MINISTRY OF EDUCATION
Te Tāhuhu o te Mātauranga

Organisational approaches to e-learning in the tertiary sector

An annotated bibliography

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1   INTRODUCTION

Background

This paper presents an annotated bibliography of the research literature relating to approaches adopted by tertiary sector organisations when planning or implementing e-learning. It surveys a large selection of literature – 110 papers. While it is not comprehensive, there is sufficient literature to:

- give an overview of the available literature
- extract major themes and messages
- determine its strengths, limitations and gaps.

We present this information in an annotated bibliography because it provides a framework to make the literature more accessible by outlining its major themes and messages. However, an annotated bibliography does not seek to synthesise or evaluate the literature. It is intended to be a collation of materials that provides a guide on what literature is available and report on what it says.

Purpose

The objectives of this annotated bibliography are to:

- provide an overview of the literature on organisational approaches to e-learning
- assist organisations, agencies and practitioners in planning and implementation of e-learning initiatives by identifying recommended approaches and the critical constraints, barriers and challenges
- contribute to the evidence base on tertiary sector organisational approaches to e-learning
- assist future researchers and funders by identifying the gaps in the literature related to tertiary sector organisational approaches to e-learning.

Planned series

This annotated bibliography is the second in a planned series. It follows an annotated bibliography on learners' participation, retention and success in e-learning. Other bibliographies being considered for this series are:

- workplace approaches to e-learning
- technologies used to support tertiary e-learning
- international and New Zealand activity and trends in tertiary e-learning.

2   METHODOLOGY

The literature in this annotated bibliography was derived from four main sources. First, we obtained literature through a desk-top search of Google Scholar, government agencies'[1] and relevant professional associations' websites. Secondly, the Ministry of Education's library provided literature from an independent search. Thirdly, we reviewed the research database maintained by Ako Aotearoa (the National Centre for Tertiary Teaching Excellence) and the Distance Education Association of New Zealand. Fourthly, literature was provided by members of the Tertiary e-Learning Reference Group (TeLRG).[2]

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[1] The agencies were from Anglophone countries: New Zealand, the United Kingdom, Australia, the United States and Canada
[2] The TeLRG was set up as an expert group by the Ministry of Education and Ako Aotearoa to advise them on tertiary e-learning.

We selected published research from journals, books and the internet and we also sourced 'grey' literature, including unpublished theses and dissertations, and reports commissioned by government agencies.

Literature was selected for this bibliography if it:
- was published between 2004 and 2010
- included organisational and agency approaches from Anglophone countries, New Zealand, the United States, Australia, Canada and the United Kingdom
- fitted into, or aligned with, the categories listed below.

The bibliography uses the Ministry of Education's definition of e-learning: 'learning that is enabled or supported with the use of information and communication technologies (ICT)', including the internet, mobile phones and video-conferencing.[3] Note that while tertiary sector organisations may define e-learning differently the bibliography's findings and annotations can be used by them to inform their e-learning activities.

The references used to support the themes and their associated messages and key findings are listed at the end of each sub-section.

Categories

The categories used in this annotated bibliography (in the order in which the annotations and their associated findings appear) are:
- Tertiary sector organisational approaches to e-learning – this contains the literature on organisation, department, faculty, programme/qualification and course-level approaches to e-learning.

- Staff development – this includes the literature that focuses on approaches to staff development undertaken by tertiary sector organisations when they are implementing e-learning.

- Quality of e-learning – this includes the literature on quality assurance processes in an e-learning context as well as benchmarking and quality improvement.

- Economics of e-learning – this category contains the literature on broader economic considerations related to e-learning costing approaches or models and returns on investment in e-learning.

3   FINDINGS FROM THE LITERATURE

Organisational approaches to e-learning and staff development in the tertiary sector

The key findings in these categories are:

- The most common organisational approach to e-learning is where high-level objectives and supporting policies and plans are set centrally but the responsibility for implementing these is at the faculty or departmental level.

- Organisational approaches to e-learning are more likely to be successful when they are supported by institutional strategies, policies, plans, monitoring and evaluation. E-learning

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[3] Ministry of Education website at http://www.minedu.govt.nz/NZEducation/EducationPolicies/TertiaryEducation/ELearning/WhatIsELearning.aspx

strategies are more likely to be effective if they take into account organisational culture and are underpinned by a rationale that has strong support from stakeholders.

- Organisations need to consider student preferences. They also need to ensure students have the skills and capabilities needed for success in e-learning. It is also important that organisations provide relevant and timely support, particularly technical, for both their students and staff.

- Organisations need to provide infrastructure that supports their e-learning objectives and meets stakeholder and learner needs. It is important that organisational ICT systems can link with each other and with students' information technology devices.

- The research literature identifies a number of success measures and recommended approaches. It also lists challenges, barriers and constraints that organisations can take into account to increase their chances of successfully adopting e-learning.

- Staff development and support are essential if organisations are to adopt e-learning successfully. Organisations should consider providing incentives for staff to adopt e-learning and participate in associated development. Staff efforts in adopting e-learning also need to be recognised. Staff must be given time to explore and experiment when they are adopting e-learning.

Who is responsible for implementing e-learning?

Before organisations introduce e-learning, they need to consider whether they are ready for it and who will be responsible for implementing it. Most organisations share responsibility for e-learning implementation. In practice, this typically means that the organisational leadership provides overall direction but the detail of how it will be achieved is left to individual faculties or departments.

Some organisations give sole responsibility for e-learning implementation to central units or groupings or (less frequently) to faculties or departments. Organisations with largely autonomous departments tend to share responsibility between centralised units or groupings and their faculties or departments. In contrast, organisations where departments have less autonomy are more likely to allocate sole responsibility for e-learning implementation to centralised units or groupings.

Where the responsibility for e-learning is shared or given solely to the centre, implementation is often supported by the establishment of dedicated units or groupings. These can be responsible for the overall implementation of e-learning or specific aspects of it (such as staff development). Some organisations have also established subsidiary or stand-alone companies to support their e-learning implementation.

But other organisations, particularly universities, are adopting a collaborative approach to e-learning. This can take include organisations sharing resources, materials and expertise between them or taking responsibility, and providing resourcing, for different aspects of learning and support. How organisations allocate responsibility for their e-learning implementation is influenced not only by their culture but also by their size, type and position within their market.

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1, 4, 6, 7, 9, 10, 11, 12, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 29, 30, 32, 33, 34, 37, 38, 39, 40, 41, 42, 43, 45, 47, 48, 50, 51, 55, 56, 57, 58, 59, 60, 62, 63, 64, 66, 67, 68, 70, 71, 72, 73, 75, 76, 77, 79, 80, 81, 83, 84, 85, 87, 88, 90, 93, 94, 95, 96, 97, 98, 99, 101, 103, 107, 108, 109, 110

Recommended implementation approaches

It is important that organisations to provide overall coordination for e-learning initiatives and activity establish core principles and an overarching framework. The core principles and frameworks should be learner-centred and build on the relevant research literature as well as experiences from similar organisational contexts. Organisations should also allocate resources fairly and balance competing demands. This can be achieved through contestable internal funding processes. Organisations need to support their efforts by developing appropriate standards and models.

While some of the literature questions the suitability of establishing centralised, dedicated teams to support e-learning, the majority of papers recommend this approach. The teams should represent all stakeholder interests and have senior management representation. It is important that the goals and objectives set for the project teams are flexible and adaptable because a steady state operational environment is unlikely. The roles and responsibilities of the teams and their members also need to be agreed to and clearly articulated.

Project teams can be supported by e-learning 'champions', whose roles can include ensuring that the e-learning delivery meets best practice or being responsible for staff development. Even where their roles are less formal, it is important that champions support staff and students in adopting e-learning.

Organisations must carefully manage the transition to e-learning. Good management of the transition is more likely where they have consulted with stakeholders and have their agreement and support for their direction and activities. The momentum gained from initiatives such as the introduction of Learning Management Systems can be leveraged to gain wider uptake of e-learning and as an opportunity to embed e-learning into mainstream activities and processes.

Organisations can also develop dissemination and transition communication strategies and activities such as workshops, conference papers and content on their websites. These communications should make it clear that adoption of e-learning is an ongoing process rather than a one-off event. If possible, organisations should build sufficient time into their e-learning implementation activities to assist the transition process. They need to monitor and evaluate effectively to establish if e-learning has met its objectives and requirements.

Partnerships with other organisations are more effective where the skills and expertise of the participants complement each other. Partnerships should be formalised through a contract or memorandum of understanding to ensure all parties are clear about their roles and responsibilities and to deal effectively with conflicts or problems.

References
9, 26, 32, 34, 36, 37, 39, 41, 42, 47, 50, 58, 60, 64, 73, 75, 77, 79, 83, 84, 95, 97, 101

Strategies and planning

Some institutions have a stand-alone e-learning strategy while others incorporate it into their wider teaching and learning strategies. Whichever approach is taken, it is critical that organisations adopt a strategy to drive their e-learning initiatives and activities. A strategy that is underpinned by a vision supported by staff and students is more likely to be effective. This vision can derive from a number of sources including stakeholders, agency requirements and initiatives, the need to remain competitive with other organisations or the wish to improve learning outcomes.

It is important that strategies support rather than hinder innovation. Some of the literature raises concerns that a centrally developed and driven strategy hinders localised, 'bottom up' approaches and initiatives. Strategies should incorporate localised initiatives and allow organisations to deal with their rapidly changing operational environment. A strategy can focus an organisation's efforts on short-term deliverables rather than long-term outcomes. However, a strategy alone is insufficient. If it is not supported by policies, plans and processes, it is unlikely to have much impact. Many organisations are adopting more formalised approaches for their e-learning activities.

While technology is essential, organisations adopting e-learning need to be careful not to overemphasise or underestimate its importance. The drivers of e-learning should be organisational priorities and requirements, particularly those related to teaching and learning. E-learning should effectively support organisational teaching and learning efforts.

References
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Infrastructure

Organisations need to provide appropriate physical and ICT infrastructure so e-learning can meet its objectives and requirements. Most organisations now support e-learning with a Learning Management System that provides administrative and learning-related services such as discussion boards and chat rooms.

However, increasingly, organisations are introducing specialist systems to assist learners and teaching staff by (among other things) tracking progress, identifying problem areas and providing teacher-type support such as feedback on assignments. But regardless of the types of systems implemented, they need to be interoperable.

Organisations are considering whether or not their physical spaces and infrastructure are effectively supporting e-learning and some are implementing significant redesigns to achieve this.

Organisational ICT environments should have the following attributes: a clear expectation and purpose, clearly defined boundaries, easily available access, valuable content, adaptive features, diverse interaction mechanisms, and an ability to support learning communities.

Organisations need to consider how they will incorporate students' personal ICT devices within their own infrastructures. One option is for them to set minimum standards and specifications for students' personal devices. It is also important that organisations carefully manage the storage of their data and use this effectively to support their teaching and learning and wider objectives and requirements.

Organisations should establish agreed or expected standards, especially for service delivery. This is of particular importance for their technical support functions. They also need to provide adequate logistics and administration support.

References
5, 6, 8, 10, 15, 17, 24, 44, 45, 50, 55, 56, 61, 62, 64, 65, 67, 68, 70, 71, 72, 73, 75, 76, 77, 80, 81, 83, 87, 89, 90, 91, 92, 95, 97, 98, 100, 101, 102, 103, 105, 106, 107, 108, 109, 110

Agency support

Governments and their agencies can also provide support for e-learning. This support can take varying forms including funding of projects, development of resources, research, and quality assurance guidance. The UK[4] has provided much government and agency support, more than New Zealand, Australia, Canada and the US. This may be because the UK has a dedicated e-learning strategy[5] and agency (the Joint Information Services Committee (JISC)).

However, the other jurisdictions have, at times, supported important initiatives. For example the e-Collaborative Development Fund in New Zealand operated between 2003and 2007, while in Australia there is a Flexible Learning Framework in the vocational education and training sector. The literature also comments on the importance of support from intergovernmental bodies such as the Commonwealth of Learning and the European Union, and peak bodies like

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[4] This includes initiatives from England, Scotland, and Wales.
[5] Developed by the Higher Education Funding Council for England

the Australasian Council of Open and Distance Learning, which has provided benchmarking tools for its members.

References

1, 5, 10, 11, 12, 13, 14, 20, 25, 31, 35, 44, 45, 62, 64, 68, 70, 72, 73, 75, 79, 80, 81, 84, 86, 90, 93, 94, 95, 98, 102, 107, 108, 110

Barriers, constraints and challenges

The literature identifies a number of challenges, barriers and constraints that can adversely impact an organisation's attempts to introduce and sustain e-learning. A centrally driven approach that does not reflect departmental differences can encounter staff resistance. If an organisation introduces e-learning too quickly it is also likely to encounter staff and student resistance. But problems also arise if implementation takes too long.

Organisations may face challenges in overcoming strong local cultures that reflect differences between disciplines. This leads to difficulties joining up local e-learning initiatives with mainstream activities and/or ensuring they are used organisation-wide rather than being located in individual units. But even if these difficulties can be overcome, organisations face additional challenges in introducing e-learning, including the requirement to maintain their business-as-usual activities while managing e-learning, and in meeting the expanded choices that e-learning offers.

Other factors that can hinder organisational e-learning efforts include connectivity issues or students' inability to obtain the necessary equipment and software. Some students may also lack the skills, capabilities and literacies needed to participate in e-learning. Organisations that do not offer adequate support for students are less likely to be successful in their e-learning efforts.

