or so years to put into place the kinds of measures that will be conducive to beginning a process of transformation that will better position an institution for responding to the kinds of challenges and expectations any modern college or university must ultimately face.

Furthermore, while being funded to achieve the kinds of change in teaching and learning that TESEP was focused upon did of course make much of what the project achieved possible within its short lifetime, the reality is that many of the measures that can be put in place to enhance learning and teaching can be done within existing structures - providing there is strong strategic leadership and a commitment to change at every level.

In offering in summary the key recommendations a project or initiative like TESEP should consider in order to embed and sustain change in technology-enhanced education, or other areas of learning, teaching and assessment practice, the authors offer the following advice:

- Find ways to link project outcomes and deliverables to key institutional initiatives that are planned in order to help management address challenges. This will improve the chance of obtaining on-going interest and support from senior and middle management.
- Try to identify and put in place mechanisms to ensure that advocate networks will exist to promote and continue to evolve the work that has been initiated once the funded or formal lifetime of the project or initiative itself is complete. The core project team may not have the time to be able to do this themselves as they move on to other work.

- Look to see if there are existing institutional processes and/or systems that the work initiated could be designed into. By embedding your work into these processes (e.g. professional development provision, course design and approval processes) the outlook, principles and values of education change initiatives can continued to built into and inform the future work of the institution.

There is a consensus forming around the need to address these kinds of issues if a desired outcome of a project like TESEP is to ensure longer-term cultural change in learning and teaching practice (e.g. Bell et al, 2009; Nicol and Draper, 2009), and ensure that change in practice continues long after the name of the project itself becomes less prominent and is eventually forgotten. As one of the senior managers involved with TESEP at Edinburgh Napier explains "It is rare for the name TESEP to be verbalised in the Faculty and Schools now, however the five principles are a common source of discussion in module development and approval meetings". In aiming to embed and sustain change in learning and teaching, it is arguably this disassociation of the project itself from everyday discussion and practice that must ultimately be aimed for if the concerns of the project are to become mainstream.

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