Systems may lack the flexibility and interoperability to support quality interactions, which can lead to students feeling isolated and potentially contributing to lower completion and retention rates. Requiring students to purchase equipment or software may also exacerbate the divide between students who can and those who cannot afford these.

Curriculum and course design issues are also challenging for organisations introducing e-learning. Course design is more than the selection of appropriate content, technologies and tools. It is also about having the appropriate pedagogies and teaching practices. How to incorporate traditional delivery and new approaches into an e-learning course are also critical design issues.

Organisations need to manage copyright and intellectual property issues that arise in an e-learning context. These issues fall into two main categories: staff and/or students obtaining resources without meeting their copyright requirements; and users external to the organisation using its resources without appropriate permissions.

Organisations need to be careful about the storage and use of teaching and learning data so they meet expectations of how this will be managed and used.

A lack of senior management support is one of the leading causes of organisational failure in an e-learning context, because senior management plays a key role in balancing competing demands for resources. Senior managers need to ensure relevant stakeholders understand the importance of e-learning. Organisations also do not want to be too reliant on key individuals and need to be aware of the significant effort, expertise and resources that are necessary to effectively introduce e-learning organisation-wide.

Arguably the most notable organisational failure in an e-learning context was the UK's e-University project. Despite an investment of £50 million, it collapsed after attracting only about 900 students after three years (rather than the projected 5,000).

This illustrates the importance of organisations correctly assessing student demand for their e-learning provision, particularly where this is online without a traditional delivery component. Another reason cited for the failure of the UK's e-University was not effectively utilising the evidence available from the research literature and other similar organisational ventures. They

also made the error of overemphasising technology at the expense of meeting their teaching and learning requirements and objectives.

References
9, 36, 37, 41, 43, 48, 52, 60, 63, 64, 67, 71, 72, 73, 80, 81, 83, 84, 89, 94, 101, 106

Quality of e-learning

The key finding in this category is:

- Benchmarking of e-learning capability has been used by a number of organisations. Benchmarking can be used not only for comparisons with other similar organisations but also to more clearly identify performance in an e-learning context.

Quality assurance

Most of the literature supports distinctive approaches being adopted for e-learning quality assurance (QA). For example, the UK's Quality Assurance Agency (QAA)[6] produced a specific code to support organisations in dealing with e-learning-related QA. Distinctive approaches are recommended because e-learning uses different delivery modes and has more distributed supporting teams and disaggregated processes as well as larger numbers of learners studying off campus than traditional delivery.[7]

While QA is often adopted to meet business or external imperatives, it should be driven by teaching and learning objectives and requirements. Organisations should adopt formal e-learning QA processes and these can use international, national and sector frameworks or align with their own internal processes. Benchmarking frameworks can also be used for e-learning QA purposes.

References
10, 11, 13, 20, 24, 31, 35, 42, 44, 45, 46, 52, 57, 61, 64, 75, 83, 86, 87, 90, 91, 93, 100, 102, 105

Quality improvement

Organisations often adopt e-learning, and are supported in their efforts by governments, because of the expectation it can improve the quality of teaching and learning. This is because it can make the learning experience more personalised, reduce learners' study time and provide more flexibility for both organisations and students. Organisations are also concerned about quality because of competitive pressures.

However, it is important that organisations determine what quality is. Comparisons with traditional delivery may not be appropriate. While e-learning may allow larger numbers of students to participate, this poses challenges for ensuring that they all have a quality experience. If quality is based on assumptions of student capabilities and access, organisations must ensure they have the ability to obtain the necessary hardware and software and be able to use it effectively.

It is useful for organisations to adopt or adapt supporting standards such as those created by peak bodies, professional associations or other bodies such as the International Organization for Standardization (ISO).

Organisations should involve their stakeholders because they can be sceptical about claims that e-learning produces quality outcomes for students. They may also have concerns about low quality or fraudulent organisations operating via the internet.

Organisations should use student data to increase the quality of their e-learning provision. Improved student data can be obtained by building evaluations into course activities rather than as an add-on at its completion.

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[6] This is the agency responsible for quality assurance in tertiary education in the UK.
[7] Traditional delivery refers to 'teaching and learning that occurs face-to-face without any technological support. In a distance or part time education context it refers to delivery being made without the support of digital technologies such as the internet, mobile devices or institutional LMS'.

They also need to ensure that the quality of their e-learning is consistent and matches their overall provision. This is more likely to occur where course design teams incorporate a range of suitably qualified and experienced personnel.

However, organisations may lack the expertise to develop appropriate strategies and associated models and processes. Their staff may also lack the confidence and/or capability to effectively teach in e-learning environments. An organisation can bypass or not complete formal quality processes if they regard e-learning as an inherently risky enterprise or a peripheral activity.

For quality student experiences and outcomes, the technologies used should be accessible and secure and given good support. Organisational quality improvement should focus on teaching and learning and, in particular, student experiences and outcomes.

Organisations can also face challenges in managing distributed teams and obtaining feedback from off-campus students.

Cost and time frame overruns can also adversely impact an organisation's ability to develop quality e-learning, and so adequate planning is necessary to support quality e-learning.

References
20, 24, 31, 42, 45, 46, 52, 57, 63, 67, 72, 75, 77, 80, 81, 82, 83, 86, 91, 93, 95, 102, 103, 105

Benchmarking

Organisations use benchmarking for a variety of reasons. External factors include a requirement or desire to participate in agency-led initiatives or to compare themselves with other organisations. Internal factors include establishing baseline data and identifying the contribution of ICT to high- and under-performing areas and processes.

Organisations in New Zealand could consider using the e-Maturity Model, which was initially developed through Ministry of Education funding and has been widely used by the university and polytechnic sectors to support their benchmarking initiatives.[8] However, it is important that organisations select the right areas to focus on when they select a benchmarking approach and if necessary mix and match benchmarking criteria or adopt their own customised set of benchmarks.

When organisations undertake benchmarking, all relevant stakeholders need to be involved. Objectives need to be agreed upfront by senior management. The roles and responsibilities of those undertaking the exercise as well as those who will support or participate in it need to be clearly articulated.

Data collection methods should be flexible and allow organisations to clearly differentiate between teaching and learning and administration. Benchmarking should preferably occur as part of a phased or staged approach over a lengthy time period to allow focus on, and performance improvements in, identified priority areas. Benchmarking should clearly align with and support institutional strategies, policies, frameworks and processes.

Benchmarking can be focused at a number of levels including course and programme but is most typically used at the faculty or organisation-wide level. Organisations should adopt a technology neutral approach to future proof their results and avoid overemphasising technology. While an initial self-assessment is the typical first step in interpreting results, external 'critical friends' should also be involved to critique these results.

Criticisms have been levelled at benchmarking. These include an overemphasis on processes, its complexity and associated bureaucracy, a hindering of innovation, and only addressing some areas while overlooking or devaluing others that are also important.

References
5, 10, 11, 13, 18, 20, 24, 25, 45, 58, 62, 68, 69, 71, 75, 81, 84, 101, 103, 104, 105

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[8] Refer to reference 69 for further details.

Economics of e-learning

The key finding in this category is:

- It is unclear if organisations can save money through e-learning. While it requires investment in infrastructure, staff development and the creation of supporting materials and resources, cost savings are possible. Savings are derived not only from economies of scale but also from other measures such as reuse of materials.

Is e-learning more or less expensive than traditional delivery?

There is no clear consensus in the literature about whether or not e-learning is a more expensive option for organisations or if it can reduce costs. Both outcomes are possible. E-learning typically requires substantive investment in infrastructure and in staff and student development. There are also significant initial costs associated with materials development. More frequent interactions with students may also increase costs.

But e-learning can also reduce costs. This is mainly through its ability to achieve economies of scale in the development and distribution of course materials. Development costs can be reduced by reusing and sharing course materials and decreasing the resources and time needed to create them. Further savings can be realised by distributing course materials on a large scale at no or minimal extra cost, as well as through mass online assessments.

Further cost savings may be possible through more effective distribution of overheads. Selecting packages that are widely used and supported rather than creating in-house systems or customised versions potentially reduces organisations' system and infrastructure costs.

Organisations could also try to make savings by adapting technology, models and processes from industry, and can consider innovative approaches such as charging only for those services that they provide to students.

References
3, 7, 9, 12, 17, 18, 24, 25, 34, 35, 36, 41, 45, 48, 49, 52, 54, 58, 59, 60, 63, 64, 67, 68, 72, 77, 78, 79, 82, 83, 87, 88, 96, 97, 100,101, 105, 106

Determining costs

Organisations need to compare the costs of their proposed e-learning solutions with the cost of other options. Assumptions also need to be tested, including the ability and willingness to transfer costs to students; and learner-generated content may need to be factored into organisational costings. Organisations should also consider whether they intend e-learning to replace or supplement existing teaching and learning-related services.

It is difficult to determine exact costs in e-learning because the data that is needed to support cost analysis is not usually available. It is also difficult to compare traditional delivery and e-learning costs as they are substantively different delivery modes.

While external models can be used, it is important that organisations tailor these to meet their specific operating context. They should also use a wide range of tools and adopt a development (rather than an audit-type) approach. While it is important to gather and analyse quantitative data, qualitative information can also be useful and should be included where appropriate.

Variable costs include those generated by student enrolments, while staff salaries, depreciation and system costs are more or less fixed. Work planning and consideration of overheads will also contribute to more accurate determination of costs. A project management approach can be used not only to establish but also to monitor costs. It is critical that less easily identifiable costs and benefits are included.

References
3, 12, 17, 42, 54, 59, 67, 79, 82, 88, 101

Funding e-learning

The source of funding is important in determining whether or not e-learning is sustainable. If organisations largely depend on student fees, they need to ensure that these are set to reflect sector norms.

To offset reductions in external funding, organisations can generate revenue from licensing agreements for software they have created or on-selling of their materials and resources. Innovative funding approaches can also be considered for e-learning courses or programmes, particularly when they do not use existing infrastructures or they sit outside mainstream organisational cultures.

Organisations can decentralise their funding decisions while still providing some centralised services including technical support. But a centralised allocation is favoured because it is more likely to lead to organisation-wide adoption of e-learning. Modest but well-targeted funding can have positive impacts if the recipients have genuine ownership.

References
6, 7, 14, 18, 41, 50, 52, 54, 65, 76, 81, 82, 84, 87, 88, 91, 94, 101

Economies of scope

Organisations can achieve economies of scope, which means that they use e-learning to broaden their reach by targeting previously inaccessible students. It also refers to the ability for organisations to create collaborative networks where they share not only materials and resources but also knowledge and expertise. E-learning-related economies of scope allow organisations to provide students with a much greater variety of courses, subjects and experiences, using a common platform.

References
12, 17, 41, 49, 54, 63, 64, 66, 74, 77, 79, 87, 90, 93, 95, 96, 102

4   SOME OBSERVATIONS ON THE LITERATURE

Strengths

The literature supplies good-practice guidance for organisations considering adopting or broadening e-learning by illustrating an array of issues and concerns, presenting the risks and opportunities e-learning provides, and identifying critical areas that need to be addressed. It also provides good case studies of specific institutional contexts. While much of the literature relates to universities, there were also case studies related to polytechnics as well as Private Training Establishments (PTEs) and wānanga that were part of a larger study.

Limitations

Much of the literature relates to universities in other jurisdictions. There are no studies relating to Pasifika tertiary sector organisational contexts, and only limited studies relating to wānanga and PTEs (Higgins and Prebble, 2008[9]). This makes generalisation of the bibliography's findings difficult. Most studies are also descriptive rather than hypothesis-based, meaning that findings from actual studies based on sound methodologies and investigative research are rare.

The studies were also mainly either theoretical (including literature reviews or similar exercises) or based on organisations that had recently adopted e-learning. This means the literature does not provide the same level of guidance on the medium- or long-term issues, concerns, risks and opportunities organisations may face when they are attempting to make e-learning part of their business as usual.

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[9] Note that Marshall (2012) undertook a study using longitudinal approaches that examined organisational change in these contexts but this was not included here because it was outside this bibliography's time period.

5   RESEARCH GAPS

This bibliography on tertiary sector organisational approaches to e-learning has identified some gaps in the research literature. There are only a few studies on New Zealand tertiary sector organisational approaches to e-learning and these tend to involve only small numbers of participants. There is also a lack of research on PTE, kaupapa Māori, and Pasifika tertiary sector organisational contexts. Finally, the number of longitudinal studies relating to New Zealand tertiary sector organisations is limited.

6   BIBLIOGRAPHY

This section lists the literature used for this annotated bibliography in alphabetical order. The summary of this literature (i.e. the annotated bibliography) immediately follows.

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7 ORGANISATIONAL APPROACHES TO E-LEARNING IN THE TERTIARY SECTOR

The change academy and institutional transformation

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Introduction
This article outlines a case study of the University of Hertfordshire (UH) in the UK, which participated in the Joint Information Services Committee (JISC)/Higher Education Academy (HEA) benchmarking project (referred to as Pathfinder). The project led to the development of a local 'change academy', referred to as the Change Academy for Blended Learning Enhancement (CABLE), which aimed to achieve a more embedded approach to blended learning across the institution.

Context
In 1995 UH adopted an ambitious strategy that included three key elements: the full-scale integration of computing, library and media services; the provision of diverse 24/7 study environments in Learning Centres; and the exploitation of information and communications technology (ICT). From this plan they obtained a Learning Management System (LMS) and developed an implementation plan to ensure all staff could use it effectively. From this arose their Blended Learning Unit (BLU), which had as part of its remit the evaluation of the university's blended learning activities.

The BLU participation in the Pathfinder project revealed that, while e-learning had become well established in the institution, it tended to be used as an addition to traditional delivery rather than being fully integrated with it. This meant the BLU needed to work directly with staff to help achieve better integration between their e-learning and traditional delivery practices and activities. At the same time, the institution had devolved more responsibility to their Schools, who were now expected to operate autonomously as strategic business units.

Change academy
With the context and need for change established, UH adopted the HEA's change academy model because of the success of their projects in using it. This model provides a year-long programme of support for higher education institutional teams that is designed to enable them to develop the knowledge, capacity and enthusiasm for achieving complex institutional change. It also provides opportunities for team-based learning and professional development that focus on the strategic interests and needs of the participating institutions.

At UH the focus was on blended learning but at a local level concentrating on the integration between e-learning and traditional delivery and working in partnership with Schools. CABLE's main objective was to develop a blended approach to engaging students with the curriculum, unlike other institutions, which tended to adopt a more general approach by concentrating directly on curriculum design. This was because a general approach could be hindered by issues not directly related to e-learning such as quality assurance procedures and programme validation and monitoring.

CABLE
CABLE is both a project and a process: a model for changing practice. A key objective was to develop a toolkit that can be used by anyone engaged in the change process. An adjunct to this was a diagnostic tool for curriculum design: the opportunity to appraise the current version and plan for development. Teams are supported by the CABLE management structure and four key supporting resources: project coordinator and facilitators, resources and site.

CABLE's key elements and stages can be summarised as:

- identifying the challenge, which comprises obtaining expressions of interest and selecting bids
- constructing a team, this is done at a team leaders' meeting. Team meetings are used to explore the issues
- providing staff development
- building partnerships and collaborative links, which involves preparatory work by teams
- doing action planning, this is done at a residential event. Evaluation and dissemination strategies are developed at post-residential meetings
- identifying change agents and providing them with ongoing support
- maintaining momentum, achieved through a final event
- implementing projects and doing final reporting on their outcomes
- following this implementation phase with evaluation, dissemination of outcomes, and supporting others.

CABLE in practice

Expressions of interest are obtained from heads of Schools. They must identify a challenge and a team leader as well as other project team personnel that must include a student. Incentives for Schools include a small amount of funding, staff development through working with BLU, and participation in a high profile project. Criteria for selecting the bids involve determining the extent to which the aims of CABLE were likely to be addressed, whether the bid dealt with a problem or a challenge, or if there was scope to change teaching and learning practice.

Other criteria used were the bid's synergy with other bids and the extent to which the project might influence practice elsewhere in the school or institution. Bids were not accepted if it was clear that the focus would be solely on primary research. Once they are accepted the project coordinator meets with the team leader to assist with team selection. This helps increase buy-in and understanding of the project, its objectives, and respective roles and responsibilities. This is further supported by team meetings.

At the team meetings a needs analysis is also conducted and the outcome is collated across all teams to ensure the residential event and ongoing support address the staff development needs throughout the project. The teams typically have six to seven members including not only a student representative and the team leader but also a senior manager from the School. This senior manager is important to ensure that project decisions and plans that may impact on resourcing are expedited quickly.

The residential event is the key for CABLE. Closely following the HEA model, it is based around two days of workshops focused on the needs analysis outcomes. But sufficient time is also provided for teams to discuss and plan their particular projects. They are supported by facilitators and attendees, who are experts in key areas such as project and change management, curriculum design, academic quality and enhancement, and previous team leaders. CABLE is managed by a dedicated team.

Since 2006 16 projects have participated in the CABLE programme including staff development in blended learning, enhancement of traditional laboratory-based teaching, and continuing professional development for health graduates. One unexpected finding from the majority of projects was the initial difficulty the teams had in using their allocated budget. This suggests that the grant allocation incentive was not a major driving force for most projects.

Outcomes

All the participating teams experienced positive outcomes such as understanding and applying new technologies to practice and increasing engagement and successful outcomes for students. But there have also been challenges like increased workloads for project groups and some resistance from their colleagues. Key lessons have emerged, including the importance of:
- fully supporting team leaders through personal contact and staff development activities
- giving teams sufficient time together to plan and try out new ideas, take risks, and work as autonomously as possible

- having a visible facilitator who, while providing support and linkages to other resources, does not 'take over' the group.

Changes to CABLE projects' funding
These include reducing the initial funding in recognition that the original levels were unsustainable. The number of submitted bids has not declined and this suggests that schools recognised that the primary value of the projects was not financial nor was this necessary for the project's success. A dedicated day for sharing project outcomes helped identify areas for improvement in future CABLE activities.

Other planned changes include:
- increasing student participation and involvement by involving more of them on the project teams
- shifting the focus to curriculum design and assessment for learning to strengthen CABLE's alignment with the university's strategic teaching and learning aims and objectives
- withdrawing all central funding except for the residential event.

Wider uptake of CABLE
This initially proved to be unsuccessful because of the inability to create effective CABLE teams in other institutions, the fact that most organisations were not ready for this approach, and a lack of involvement from senior staff.

A recent report (Flint and Oxley, 2009) on seven other institutions that had adopted a local change academy approach showed that they too had experienced positive outcomes. They were not only interested in the results of change, but also in its process and in establishing change agents. Some were based on open attendance rather than teams but the supporting structures were broadly similar to each other and CABLE, for example by including students in their project teams.

Re-organizing universities for the information age

Author: Annand, D.

Reference number: 2

Background
Most universities organise themselves around cohort-based education at a pace, time and location of their choosing rather than that of their student body. E-learning allows for learners to become more independent. They may also take on some of the traditional teaching roles. However, this demand for increased autonomy is at odds with requirements for social interaction.

Traditional delivery norms dominate in e-learning environments because they are easier to support within organisational processes. This means that industrialised forms of distance education predicated on independent learning are still largely ignored or criticised, even though these are scalable and more cost-effective.

Universities as pre-industrial organisations
Most universities have not fundamentally altered the way they conduct core aspects of the education process since the pre-modern era. However, Rumble (1998) disputes this view by pointing out that universities have become increasingly large and therefore bureaucratic. Other factors have also contributed to changes in universities' roles. These include the mass numbers of students entering higher education, an emphasis on being responsive to the market and being more entrepreneurial, the rise of a professional managerial cadre, and the increasing dichotomy between teaching and research.

Rumble and Latchem (2004) state that distinctions between traditional delivery and distance education are being reduced as on-campus universities look to reduce costs by raising class

sizes and imposing more bureaucratic oversight to standardise teaching and learning. But these differences in role and operations should not be overstated. This is because learning continues to operate on a cohort basis within prescribed start and end dates. Individual students are still largely overseen by a limited number of staff.

Universities too are still, in the main, vertically integrated organisations with staff and students clustered on physical campuses despite the ever increasing provision of e-learning. Competitive advantage is often achieved by marshalling faculty resources in one geographical location and restricting competition through the accreditation process.

Their resistance to change is partly because of the difficulties of adapting new delivery modes to classroom-based teaching and learning. However, public funding may also have insulated universities from more progressive trends within wider society. But distance education has generally incorporated a more modern, industrial-type approach. In its latest incarnation, technology use means more personalised support can be provided. Using a technology platform also means some academic roles such as student advice and general administrative information can be outsourced to call centre personnel.

Its critics argue that this reduces education to a glorified assembly line and they see it as antithetical to desirable teaching and learning processes. Stevens (1996) summarises these objections as the exclusion, objectification and marginalisation of learners and staff, providing tacit support for globalisation, and a diminishing of teaching.

But most of these criticisms can be applied equally to any form of university organisation. They also miss the point that many faculty shifting to e-learning could benefit from a more industrial approach where external experts such as instructional designers and graphic artists and editors are assigned particular roles. This assists in realising the full potential of e-learning and does not necessarily mean removing core responsibilities from academics.

The innovation imperative
Potentially universities can resist change. Faculty associations and academic decision-making bodies continue to hold considerable influence and invariably are advocates for incremental change rather than radical reform. Continued moves to cohort-based e-learning may reduce the need for expensive physical infrastructure and its associated costs and therefore external pressures to reorganise.

But realistically most universities, particularly those that are publicly funded, are unable or unwilling to change and even if they wanted to are ill-equipped to manage or handle major organisational change. However, increasing demand for higher education is leading to severe capacity constraints in both staff and infrastructure terms.

This projected demand has led Daniel, Kanwar and Uvalic-Trumbic (2006) to predict a 'tectonic shift' in developing countries' higher education systems. Increasingly ubiquitous connectivity combined with the massive creation of open educational resources may soon allow economies of scale and the attendant radical reduction in costs that are necessary to meet this demand.

But universities will still need to reorganise. Technology allows this to occur by providing additional services and flexibility at reduced cost to learners. One risk of not adopting more innovative approaches is that learners will exit traditional universities for those that can offer them more personalised learning and support.

Van Dusen (2000) believes that a radical restructuring of universities is necessary to respond more rapidly to growing external pressures and demands. To achieve this, removal of time and place constraints is essential. Therefore e-learning, adopted by appropriately reorganised institutions, should be used to create significantly new approaches to the management and process of higher education, and not merely to augment traditional delivery.

But most universities consider the use of e-learning only to the extent that it might incrementally improve traditional approaches in face-to-face and online environments without regard to how, when combined with organisational reform, it could transform the educative process (Hilsberg, 2004). This view is supported by Irele (2005), whose research challenged the assumption that e-learning could be widely accepted and integrated into mainstream higher education.

Moving towards e-learning in schools and FE colleges: models of resource planning at the institution level

Authors: Armstrong, D., Atkins, J., Kane, M., Mackenzie, A., McBurney, M., and McMullan, T.

Reference number: 6

Introduction
E-learning is now a key priority for UK training and education policy. It is also considered to have the potential to revolutionise teaching and learning. This is because new technologies allow institutions to transform the delivery of their services by developing their capital infrastructure, providing quality interactive content, and supporting teacher training and assessment (Skills Strategy White Paper).

The research was conducted by PricewaterhouseCoopers on behalf of the UK's (then) Department for Education and Skills. Its overall aim was to examine resource management strategies and processes for the sustainable development of e-learning in schools and Further Education (FE) colleges. This annotation will focus on the FE colleges. Underpinning this overall aim, the report's specific objectives were to:

- identify the **range of resource planning and management strategies** adopted by institutions in making the transition to embedded e-learning
- investigate the **factors that affect key resource-related decisions** about the acquisition, deployment, support and development of ICT
- indicate how particular resource management approaches and planning strategies employed within institutions **impact on the costs involved in integrating ICT into mainstream activities** within schools and FE colleges
- establish **current levels of ability and willingness** in schools and FE colleges for planning and managing resources for the ongoing development of e-learning
- determine the assistance that institutional leaders need to improve management capability in this context
- establish the **principal outcomes of the integration of ICT into mainstream activities** within a range of institutions, and link these to the ways in which e-learning has been implemented.

Methodology
The authors did a brief literature review that examined the e-learning experiences of other countries and other parts of the tertiary education sector as well as workplaces. They then visited 24 good-practice institutions, six of which were FE colleges. These were written up as case studies and aimed to identify good practice with regard to embedded e-learning. These case studies assessed examples of good management practice and gained feedback from students and teachers on e-learning, and examined the sustainability of embedded e-learning.

At each case study institution, interviews were conducted with the principal, key ICT personnel and financial staff as well as group discussions with staff and students. Finally a survey was conducted with a nationally representative sample of FE college principals and school head teachers to examine the ability and willingness of institutions to move towards embedded e-learning, and to assess the nature and extent of assistance required. There were 1,290 surveys

sent with 377 responses (which was 29 percent overall). They also conducted a smaller survey of non-responders and the findings here reflected the ones in the larger sample.

Key findings

The survey data shows that 90 percent of institutions had a formal or informal ICT strategy. Formal written strategies were more common in larger institutions. But only 10 to 20 percent of institutions had their ICT strategy positioned within their overall teaching and learning strategy. The particular management structures in FE colleges allow a more localised approach to be adopted. In practice this means that there is no institution-wide strategy because while the organisation sets the vision they encourage individual departments to develop their own e-learning approaches.

The case studies demonstrate that institutions can make most progress when teachers and other staff have fully bought into the overall vision for learning and the associated strategies for the use of ICT. For FE colleges these case studies highlighted the importance of appointing a senior manager who has e-learning as their responsibility to ensure overall senior management buy-in and support.

But the survey data revealed that e-learning strategies are largely developed by the senior leadership team and the ICT coordinator. Teachers and subject leaders had less input, with only 20 percent of institutions describing them as having a significant influence on strategy. While there was no overall planning methodology evident across the case study institutions, a phased approach that takes into account the pace at which staff can accommodate change has proven beneficial.

However, senior management teams in FE colleges have managed to adopt a planned strategic approach from one site or system and develop this institution-wide despite the logistical challenges associated with multi-site campuses. FE colleges tended to buy IT resources from their general budget, which allows for greater flexibility to make purchases that reflect their strategy.

They are more likely to be self-reliant in sourcing funding for IT development and tend not to rely on grants, special programmes or sponsorship. This will ensure greater long-term sustainability. Within the case study colleges, an effective approach to assessing need is often to firstly conduct a top-down assessment of the budget, and then invite bids from colleagues. These internal bidding processes were widely established, with 80 percent of colleges using them. But the larger institutions are far more likely to use this process than smaller ones.

Given the scale of the FE colleges' infrastructure investment, software license costs can be prohibitive, particularly institution-wide ones that allow them to load software on lecturers' personal, home-based machines, and the fees charged for Virtual Learning Environments. It is critically important to keep abreast of technological developments and have a general understanding of the ICT sector and e-learning needs. In this context a more joined-up approach between government agencies promoting e-learning and those concerned with networking infrastructure would be of benefit to institutions.

Not all college subjects have the 'critical mass' nationally to support independent or commercial development of e-learning courseware. This makes it difficult for commercial providers to develop e-learning materials, which in turn forces colleges to develop proportionally more approaches and models in-house. In this context it is important to establish networks to share specialist e-learning materials and achieve economies of scale.

The case study colleges typically did not lease equipment as there was little difference between renewal and replacement costs. Major items were generally purchased outright, although about 25 percent did lease them (10 percent), or used a combination of buying and leasing (16 percent). Generally colleges tendered annually for preferred purchasing arrangements with suppliers. In any case, institutions clearly benefit from having long-term, effective relationships with suppliers.

Management teams in FE colleges had more than an adequate level of competence to deal with ICT issues, which they see as an important part of their overall responsibilities. Typically colleges found it relatively easy to recruit specialist senior management expertise in e-learning if required. FE colleges are generally aware of, and planning for, sustainability, but the amount of funding available was a key constraint.

Colleges typically do not use one-year budgets; earmarked funding targeted at ICT is generally the preferred model. About 65 percent of colleges indicated that their buildings restricted their ICT development, because of their size, age or layout. The colleges also viewed intellectual property, security and access as important issues.

Developing the skills needed to engage effectively with ICT is central to embedding e-learning. Creating structures to facilitate ICT use is as important as purchasing the equipment. These structures can be created through formal or informal training but research shows that the latter is often more effective. The importance of training and support is demonstrated by the fact that more than 90 percent of institutions had an ICT coordinator or equivalent and 96 percent had access to technical support.

Seventy-three percent of colleges provided staff with personal access to a computer. The majority of them have adopted Virtual/Managed Learning Environments or are shortly planning to do so. Most institutions believe that student attainment has been improved by embedding e-learning into the curriculum, but they could not quantify these gains or the causal chain that links e-learning to improved outcomes.

Technology was also seen as having other benefits including the facilitation of higher quality information and levels of presentation, improved effectiveness, less time spent on administration, increased student ownership of their work, and reduced lecturer hours for the same learner volume. Based on the survey results, only 11 percent of institutions can reasonably be described as having embedded ICT successfully into teaching and learning.

At the other end of the spectrum, slightly more (13 percent) are late adopters. They are not performing well and recognise that they have not embedded ICT into their teaching and learning. The remainder (about 75 percent) can be broadly split into two groups: those who have made some progress but are committed to and enthusiastic about e-learning, and those who have a similar level of progress but are more ambivalent about developing e-learning in the future.

These findings suggest that institutions need to consider the following:
- **Strategic vision** – institutions should have a strong and inclusive educational vision, which must precede the vision for ICT. The strategic and management focus of e-learning needs to be tied back to the learning.

- **Strategies** – e-learning strategies need to be broad and encompass the opportunity to improve the quality of teaching and learning. But they should also aim to provide opportunities for institutional improvement and reductions in teacher workload. It is also essential for issues relating to funding, as well as those relating to ICT infrastructure, to be shaped and driven by the overall vision for teaching and learning.

- **Planning for sustainability** – as part of their strategic development, institutions must address the issue of sustainability and plan for future e-learning provision.

- **People** – staff need to buy into the overall vision for learning and the associated strategies for the use of ICT. As part of this approach, developing the necessary skills to engage effectively with the technology is central to embedding e-learning. Informal training is likely to be more effective in creating structures to facilitate ICT use, although formal training can also be used. These structures are arguably more important than the purchase of equipment.

- **Buildings** – e-learning can be restricted by buildings and so the applicability of the building environment for facilitating e-learning must be examined.

The report also identified some opportunities for agencies to help institutions embed e-learning in their teaching and learning. For example, they could use some of the principles of good management practice identified in the literature to steer institutional strategies in the desired direction. Agencies should also adopt a joined-up approach, for example by better aligning those who are responsible for the teaching and learning aspects of e-learning with those more concerned with systems and infrastructure. A piecemeal development process typically fragments agency support.

Models of student support within the University of London external system: historical development and future evolution

Author: Arnold, R.

Reference number: 7

Background
The University of London's external system provides opportunities for learners to gain qualifications without being physically present on campus. They operate different mechanisms of student assistance simultaneously. Student support in this paper refers to that associated with academic issues.

Current student support
This draws heavily on models used by the Open University, which emphasise individualised support. Their student support can be broadly positioned within two categories: partial and full. Partial support tends to apply to undergraduate students and the full support model to postgraduate learners.

Under the partial support model, learners receive an introductory package that includes a handbook and a study guide for each unit they are planning to undertake. They can also purchase local teaching from institutions that offer it. This is largely informal and the university does not seek fees from the other institution providing this support. They do not necessarily endorse the other institution and do not take responsibility for the quality of teaching at these supporting institutions.

While informal, and even with the above caveats, this form of support is popular with learners as it allows them a traditional delivery supplement and support without having to go to the London campus. From the university's perspective, this model is considerably cheaper than those based on the supply of learning materials in full and the provision of support on a remote basis. The potential quality control risks are managed by encouraging learners to obtain local support from a university.

The full support model for postgraduate students provides them with most (if not all) of the materials they need. They will not normally be required to purchase additional textbooks or other study-related items. Tutorial support is provided at a distance through legacy systems (i.e. papers by post) or through the university's e-learning environment. This environment links to the library and hosts a peer-peer network, which allows for academic and social interactions between participants.

This is a more flexible model that recognises that some learners are unable to access traditional delivery. But it does make learners more reliant on technological connectivity, it can lead to isolation, and most importantly, from an institutional perspective, it is more expensive to provide. These costs are passed on to learners, which means those participating through a full support model pay seven to 10 times more than those using a partial support model.

However, this reflects the differing cohorts. Undergraduate students are less likely to be able to meet these increased costs as they may not have well-paid employment and do not require the

flexibility of the postgraduate learners, who are more likely to be experienced professionals already holding university qualifications.

But there are problems with these support models. Under the partial support model, about 25 percent of learners are left to study alone without access to online resources, direct tutorial support or local options provided through other institutions. For example, both rural and international students are likely to be disadvantaged because of the lack of local support options. Even where local support is available, it is not comprehensive and tends to be restricted to a limited number of the available qualifications.

Quality issues are also inherent in this model, with other institutions being able to assist learners with their University of London examinations and/or use their logo or branding in marketing exercises. Although they encourage learners to undertake this support at a university, they cannot mandate this. Furthermore, even if students do obtain their assistance from these sources, the University of London cannot guarantee it is of sufficient quality or value and has no quality control mechanisms to alleviate this problem. The supporting local institutions could also offer their services to competitors by developing superior educational products and services.

The costs of the e-learning system to support postgraduate students are substantial and will have to be passed on to them at some point. The costs may also not be recoverable where insufficient learners enrol, as was the case with one of their recent postgraduate offerings. There is a risk that, in responding to perceived student demands for cutting-edge technology-supported delivery, the full support model could price itself out of any realistic market, or operate on unsustainable margins.

Future developments
The future development policy options fall broadly into two categories. The first would be the status quo, where costs are reduced through employing other institutions to provide traditional delivery support for their off-campus students. The other would see more technology support provided through a suite of products and services; this would require a significant level of advance investment and higher charges for learners. At the time of writing, the University of London was using cross-subsidies to manage their support. The cheaper, partial support model in effect was subsidising the more expensive, full support model.

This makes sense if the full support model delivered by technology is the key to future markets, even if its current revenue streams are unreliable. But it is unclear if this is a deliberate choice or an ad hoc reaction to circumstances. It is also not clear how this process is intended to evolve in the future.

For example, an emerging issue is that funds obtained through the partial support model are not necessarily being used to grow and develop the undergraduate programme. If resources are devoted solely to the full support model, which has uncertain revenue, there is a risk that available reserves for future development may diminish. But there is an equal danger that if insufficient development is made in new investments, the entire support model could be vulnerable if there were to be any significant contraction in their core student markets.

Ideally learners would be able to use both support models on an as-needed basis including simultaneously if required. But this hybrid model would be extremely complicated to administer and very expensive to develop. However, its underlying principles of flexibility and integration could be used to underpin future support models.

This would be more successful if targeted towards future qualifications as opposed to modifying existing ones. This is because the organisational sub-cultures that support these models are markedly different and they have developed varied responses to the problems and challenges they face. To overcome this, it was suggested that this proposed shift in policy, development,

and implementation should not represent a sharp discontinuity with tradition but rather a merging of separate traditions into a more integrated and cohesive whole.

'Where do you learn?' tweeting to inform learning space development

Authors: Aspden, E. J., and Thorpe, L. P.

Reference number: 8

Background
Student use of informal learning spaces is becoming increasingly important. Informal learning was defined as: 'the activities that take place in students' self-directed and independent learning time, where the learning is taking place to support a formal program of study, but outside the formally planned and tutor-directed activities'.

Methodology
The authors recruited 15 student volunteers to take part in their two-week study. The volunteers were expected to use Twitter and post three 'tweets' daily about where they were learning and the activities they were engaged in, provide three longer summaries to answer questions posed by the research team, and participate in a final interview.

Twitter was chosen because it allows anytime, anywhere updates. The constraints around 'tweets' meant that responses were concise and focused on the key question. It also meant that a wider community could be involved in the research.

Key findings
- Emerging technologies and applications can extend traditional data generation approaches and can be used effectively in institutional planning.
- Using a method where data is shared and emerging – as opposed to being controlled and presented in summative form – enables informed decisions to be made about ongoing projects and developments.

The need for a strategic foundation for digital learning and knowledge management solutions

Author: Asgarkhani, M.

Reference number: 9

Background
Increasingly, people are expected to learn on an ongoing basis to keep their skills and knowledge current and relevant. But most traditional learning approaches are inadequate in regard to the need for increased efficiency (and effectiveness) in developing, acquiring or disseminating knowledge. The solution to this problem in most cases appears to have been provided through the application of information and communications technology (ICT).

Rapid advancements in ICT have fundamentally changed the ways businesses operate, but have also had a profound effect on tertiary institutions because they have made it possible for them to think of new ways to use the internet to provide knowledge management and training opportunities. Organisations increasingly view e-learning as the solution for addressing the challenges associated with digital learning. The approaches range from e-learning being used as a supplement to traditional delivery to its replacement.

But there is a risk that if organisations focus too much on the technology and de-emphasise the broader, associated strategies and issues, e-learning will not deliver a high-quality solution. This is demonstrated by many e-learning programmes being developed and implemented without

taking cognisance of the broader environment. As a result, e-learning has not proved capable of meeting student/trainee expectations. To address this problem, e-learning needs to be based on a strategic foundation.

E-learning involves the use of a range of ICTs. Many universities have used these to develop profit-oriented subsidiaries, often referred to as e-universities, which offer degree-level courses and programmes. E-learning was defined here as being delivered through web-based technologies and applications.

Organisational rationales for e-learning
There is a growing belief within organisations that traditional delivery is becoming increasingly ineffective. Many organisations are now shifting to e-learning solutions because of the need for learning to make a positive impact on student performance and work readiness. E-learning provides more flexibility for students, particularly around time and place, and can also more easily facilitate real-time learning. But there is still an important role for traditional delivery (Asgarkhani, 2003).

There has been considerable debate over the potential benefits and problems of e-learning (Burns et al., 2001; Rosenberg, 2001; Sitze, 2001; Kruse, 2002b, 2002c; Asgarkhani, 2003). But some clear benefits for organisations have emerged, including reduced overall costs and learning time, and consistent delivery of materials. However, there are some significant barriers such as the need for up-front investment, technology complexity, educator workload, challenges selecting appropriate content and effective instructional design, and cultural acceptance.

But despite these significant challenges, it appears that organisations of all sizes are using e-learning. This may be because of increased learner demand for e-learning (Burns et al., 2001; Asgarkhani, 2003).

E-learning and knowledge management
E-learning tools are often viewed as knowledge management tools. However, e-learning and knowledge management appear to be focused on different goals. For example, e-learning seems to assist learners in expanding their knowledge through the provision of structured learning content and communication linkages to specific topics, whereas knowledge management is focused on the storage and dissemination of content (Asgarkhani, 2003a; Putzhuber, 2003).

But they do share some common characteristics, including the use of similar systems, provision of knowledge in different forms, personalisation, and the provision of communications and interaction facilities. Organisations are increasingly interested in bridging the gap between e-learning and knowledge management. For this to work, strategic solutions need to consider e-learning alongside knowledge management solutions.

Digital divide issues
These can negatively impact on the implementation of e-learning. They include lack of telecommunications and network infrastructure, lack of PC access, limited internet access, lack of ICT literacy, cultural resistance, high investment costs, and strategic impediments.

The need for a strategic foundation
It is essential to monitor and assess the effectiveness and success of e-learning projects. Success can be measured in both financial and academic terms. Success and effectiveness measures that can be used include:
- return on investment, increased revenue, and cost savings
- learners' achievements, which can also be compared with student achievement in traditional delivery
- scalability and functionality
- establishing a culture of support for learning
- ensuring management support
- deploying a supportive business model
- sustaining the change throughout the organisation.

Institutions need to be aware that e-learning solutions can be inadequate or even fail (Rosenberg, 2001). Typical causes of failure include (Rosenberg, 2001; Galloway et al., 2002; Asgarkhani, 2003a; Sun, 2003):

- lack of familiarity with e-learning requirements
- underestimating the requisite resources and expertise
- overestimating what e-learning can accomplish
- lack of understanding of the functionality and available tools
- overlooking the potential problems of self-directed learning
- overemphasising the technological aspects of e-learning
- inappropriate content planning and design
- lack of standards for e-learning solutions
- adopting a one-size-fits-all approach
- lack of support
- learners' resistance to the adoption of e-learning.

The development and delivery of quality e-learning solutions need to be viewed as a holistic process. A strategic foundation needs to be developed that gives consideration to the digital divide, culture, social trends etc. This is more likely to result in optimal use of technology by the institution and its staff and learners. The e-learning strategy needs to be examined, piloted and implemented to take into account the rate of development of both the internet and supporting technologies.

The strategy needs to be concerned with the overall direction of e-learning as well as providing a foundation for tactical and operational issues. The literature suggests the process of strategy development should consist of three phases: analysis, choice, and implementation (Robson, 1997; Boar, 2001; Asgarkhani, 2002a; Rossett, 2002; Heath, 2003).

Strategic analysis involves establishing an understanding of the current situation. This includes current infrastructure, available resources, broad objectives, and expectations. Strategic choice is where the strategy is supported by an evaluation of the various options. Strategic implementation involves tactical issues such as resource assessment and planning, identifying human resources and systems, and determining organisational structure.

The strategy plan should include (without necessarily being limited to):

- mission – what is the organisation planning to do with e-learning?
- goal(s) – what is the organisation trying to achieve?
- strategies – what alternative pathways are available to achieve the goals?
- policies – how should the organisation guide its moves within the selected pathways to achieve its goals?
- decisions – what options should be considered?
- action – how will the organisation implement its decision to introduce e-learning?

The critical components for successful e-learning include:

- answering critical questions such as whether or not e-learning is to be a supplement to traditional delivery or a stand-alone delivery mode
- creating a robust business case that links e-learning to organisational goals
- fostering an environment that meets both business and learner needs in order to guarantee management support
- allowing for an effective change management approach
- establishing a vision and supporting architecture to underpin the infrastructure.

Other key questions include:

- What are the organisation's reasons for adopting e-learning?
- Are organisations aware of their limitations and the likely challenges they will face?
- What is their vision for e-learning?
- What are the priorities that have been considered?

- What types of e-learning are the organisation ready for?
- Does the organisation have a methodology for selecting, planning and managing e-learning projects?
- Did the organisation consider a thorough change management plan?
- What are the tools and metrics that can be used to measure progress and success?
- What would be the model for managing relationships with other institutions when considering potential strategic partnerships?
- How would e-learning improve the overall process of learning?

It is important for organisations not to ignore the iterative nature of their e-learning strategy(s) as this will eventually compromise the quality of the outcome.

CAPITAL (Curriculum and Pedagogy in Technology Assisted Learning) horizon scan: organisational change second report

Authors: Bacsich, P., and Pepler, G.

Reference number: 14

Introduction
The operating environment for tertiary sector organisations in many jurisdictions is becoming more challenging. This has led to a more conservative approach being adopted. The UK has few policies to support institutional change and it is difficult to determine how much progress they are making in an e-learning context.

Further education initiatives
A benchmark has been developed (e-Maturity Framework), which, like other similar initiatives, offers institutions a holistic assessment of technology effectiveness. In common with other exercises of this nature, this will allow organisations to assess areas of excellence and where improvement is required so stakeholders can receive more benefit and allocate resources accordingly. Institutions were offered the opportunity to trial the framework prior to its release.

Higher education initiatives
A benchmarking exercise was completed in 2008. The Joint Information Services Committee (JISC) funded projects that allowed institutions to review their course design and validation processes and the ways these are supported and informed by technology. The purpose of these projects was to 'transform learning opportunities to address an identified issue or challenge of strategic importance to the institution involved' (JISC, 2008). Twelve proposals were funded from across the UK, primarily from larger institutions.

JISC also funded projects that aimed to 'transform how [institutions] deliver and support learning across a curriculum area through the effective use of technology, in response to a particular challenge faced by the discipline(s), department(s) or institution(s) involved' (JISC 2009b). Fifteen projects were funded.

The Higher Education Academy (HEA) in 2009 issued a call to institutions to take part in an e-learning-focused 'Enhancement Academy'. However, this was largely confined to the organisations that had taken part in the second phase of the aforementioned benchmarking exercise. The academy would provide support over a nine-month period.

This support would consist of two events and a dedicated person to support the institutional team including the coordination of input from relevant agencies. No direct funding would be provided but it was expected that each project should at a minimum produce a fully implementable plan for positioning the institution's e-learning approach within flexible provision, involving both infrastructure and workforce development.

This is aligned with and supported by a Change Academy also run by the HEA. They describe it as a year-long programme of support for teams from higher education institutions that enables them to develop the knowledge, capacity and enthusiasm for achieving complex organisational change. It provides unique opportunities for team-based learning and professional development that focus on the strategic interests and needs of the participating institutions (HEA, 2009). Signing up for a team of seven people costs an institution £8,100.

The then UK government also committed to making the UK a world leader in e-learning by drawing on the lessons learned and experience and knowledge gained from the failed e-University venture. This vision was supported by the belief that there was significant national and international demand for virtual learning and it would be realised in part through a national policy framework. But it would leverage existing provision and capability in this context and would not create an entirely new organisation.

The work on costings in e-learning is covered in more detail in the Bacsich and JISC annotations in the costs section below. It can be noted here, however, that the findings were that this is a subject with relatively little supporting evidence and it is of limited interest to the wider sector although some individual institutions are making good progress towards developing robust indicators and models. Quality assurance in e-learning is also gaining increasing prominence in agency work programmes and initiatives.

United States
According to Mayadas, Bourne and Bacsich (2009), e-learning is now and will continue to be an established part of the US tertiary sector landscape. But a few institutions referred to as select, highly endowed and elite are largely ignoring e-learning because in their view it is not necessary from a strategic or competitive perspective. However, the author's view is that they will be impacted by the continued rise and growth of blended learning options.

Institutions relying primarily on students for revenue may be adversely impacted. This is because other options outside of formal, state-funded education will be increasingly available to students through e-learning. But the picture outside the US is much less promising. Greater student (and therefore institutional) acceptance of e-learning in the US is put down here to the greater distances that learners must travel to access traditional delivery, a more 'can do culture', and greater acceptance of private universities, both non-profit and for-profit.

Informal literature and sources
Organisational change has received limited attention at e-learning-related conferences. The main reasons for this are a lack of attendance by senior management and lack of interest from conference organisers. Senior management generally do not attend as they lack time, and the conferences tend to be run by, and targeted at, researchers. This also highlights the other main reason, which is there is no community of scholars supporting this topic.

The limited base of personnel is problematic in terms of developing the field. Agencies could help change this by providing more funding to projects and ensuring that more of them are targeted at wider institutional teams rather than individuals. This limited interest and attention are also reflected in more informal web spaces such as agency, institutional and individual blogs. Agency and other stakeholders are increasingly developing a social networking presence but interoperability issues are hindering exchange of ideas and knowledge.

Other reflections
Institutions and their stakeholders (particularly students, their families, and employers) are extremely conservative and resistant to change. This means for institutions change is a last resort and they tend to adapt rather than transform. However, e-learning can support substantive change such as a reduction in the amount of time it takes to complete a graduate or postgraduate programme. Organisations can also assist by alleviating some of the problems associated with technology such as concerns about privacy and security. They can also use technologies that are relevant for learning as well as providing these for students who cannot access them.

The most challenging areas for institutions in this context are:
- learning content
- assessment and accreditation
- demand for skills
- infrastructure.

Designing for support: how do we support learners?

Authors: Barr, A., Neal, T., Moore, M., Delany, J., and Hunt, K.

Reference number: 16

Background
This is one of a series of 'bulletins' that were part of a Ministry of Education (Ministry) funded project. They drew on the Ministry's research up to that point, literature from projects funded by the Tertiary Education Commission, and some sector-based research. This particular bulletin focuses on the key findings from this research in relation to how institutions can better support their e-learners.

Institutions provide a range of services to support learners, including libraries, learning skills centres, technical services, and activities and resources. The quality of learner support varies significantly across the sector.

Provide support with an understanding of learners
New learners have a range of attitudes, skills and understandings that will both help them to progress, and create barriers for them in e-learning. As well as understanding these background factors, organisations need to be aware of prospective learners' levels of information and technical literacy. Learners will benefit from timely and relevant information that prepares them for online study at the pre-enrolment stage.

Learners tend to dislike e-learning if they are inexperienced, unable to cope with self-directed learning, or regard technology as a barrier between them and their learning. To overcome these obstacles to success, organisations can provide support so that learners can build:
- motivation and confidence
- time-management skills and the ability to set goals
- commitment to study
- reading, literacy and technical skills.

In practice to provide this support organisations should:
- assess learner readiness for e-learning, including attitudes and technical skills
- provide orientation support so that learners can be more independent and self-directed
- design and plan remedial activities to address skill gaps and lack of confidence
- introduce learners as early as possible to the delivery mode and structure of their programme, such as any specific study requirements and ICT/e-learning skills, including a trial of the course environment before it starts
- provide accurate information about the time, effort and commitment learners will need to successfully complete the course
- particularly for Pasifika learners include the wider family in orientation programmes
- provide course links to learning centres, and specific library and learning resources as well as relevant generic information.

Design for effective use of technology
Learners regard technical help as the most important support for e-learning. They need access to reliable ICT systems and technical help that is relevant, easily understood, and available on demand. Technology that is not robust frustrates learners and reduces the likelihood of course engagement and successful completion. Clear, accurate information about the course, technical support and infrastructure enhances learner retention.

When selecting technology, organisations need to maintain a balance between the improved functionality and richer content and opportunities that high-bandwidth applications can provide on the one hand and accessibility for learners and interoperability and compatibility with existing systems on the other. Well-informed technical advice and support are critical, but they must serve the pedagogy – not dictate it.

When providing technology, infrastructure and associated support, organisations should:

- provide robust technical systems and sound, up-to-date information about them to reduce the possibility of technical challenges causing frustration
- provide accurate information about the infrastructure learners will need to access the course – both on and off campus
- provide clear information about who learners should contact for technical support and when this is available
- choose technology that is established and proven for the particular purpose.

Strategic planning for e-learning in a polytechnic

Author: Bates, T.

Reference number: 18

Background
In many institutions, the introduction of e-learning follows a fairly standard pattern that comprises five distinct stages. Stage 1 is where the early adopters introduce e-learning, often without wider institutional support. Stage 2 is where early adopter activity gets noticed by senior management, who try to support them through small grants or a reduced teaching load.

Stage 3 is where e-learning becomes widespread but without centralised coordination or support. This leads to institutional concerns about quality, duplication of effort, lack of technical standards and especially the associated costs. Stage 4 is where senior management realises the need for priorities, the development of common technical standards, the provision of specialist training and the creation of cost-effective ways of developing e-learning so that budget and teacher workload can be controlled.

Stage 5 is where the institution has established a stable system of e-learning that is cost-effective and scalable. Few institutions have reached this stage. The focus of this article is on Stage 4.

Case study – Southern Alberta Institute of Technology (SAIT)
SAIT first introduced e-learning in 1997 in the form of laptop programmes. But student use of them is not mandatory, which meant they could not be moved to the state-wide online portal. Their e-learning provision was small, and they did not have an institution-wide Learning Management System (LMS). Despite these problems, the institution saw e-learning as an important contributor to their vision of being Canada's premier polytechnic. In partnership with Cisco Systems Inc. they set up an e-learning chair whose responsibilities included developing a strategic plan for e-learning.

Strategic plan development and process
To develop their e-learning strategic plan, SAIT established a 10-person strategy development committee. The committee was intended to represent all major internal stakeholders who were likely to be affected by e-learning. The e-learning chair held a number of meetings that included all academic departments, learners, faculty executive and support departments such as Information Technology services and the library. They also observed laptop classes and reviewed all relevant documentation including institutional academic and strategic plans.

Within its recommendations the plan contained a strategy for implementation that would be the responsibility of a newly appointed associate vice president, academic development. But even before the plan was developed, the institution took five critical steps, all in parallel. The first of

these was developing an agreed definition of e-learning. They chose a broad definition to recognise the dependency of e-learning on other indirect support areas for teaching and learning including the library, information systems and customer services.

They completed a modified Strengths, Weaknesses, Opportunities, Threats analysis. This identified that while there was strong support for e-learning from some employers, from most managers, and from many learners; teachers were more cautious. While they did not object to it in principle, they were concerned there would be insufficient time and resources allocated to allow the development of good quality e-learning. A minority thought it only had limited potential for their particular subject area.

But of more concern were the limitations of their laptop programme, particularly its inability to provide flexible access for workplace learners. This meant that, despite skilled staff and good infrastructure, SAIT was judged to be several years behind Canada's lead institutions in the polytechnic sector in an e-learning context.

They developed an institutional rationale for e-learning. This included meeting the flexible needs of current learners, the enhancement of teaching and learning, better preparation of students for business and industry, development of independent learning skills and the improved accommodation of differing learning styles.

Instructors also requested a set of core values and principles for e-learning development. These included:
- using e-learning only where benefits could be clearly identified
- making decisions at departmental level about e-learning use, based on knowledge of its strengths and limitations
- avoiding increases in workload by following best practices in e-learning such as team work, quality assurance processes, new teaching and learning approaches, organisational change and project management
- allocating sufficient time and resources to instructors for training in the use of e-learning
- undertaking e-learning development cost-effectively, but without adopting a one-size-fits-all costing model. Costs would vary depending on the market and subject matter requirements.

Finally, a vision statement for e-learning was developed based on extensive consultation across the institution. It had three different levels: institutional, administrative, and academic department.

Academic issues
E-learning should be approached as a learning/business solution not a technical one. It is more likely to be successfully implemented if it is viewed as part of a broader strategy of institutional renewal and innovation (Bloom, 2004). Instructors must understand fully the different options available and keep abreast of employers' changing needs. Recognising this, the plan recommended that 'the move to e-learning should be combined with the adoption of new methods of teaching and learning that reflect the needs of a workforce in an information-based society'. This was probably the most important strategic decision that SAIT had to make in an e-learning context.

Most departments had no overall plan for e-learning. However, it should be integrated within their overall teaching and learning strategy. The plan recommended a three-year plan for teaching and learning that specifies not only the courses and programmes it wishes to offer, but how they will be taught and the number and types of students it is targeting. E-learning would be included in the plan's proposals but the main factor determining allocation of resources would be the budget process, with which the plan had to have formal links/alignment.

The plan aimed for the development of 450 new courses over a five-year period. These could be in either blended or fully online delivery mode. The relevant programmes were to be supported by business plans that included the rationale for e-learning, the intended market, learning outcomes, method of teaching, and expected costs and revenue. Academic departments retained a large amount of autonomy within the general directions set at institutional level to determine

e-learning priorities, and planning for it would be embedded within overall academic planning within the academic division.

Faculty development and other Human Resource issues
Few instructors were adequately prepared to develop quality e-learning. Substantial up-front planning and development of materials are needed before a course or programme can be delivered. This would require not only extra time, but also for ongoing training and professional development to become an essential and regular part of teachers' work. But SAIT teachers had a very heavy, pre-existing workload, which would have to be reduced to free up time for e-learning development. This would be achieved by decreasing learner time in class, with more students working independently online and increasing support staff. But the short-term solution was to hire more instructors.

More flexible delivery of professional development was also required, including online courses and short periods of non-teaching time. Their Centre for Instructional Technology and Development (CTID) was charged with providing institute-wide workshops to deal specifically with overall design issues. The institution would support this by giving each instructor a training plan and appointing a senior teacher within each department to organise their departmental, in-house development programme, in collaboration with CTID.

Learner support
Programmes requiring learner computer use had to have clearly specified added value in terms of the competencies they would develop through this use. To support this it was recommended that each programme have a clear policy statement about the requirement for a computer, how it should be supplied, its minimum technical specifications, skills needed by learners on entry, and the benefits it would provide.

Learners were expected to provide their own computers for fully distance and blended courses as well as those on-campus courses where their use was optional. However, it was recommended that SAIT provide a pre-entry course to bring all learners up to the minimum computer literacy standards that they set.

CTID
While CTID were expected to provide all essential e-learning-related support across SAIT, as in many institutions, there was an ongoing tension between the departments and the central support unit because CITD was unable to meet the demands for its services. This was compounded by the fact that not all its personnel were trained or experienced in e-learning or project management. To fill this gap, many departments developed localised expertise based on short-term contracts.

But this was not a long-term solution. As a result, it was recommended that CTID increase its personnel dramatically in key areas: from four to 20 instructional designers, 11 to 20 multimedia developers and two to four faculty development facilitators within five years. It was also recommended that annually a committee would determine the allocation of CTID resources to different departments through service agreements. However, it was strongly recommended that specialist e-learning support staff continue to be funded through and responsible to CTID's director.

Other support departments
A modest increase in resources was recommended for the library so it could strengthen its support for online users. It was also proposed that the entire institution have wireless access. Additional servers and data centres were required as well as an extra technician to provide 24/7 support for the LMS.

The online administration systems should have a dedicated management committee established to determine priorities and to identify and access resources for their upgrading and maintenance. But more importantly, SAIT needed a broader, integrated institutional 'e-strategy' encompassing all internet use including e-learning, e-commerce and e-administration.

Intellectual property and content management

Magee (2005) noted that 'the considerable investment in [digital] materials requires an organisation to receive fair compensation for their use and maintain control over their usage'. The plan recommended that SAIT develop a generic wording of third-party contracts to protect the integrity of their digital materials when reused.

Better procedures to ensure copyright compliance and easier use of copyrighted materials were required. Strategic issues that institutions need to consider in digital content management include:

- how best to create it so it can be reused
- how to store it and make it accessible
- who owns the copyright once it is created
- what uses are permitted and who decides
- quality control or assurance.

One of the issues that SAIT also had to consider was whether to charge for access and use. The plan recommended a dedicated sub-committee to develop a plan, including recommendations on policy and procedures. A business case should be developed to explore reuse and sale of materials and in the short term a low-cost registry of all digital e-learning materials be established that enables materials to be quickly and easily identified for third-party use.

Financial issues

To address skill and capability gaps, the plan recognised that substantial investment would be required in its first five years to support the design and development of e-learning programmes. But it was anticipated that these additional costs would be largely offset by increases in enrolment revenue if their targets were met. In addition, brokering of online materials and services and corporate sector contracts would also be expected to generate significant revenues.

After five years, the costs of e-learning would be an integrated part of the overall academic budget. The main risk was the hiring of large numbers of new teachers. But this risk was offset by expected increases in student numbers and the assumption that government funding was likely to be available to support such an increase.

Implementation and monitoring

SAIT developed the following key performance indicators to evaluate the success (or otherwise) of the implementation of their e-learning strategic plan. These should be used to benchmark their progress against similar institutions, or organisations which SAIT considered to be international leaders in e-learning.

1. Target number of courses using each e-learning delivery mode.
2. Target five-year budget projections for e-learning.
3. Cost per enrolled student.
4. Implementation of quality assurance procedures.
5. Student satisfaction.
6. Employer satisfaction.
7. Analysis of learner enrolments by learner type.
8. Course completions.
9. Changes in learning outcomes/learner performance.
10. More effective use of facilities.
11. Cost per graduate student.
12. Increased revenues or savings as a result of the introduction of e-learning.

Factors influencing the development and acceptance of the plan

In no particular order these were:

- strong support from institutional leadership
- creation of a dedicated, independent e-learning chair
- inclusiveness of all key stakeholders

- political context – SAIT recognised the opportunity presented by the government's intention to dramatically increase post-secondary enrolments
- most importantly, planning – without rigorous processes it is unlikely that a plan that has value for the institution will be developed and implemented.

Future developments
It was anticipated that within five years most programme-level provision would be traditional delivery. The main anticipated change would be to shift approximately 15 percent of all classes to blended delivery while about 10 percent would be fully online. They would also have in place a special unit to deal with the corporate sector, including training and brokering or reuse/sale of materials. It is also anticipated that there would be substantive increases in part-time students and lifelong learners, particularly from the corporate sector.

Using e-learning to promote excellence in polytechnic education

Author: Beers, M.

Reference number: 19

Background
The British Columbia Institute of Technology (BCIT) launched a five-year Technology Enabled Knowledge (TEK) initiative. TEK is a joint initiative between BCIT's Learning and Teaching Centre and its Department of Computer Resources, each of which supports faculty in their use of e-learning.

The Learning and Teaching Centre (LTC) provides faculty, staff and students with a wide range of services and resources, including educational research, curriculum development, instructional design and consultation, media production, and audio-visual services. In the TEK they provide educational leadership, project management, and first contact for technical support for faculty and learners.

Computer Resources (CR) provides advanced technology and essential computing and communication support to meet the needs of learners, faculty and staff. It also supports and enhances key institutional systems and infrastructure. In the TEK context CR provides the technical infrastructure, collaborative web applications, and back-end technical support.

The critical component is faculty support and participation. Faculty involvement has been through a process informed by participatory design theory (Bannon, 1995; Gould, 1995; Fischer and Giaccardi, 2005). This theory advocates active involvement of users throughout the design process because they are experts in technology-supported work practices and will be the main people creating new practices using new technologies.

TEK foundation goals
Using a top-down, bottom-up strategic approach, four goals emerged from focus groups held over two years that involved staff, faculty management, administrators and chief instructors from the trades. These goals were:
1. Collaboration and Connectivity – connecting BCIT globally
2. Smart Learning Spaces – providing suitable equipping of these
3. Best Teaching Practices – supporting effective teaching and learning
4. Applied Research – advancing polytechnic education.

These goals align with Bates' (2000) recommendations that a model strategic technology plan should reside within a wider teaching and learning plan and cover technology infrastructure and technology-supported teaching, as well as providing a substantive, detailed vision statement.

TEK vision
This was developed in consultation with faculty and was endorsed by them as well as the president's executive council, board of governors and wider BCIT community. It draws heavily from existing teaching practice in what are deemed to be exemplary courses. It basically

involves effective linkages between instructors and learners and learners and the workplace supported by technology.

Implementing the vision
The LTC and CR collaborated to identify the educational and technical infrastructure necessary to support the vision's intended teaching and learning experiences. A management team was created to oversee four distinct project portfolios: Academic Teaching and Learning, Web and Collaboration, Enterprise Architecture, and User Support and Service Level. But TEK remains a faculty-led initiative, determined by educational goals. LTC faculty members are responsible for coordinating and leading all academic teaching and learning portfolio projects.

The importance of faculty involvement is demonstrated by their advisory sitting alongside the TEK project manager. This advisory consists of faculty representatives from BCIT's six schools, the library, the applied research facility and the LTC. The advisory's main purpose is to provide direction for the TEK initiative from an instructor's perspective and ensure the focus remains squarely on teaching and learning.

They also select and fund the academic teaching and learning pilot projects that fit the criteria of:
1. using educational technologies in innovative, creative ways
2. encouraging collaboration among learners, instructors, and community partners
3. promoting knowledge building through idea sharing
4. engaging the students in learner-centred teaching strategies
5. enabling learners to achieve course learning outcomes
6. supporting TEK's foundation goals.

E-learning projects
As part of the TEK initiative, 50 projects had been funded at the time of writing. These projects included the development of online communities, e-portfolios, blogs, and use of clicker technologies in large lectures for medical laboratories and trades-related processes. They are a central focus of success for the TEK initiative. This approach avoids the one-off, 'lone ranger' model Bates (2000) cautions against because it provides a managed, efficient use of resources to support faculty innovation.

These projects have a pre-defined lifecycle in which faculty receive technical training and support alongside instructional design in addition to assistance with development and implementation. Faculty inform institutional practice when they give the TEK team feedback that is used to refine the work processes. They also mentor their colleagues by sharing their experiences. The projects themselves are developed with a range of inputs from subject matter experts, instructional designers, and technical advisors. Other experts such as video producers, graphic artists, and systems analysts are brought in on an as-needed basis.

Lessons learned from the projects are used to inform an eCompetencies programme. This programme is supported by extensive technical and educational resources divided into technical, teaching practice exemplars, and best use case studies. Faculty are awarded up to 20 release days to participate in the projects as well as efforts to secure funding sources and awards for their efforts.

Lessons learned
The educational vision has provided a clear focus to more effectively facilitate the TEK initiative's educational and technical operations. This vision is continually adjusted through consultation with each school and department. The Faculty Advisory provides valuable input into the initiative and helps improve linkages to the schools and departments.

The projects have been an effective vehicle to pilot technology-supported learning approaches and foster innovation among the faculty. The complexity of simultaneously piloting these learning approaches and technology that can be unstable has made it important for all team members to agree on success criteria before the project starts.

The project's design model has provided a well-managed, efficient use of resources to support faculty innovation and enable opportunities for collective dialogue around educational excellence. To be most effective, all design team members require clear definitions of their roles and responsibilities and an appropriate level of understanding of the learning approaches and educational technology solutions that are available.

Measuring success in e-learning – a multi-dimensional approach

Authors: Bell, M., and Farrier, S.

Reference number: 20

Background
This article is based on the approach taken to the development and implementation of e-learning by Northumbria University, in the UK, which has over 1,100 full- and part-time staff and more than 32,000 learners. They developed their first e-learning strategy in 1999. A major component of the strategy was the exploration and introduction of a virtual learning environment, which led to the introduction of an institution-wide Learning Management System (LMS). They also added in an integrated content management system. They had 90 percent of staff and most learners using the LMS by 2003 (Bell and Bell, 2005).

The university recognises that e-learning is much more than an LMS and incorporates a wide array of ICT. Their rationale for assessing their progress in e-learning was the relatively long time it had been in use and a desire to compare themselves with others in the sector. They also wanted to assess how well they were doing in relation to their own and government strategies, that is, the Higher Education Funding Council for England's (HEFCE's) and the Ministry's equivalent e-learning strategies.

How did they measure progress and success?
While assessing the performance of the infrastructure was relatively straightforward, ascertaining e-learning's impact on educational outcomes was challenging. They used success measures outlined in HEFCE's e-learning strategy. These included:
1. ICT is part of all aspects of the learner's experience.
2. Technical issues have been addressed to give better value for money.
3. Learners can access information, teachers, and peers wherever they are. They can check and record their achievement in a form designed for multiple uses to enable personal and professional development.
4. Teachers have access to the necessary tools and support for their use.
5. Subject communities can share materials and are supported to work collaboratively in their development. These materials are effectively quality assured and widely disseminated.
6. They have access to research to inform their teaching and curriculum development.
7. Lifelong learning networks support connectivity between institutions to provide seamless access for learners and staff.
8. Staff are supported at all stages to develop appropriate skills in e-learning, and these skills are recognised in their roles and responsibilities and institutional reward structures. They have access to accreditation for their level of skills and professional practice in linking technology with teaching.

Data used to assess their progress and success against these measures included management and staff interviews, a survey for learners administered by their student union, which also ran focus groups, and other sources such as relevant strategies, academic schools development plans, access, staff development and LMS statistics, and helpline information.

National benchmarking exercise
The Joint Information Services Committee and the Higher Education Academy ran a national benchmarking exercise in e-learning. Institutions were able to select a methodology and

Northumbria chose the 'Pick & Mix' approach (Bacsich, 2006a). This comprises 20 core criteria with descriptors for Levels 1-6 (6 being excellence). However, they also selected additional criteria that were of particular relevance; these related to uniformity, ubiquity, widening participation, personalisation, learner satisfaction, and e-portfolios.

The exercise was supported by an advisory panel of representatives from all schools and services at senior management level (associate dean and director respectively), chairs of e-learning groups, and the student union. The panel was chaired by the Deputy Vice-Chancellor for teaching and learning. An operational group that included academic staff, a researcher, and a project assistant carried out the exercise.

They broke the work down into discrete areas and these were matched to the particular expertise and strengths of the operational group members. These arrangements were flexible to allow staff commitments and workloads. They also identified areas where further research would be needed and more detailed analysis could occur, for example at course level. This exercise would provide baseline data and they were intending to repeat the exercise every two to three years.

Initial findings
This exercise identified numerous organisational and technical strengths. These included a range of technology and tools being available for staff and learners and a demonstrated expertise in the implementation of e-learning projects. An excellent set of structures is in place to support staff training and development. Decision making for these developments is embedded within the work of schools, departments, and subject areas.

The exercise identified some areas that could be developed further, including the need to incorporate e-learning expertise into staff roles and into their recognition process. Emphasising the emerging e-learning pedagogies should be part of their staff development. They also had not developed costing and workload models that take into account the extra requirements for e-learning; and they lack a central coordinating body for e-learning developments.

They had good quality assurance processes but this area faces challenges because of e-learning's burgeoning growth. Many systems that are effective for traditional delivery may need to be reviewed to take e-learning into account. They need to increase the sophistication of use of the LMS and provide support for this. However, they did provide good central support for staff development of e-learning and rewards are available to recognise expertise.

Some areas also make allowances for the extra work involved in e-learning. Students' learning is enhanced by e-learning and its usability and access are uniform and ubiquitous on and off campus, including partner institutions for most provision. The remaining challenge in this context is to ensure this applies to all provision. However, the vast majority of students were satisfied with their e-learning experience and the available support. There is also work to be done around realising the potential of e-portfolios for personal development.

Lessons
The benchmarking exercise provided a number of major benefits for the university. It helped them to identify both stronger areas and those that needed more development. This is particularly important as e-learning imposes different needs and constraints on the planning, preparation, delivery and maintenance of teaching and learning. It also provided the opportunity to more carefully examine local practice and help to break down barriers between different areas.

It helped identify exemplars, as well as standard practice, and more readily identify what is achievable. The exercise also provided an opportunity to engage with the broader higher education sector. This provided not only a wider variety of perspectives but also the foundations for potential collaborative partnerships in the future.

There are risks associated with an exercise of this nature. It can identify disconnects within overall provision and also identifies areas of concern much broader than e-learning within existing institutional teaching and learning practices and processes. It may also lead to a situation where some areas are ignored. But it is important in the current environment that

institutions undertake these types of evaluations so their provision is relevant and current and more closely matches learners' requirements.

Recommendations for future benchmarking exercises
- Create a clear division between data collection and project management and coordination to ensure that project managers are not overly involved in data collection.
- Select criteria that are relevant for the particular institution.
- Focus on specific institutional needs, relate the activity closely to their policies and strategies, and consider these in the context of any national strategy(s).

The need for e-learning strategies: higher education institutions and their responses to a changing environment

Authors: Boezerooij, P., van der Wende, M., and Huisman, J.

Reference number: 21

Background
In recent decades, higher education institutions have experienced profound changes in their external environment affecting not only education and research but also their organisational and administrative processes and support services. Technology is one of the contributing factors to this change alongside demography, government policies and economics (Bates, 1997; Wills and Yetton, 1997; Sporn, 1999; Fisser, 2001; Middlehurst, 2003; van der Wende and van der Ven, 2003).

The decline in public funding means higher education institutions are operating in a far more competitive environment increasingly dictated by market forces. As a result, entrepreneurialism and commercialisation have become increasingly central to institutions that previously were only concerned with teaching, research and service. In making this shift, institutions are increasingly turning to e-learning to reach new student markets and expand enrolments.

Given this context, an important question is how higher education institutions strategically deal with integrating e-learning into their educational delivery and support processes and which environmental influences and internal organisational characteristics affect these strategic choices.

E-learning strategies to date
The lessons learned from a wide range of e-learning initiatives demonstrate that they have stimulated mainly an agenda of decentralised innovation rather than centrally led changes in educational delivery processes. The implementation of e-learning has been evolutionary rather than revolutionary. Generally it has been a process of decentralised, incremental change in which e-learning is integrated into existing practices (Collis and van der Wende, 2002).

This view is supported by Douglas (2005), who notes that blended learning tends not to replace traditional delivery with e-learning, and Smith (2005), who states that the only widespread adoption of e-learning that has occurred has been through institutional virtual learning environments. However, this follows the general and technology-led change processes in education (Fullan, 1991; Collis and Moonen, 2001).

The following steps can be distinguished:
- Pre-initiation and initiation, in which activities are mainly, bottom-up experiences.
- Implementation, in which a more strategic approach is developed.
- Institutionalisation, in which the change becomes institutionalised and an integral part of the core processes in higher education organisations.

Institutions are at different stages of this transition. In the UK context, according to Smith (2005) there is evidence supporting the increasing systematisation of e-learning within higher education institutions. This view is supported by the OECD (2005), who found in an international survey that institutions were increasingly likely to adopt an organisation-wide

e-learning strategy. However, in contrast to this view, Collis and van der Wende (2002) argued that, while institutions had adopted the supporting infrastructure for e-learning, the pedagogical use of it supported by strategic plans was immature.

This illustrates the importance of a strategic approach to e-learning for two reasons. Firstly, it allows e-learning to be integrated more systematically into the core teaching and learning processes. Secondly, e-learning plays an important role in the positioning of higher education institutions in an increasingly competitive environment.

Formulating strategies assists institutions in coping with an increasingly uncertain and complex environment. Many authors see strategies as the link between organisations and their internal and external environments (Asplund and Asplund, 1982; Mintzberg, 1983; Stoner and Freeman, 1989; Prahalad and Hamel, 1994; Peterson and Dill, 1997; Mintzberg, Ahlstraid, and Lampel, 1998; Watson, 2000; Taylor and Miroiu, 2002). They are also critical in defining the organisation, focusing efforts and providing consistency (Mintzberg et al., 1998).

Strategies can be conceptualised in one (or more) of five ways: as a plan for activities, a pattern of consistency (intended or otherwise), a positioning in particular contexts, a perspective or fundamental way of doing things, or finally a ploy intended to gain competitive advantage (Mintzberg et al., 1998). In this context, the critical question for higher education institutions is what strategies they can or should adopt in regard to integrating e-learning, and the external and internal influences that affect these choices.

Boezerooij (2006) sees the choices as being different educational delivery scenarios. For example, should the university focus on its campus-based learners or move towards a future where their students rarely or never attend a physical campus? Another consideration is the increasing number of options in relation to content. An important question for institutions to consider is whether or not they can handle the potential personalisation that is now available.

Scenarios for e-learning
The authors outline four possible scenarios for higher education organisations to consider when they are contemplating the introduction (or otherwise) of e-learning. In the first scenario, higher education institutions would focus their efforts around traditional delivery. Technology is used, but only a limited amount and in restricted contexts such as making course materials available via the internet.

In the second scenario, technology's role is critical as it facilitates access to all course materials, assignments and peer-peer and learner-teacher communications and interactions. In the third scenario, technology is used to significantly increase flexibility for campus-based students, including the ability to take courses at other institutions. In the final scenario, this flexibility and personalisation are taken to additional lengths and allow students to study from a range of institutions both in their own country and overseas. Learner choice is paramount and is made on the basis of the relevance, quality, efficiency and flexibility of the various options.

Strategic choices
These tend to fall into two distinct categories: external and internal. External considerations are technological, demographic, governmental and economic factors (Peterson and Dill, 1997; Sporn, 1999; Fisser, 2001; Hammond, 2003; Middlehurst, 2003; Boezerooji, 2006). Internal considerations noted were institutional governance, profile and technology (Bates, 2000; Gallagher, 2001; Chevaillier, 2002; Meek, 2002).

Methodology
These categories were further operationalised into a number of characteristics including public spending and competition/collaboration (for economic factors), type of institution, size, mission and 'typical' learners (for institutional profile). These characteristics were each measured by a number of different variables. The dependent variable used the four scenarios (Collis and Gommer, 2001) outlined above. Data for the independent variables (the internal and external factors noted above) was gathered through a web-based survey and desk-top research. The survey was also used to gather data on institutional strategic choices.

This data was aggregated into a sample of 91 institutions from Germany, the UK, the Netherlands, Norway, Finland and Australia. One-way ANOVA and chi tests were used to explore statistically significant differences between higher education institutions' characteristics. Exploratory factor analyses were used to reduce the number of independent variables. Regression analysis was used to explore the relationships between the dependent and independent variables.

Results
Using these methods, institutions were grouped into three broad categories: those who had a strategy primarily focused on traditional delivery, a smaller group whose strategy mainly targeted the flexible provision scenario, whereby learners could take courses at other institutions, and the smallest group focused on the international scenario, whereby students could take courses not only at other institutions within their home country but also overseas.

The largest differences observed in respect of strategic choices were between the traditional delivery and internationally based institutions. The differences between traditional delivery and flexible provision and between flexible provision and an international focus were much less prominent.

There were no major differences observed among the three categories in respect of institutional governance. In contrast, profile and technology differences were much more pronounced. Institutions choosing an international strategy are much more likely to have a focus on increasing access, offering additional flexibility and using ICT for revenue growth than the other categories. They also tend to have a more diverse learner population, and utilise more advanced technologies, but mainly for income generation, not to support teaching and learning.

These particular choices are most likely because they are already in a competitive environment and expect this to increase. But they are not ignoring their traditional delivery component, as many younger (and other learners) expect this as part of their educational experience. However, this is more likely than at the other institutions to be combined with education that is available 'anytime, anyplace, and anywhere'. This is of particular importance to workplace and international learners.

However, this type of delivery should be supported by a teaching and learning vision that incorporates technology, appropriate programmes for the new learner groups need to be identified, and the necessary support for technology-based teaching needs to be determined (Bates, 2000). The internationally based institutions tend to adopt a centralised approach for policy formulation but, importantly, largely devolved implementation to faculty and departments. In contrast, the traditional delivery institutions tend to rely on individual academics for implementation of e-learning.

The VLE as a Trojan mouse: policy, politics and pragmatism

Authors: Brown, M., Paewai, S., and Suddaby, G.

Reference number: 22

Introduction
Selecting an institutional Learning Management System (LMS) is a critical decision for any university and one that is likely to have significant and ongoing impacts. But developing a robust methodology for its selection is challenging and both qualitative and quantitative factors need to be taken into account. This is especially the case when specific organisational requirements are deeply embedded in institutional politics.

Critical to the process was the explicit articulation of guiding principles, pedagogical criteria, and identifying university requirements, along with politically astute alliances and consultations to endorse the selection process.

In this process, technology selection was the least problematic. The more substantive challenges were embedded within institutional culture. For example, the need to shift institutional thinking in the absence of formal policies or strategies related to e-learning, combined with the lack of a formal governance structure and policy framework to mandate the replacement LMS, complicated, and at times convoluted, the review process.

Institutional context

Massey University is New Zealand's largest university-level distance education provider, with over 18,000 learners in 2010. They were early adopters of the LMS and they have become 'mission critical'. But despite the fact that their LMS had improved student satisfaction, retention and achievement it was nearing the end of its useful life and needed replacement. This also afforded an opportunity to have a more consistent uptake of e-learning across the university.

Strategic drivers

Although there was an identified need to invest in new infrastructure and support staff in the adoption of e-learning, there was no strong senior management support. The LMS was regarded as simply another technical service. Therefore the first challenge was to transfer ownership from the IT to the academic part of the university on the basis that pedagogy, not technology, should be the main driver for change.

In this view, the selection of a replacement LMS presented a strategic opportunity for the university to redefine its delivery modes to support a more engaging and flexible learning environment. To support this goal the key strategic drivers were:

- responding to the challenge of the so-called 'Google Generation'
- enhancing the quality of teaching so as to maintain Massey's status as a pre-eminent distance education and flexible learning provider
- introducing a new blended teaching model that increases the level of student engagement and providing a learning experience relevant to the requirements of a knowledge society.

Growing the vision

The overall vision was to build a new blended learning environment that provided a more flexible, collaborative, interactive and personalised student learning experience. This aligned with two existing university strategic priorities:

- Improved educational outcomes for learners through strengthening their e-learning capability.
- Improved educational success for learners through the continuous improvement of their university-level distance education provision.

Political challenges

Because the vision was tied to existing strategic priorities and funding, establishing the case for a replacement LMS was much easier. For the first time, it was part of the wider context and there was an institutional mandate for the academic leadership to take a larger and stronger role. Arguably, without these strategic drivers it would have been extremely difficult to remove many of the pre-existing roadblocks.

But gaining approval and acceptance for the replacement LMS was difficult and required a multi-pronged approach. The risk of the perception of a centrally driven and overly prescriptive application of quantitative criteria for selection was recognised at the outset. To ensure strategic drivers, not technical considerations, drove the process, the LMS' selection criteria were based on clear principles, pedagogical considerations, and university-specific requirements.

Because there was no mandate or clear authority to initiate the first stage of the selection process, stakeholder consultation was carried out over an 18-month period and involved:
- working parties, staff surveys and in-house evaluations
- meetings with Student Federation representatives
- meetings with senior staff from competing LMS suppliers

- national and international benchmarking with other institutions and organisations.

Guiding principles

A set of guiding principles was established and provided a framework which played a key role in the selection and decision-making process. These principles included:

- New initiatives had to align and be consistent with their Investment Plan key priorities.
- New e-learning and distance education initiatives must be consistent with a one-university identity as there is no benefit in a fragmented approach.
- New e-tools must enhance student retention and outcomes.
- The new core e-tool set must work. In addition there must be adequate technical support and infrastructure available to support widespread implementation.
- The success of new initiatives relies heavily on appropriate training and professional development to ensure a high level of pedagogical uptake by academic staff and students.
- New initiatives must support Massey University in building a stronger network of provision for Māori and Pasifika students and other key stakeholders and education providers.
- The selection of any new e-tools must be driven by contemporary theory and research and related pedagogical criteria, with the objective of enhancing the quality of teaching and learning at Massey University.

Pedagogical criteria

Massey University established a Pedagogical Reference Group to challenge the dominance of technology-led selections and decisions and allowed pedagogical experts to be intimately involved. Members represented all areas of the university and had a high level of academic credibility, which helped to ensure the trust and support of senior management.

A set of 10 pedagogical criteria was developed to legitimise the central role of pedagogy and to scaffold the selection process. They were based on a brief synthesis of the literature (e.g. McCombs and Vakili, 2005; Milne and Suddaby, 2006; Garrison and Vaughan, 2008). They were:

- communities of inquiry – this is where learning is a social experience that generates knowledge that is both embedded within and distributed across communities of practice
- learning-centeredness – this is not only having the focus on learning but employing instructional designs to support the needs, experiences and pre-existing knowledge of students
- interactive – this refers to student-content and peer-peer interactions
- collaboration – where there is a strong sense of social presence between teachers and learners
- personalisation – which is not only teachers responding to individual learner needs, but also students being able to customise the learning experience to meet their unique requirements
- rich tasks – these engage students in critical reflection within authentic contexts
- flexibility – these are learning designs which support students to learn anytime, anywhere and any place
- assessment for learning – this is where learning activities promote feedback and feed-forward assessment, which helps students reflect on and improve their learning outcomes
- diverse learners – this is where learning designs need to respect the diverse needs of students and support learning in socially and culturally appropriate contexts
- innovation and excellence – this supports good teaching by providing a culture of innovation where teachers are encouraged to continually push boundaries and strive for excellence.

Massey University requirements

These were the third component of the selection and decision-making process. For example, it was determined that the replacement LMS would:

- provide for a consistent look and feel for all courses and programmes
- offer a standardised interface supported by a core set of tools and Massey-specific templates

- integrate with existing systems and enable the electronic submission, tracking and return of assignments
- promote instructional support designs that support differing learner needs but also subject-specific requirements
- allow the integration of static and dynamic content within a common template and framework
- offer the latest social networking tools to promote collaboration, social presence, and a scholarly culture of knowledge production
- support a robust quality assurance system for e-content that aligns with its print-based counterparts
- support Te Reo Māori and Pasifika initiatives consistent with key university priorities and outcomes in these contexts
- integrate with an e-portfolio system to provide a more connected lifelong and life-wide learning experience
- support and easily integrate additional 'plug-ins' and 'mash ups' within a common framework
- have a high level of local support and be a proven solution for comparable providers.

Recommendation

Despite the attempts at objectivity, the criteria heavily skewed the selection recommendation towards a particular LMS (Moodle). This shows that the selection process is not neutral and can be captured (for better or worse) to meet certain political and institutional ends. But there was opposition, with many favouring an 'off-the-shelf' solution.

This was only resolved through the establishment of a formal LMS Project Board. Ideally this would be established at the outset. However, this requires senior management recognition, which was absent in this case. To further strengthen the case and support for this decision, this recommendation was also endorsed by their:

- Vice-Chancellor's Executive Committee
- Teaching and Learning Committee
- Distance Students' Association
- Senior Leadership Team
- Academic Board – having its buy-in was critical to resolving ongoing debate and the implementation.

Developing a business case

This was necessary to obtain the requisite financial resources, but was a challenging process. Some of the key questions that emerged during it were:

- Is the timeline realistic? How will it be phased in?
- What are the workload implications? Is there enough money for staff support?
- Is there sufficient time to teach the teachers? Have the pedagogical challenges been addressed?
- Have the new media technical roles been defined?
- Is the NPV (depreciation) rate accurate?

The approved budget of $4.5 million allowed for a significant increase in pedagogical support. However, the approval was only obtained after intervention from the Vice-Chancellor. Commitment from the most senior levels of management is critical in obtaining approval for these types of initiatives.

Key questions for senior managers

In their study for the Ministry of Education and Ako Aotearoa, Higgins and Prebble (2008) developed a set of questions for senior managers under the headings of strategy, decision making, and structure, resourcing, and selecting technologies. While these questions will be outlined in more detail in pages 85-90 below for the purposes of this annotation the authors developed additional questions for senior managers under these headings as follows:

Strategy
- How do you know what you do not know? How much is enough to know before a decision can be made?
- In the current intertwined global, digital environment how is a specific institutional strategic direction set? To what extent should institutions follow their own path as opposed to that of other organisations?

Decision making
- How are the politics managed?
- What is the right balance between the competing and co-existing pedagogical, technical and student-focused interest groups? Which group should have the greatest weight in the selection process?

Structure
- Whose interests do the current structures serve?
- Where are the tensions and pressure points in existing structures? What can be done about them?
- How are strategic decisions made within immature structures?

Resourcing
- What is the cost of doing nothing? Can the organisation afford to do nothing? Does the institution have a choice?
- How is resourcing provided for sustainable innovation with a long-term outlook?

Selecting technologies
- Does this technology support the type of pedagogy and curriculum that the institution wants to promote?
- Does the organisation know what type of learning experiences they want to offer their students? Have they asked them?

Exploring the current theoretical background about adoption until institutionalization of online education in universities: needs for further research

Author: Casanovas, I.

Reference number: 23

Background

As traditionally defined, e-learning can be seen as innovation. Denning (2004) states that innovation adds more value than the status quo. For example, e-learning can provide a student-centred and controlled model of lifelong learning, convergence of IT innovations, and social networking, and assist with the attainment of borderless internationalisation.

Many traditional educational institutions are slowly getting involved in e-learning, which has led Hanna (1998) to define them as traditional extended universities. These universities provide a virtual programme which serves a non-traditional, geographically dispersed student body. However, where innovative pedagogies arise in response to technology but the academic routines remain unchanged, a gap between the institutional culture and its e-learning operations soon arises (Banks and Powell, 2002).

A third wave of e-learning based on networked collaborative concepts is emerging. However, traditional universities have yet to successfully embed the first and second waves of e-learning based on one- and two-way interactions.

The overall purpose of this study was to encourage researchers to address gaps in the current knowledge/evidence base so that a clearer understanding of the individual and organisational interactions that influence the development of strategies and the institutionalisation of emergent

e-learning initiatives could be developed. To achieve this aim, a formal literature review focused on 2005-2008 in specialised journals and conference proceedings was undertaken.

Literature review

An earlier review of IT-based innovations by organisations failed to include any higher education institutions (Jeyaraj et al., 2006). Lucas et al. (2007) identified a number of new concepts in this context, the best known being: diffusion (Rogers, 1962, 1995, 2003), infusion/incorporation (Apple and Zmud, 1992), innovativeness (Lind and Zmud, 1991), routinisation (Saga and Zmud, 1994) and assimilation (Armstrong and Sambamurthy, 1999; Purvis et al., 2001; Zhu et al., 2006). However, Lucas found that there was no unifying theory of factors and the literature tended to focus on individuals', rather than organisations', acceptance and adoption of innovations.

Gauntlet's literature review (2007) on e-learning in higher education had no articles on adoption. The Dwivedi et al (2008) review from 1985 to 2007, which included 247 articles on the adoption and diffusion of IT innovations, only had two of these that related to e-learning systems.

Other researchers have stated that e-learning is established and embedded within institutions (Spender, 2001; Symonds, 2001). While acknowledging that IT has transformed higher education, other more recent research also notes that this has not led to changes in how standards are set (Ayres and Grisham, 2003; Alexander, 2004). In contrast, the UK's Department for Education and Skills[10] (2003) insists that e-learning is not embedded at any stage of education. To add value for university managers and other stakeholders, research on educational innovations needs to be done from adoption at an individual level through to institutionalisation.

Higher education institutions

Clark (1983) saw the handling of knowledge as the crucial activity for higher education institutions. Typically they are integrated through decentralised departments and schools where chairs and faculties have large amounts of autonomy. Bleiklie (1994) identified the differences between higher education institutions and organisations in general as being the institutional autonomy within external constraints, the individual freedom and the scientific activity. But the European University Association (2003) also noted their extreme emphasis on educational activity, research work, their public responsibility and social role.

The level of autonomy within institutions leads to an environment where organisations exist within organisations. Another dimension has been added to this in recent times with the introduction of the virtual university (De Wolf, 2001). E-learning allows universities to respond to the requirements of increasing customisation and interactivity placed on them in an increasingly globalised environment if they are willing to embed it in their organisational culture. This would involve integrating pedagogical and technological frameworks, organisational models, the new role(s) of learners and teachers, and a business perspective.

Another consideration for universities is the increasing need to collaborate, which has implications for both institutional pedagogy and culture. The challenge in this was identified by Hanna (2003), who stated that to 'Co-operate to compete as a strategy of 'collabotition' (collaboration + competition) will be a critical strategy for colleges and universities in the future'.

Online education

Online education is typically characterised by:
- the separation of teacher and learner, which distinguishes it from traditional delivery
- the influence of an educational organisation, which distinguishes it from self-study and private tutoring
- the use of computer networks to present or distribute some educational content

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[10] This department is now referred to as the Department for Business, Innovation and Skills.

- the provision of two-way communication via a computer network so that learners may benefit from communication with their peers, teachers and staff.

This study also included blended learning, which combines e-learning and traditional delivery (Bonk and Graham, 2006) in their definition of online education.

The process of adoption and institutionalisation of IT innovations
This study defined adoption as the decision to use an innovation (Sauer and Lau, 1997). Intending to adopt refers to the degree to which a person has a favourable or unfavourable purpose in accepting or rejecting the innovation (Azjen, 1991). Technology acceptance is the extent to which it is used when its usage is voluntary or discretionary (Morris, 1996). Diffusion is the process by which the innovation is communicated through certain channels over time to members of the system. It also refers to the accumulated level of users of an innovation (Rogers, 1995).

The common theoretical framework for individual institutions adopting e-learning is Rogers' diffusion of innovations (1995, 2003). Regarding the organisational innovation decisions, Rogers identified three different types: optional, collective, and authority. But in universities this process is complicated by the fact that their departments/faculties exercise such a large degree of autonomy and are typically under no obligation to collaborate or cooperate with their counterparts.

There have also been criticisms that it has not focused on newer technological developments as well as modifications and alternative frameworks (Baskerville and Pries-Heje, 2001; Anand et al., 2006; Wainwright and Waring, 2007). Fichman (2004) demonstrated the emergence of the so-called dominant paradigm: the more individuals and institutions possess greater innovation-related needs and abilities, the more the IT innovation will be adopted.

Institutionalisation refers to the ongoing set of values, structures and activities that ultimately become an integral and sustainable part of an organisation's business as usual (Quality, Assurance Project, 2000). If institutionalisation is to occur, it needs administrators and teachers skilled in and committed to the change, and established procedures to support new educational modalities, teachers and administrators.

But this process always commences at the personal level and can only occur if the conditions are established for the long-term support of the initiative (Fullan, 1991). Regardless of the perspective, that is centralised, decentralised or a combination (Towler, 1998), they appear to converge in a systemic approach which considers that willingness, sensitivity, flexibility, structures and resources coming from all stakeholders leads to strategic institutional planning. This paints a picture of an unclear and rather intangible process. To counter this inherent instability managers tend to adopt fixed plans.

Although more than 80 percent of universities offer e-learning, there have been many setbacks and failures and it has failed to fundamentally alter the way that they operate, with its notable impacts being in the teaching and learning context (Ayres and Grisham, 2003; Garret, 2004; Allen and Seaman, 2007).

Literature review results
The number of articles on adoption in university contexts is significantly increasing (about 90 percent) in specialised journals and conference proceedings. This is matched by national and transnational initiatives dedicated to e-learning. However, none cover the whole process from adoption to institutionalisation. As is the case with other fields of educational research, qualitative approaches underpinned by survey and questionnaire data collection tend to dominate. But empirical studies were also higher than their non-empirical counterparts.

Conclusions and further research
The literature related to higher education institutions' processes for adoption and institutionalisation of e-learning represents a small proportion of the total. Extant literature tends

to focus on the take-up, adoption and implementation stages of e-learning, with an emphasis on factors and prescribed practices (Aboelmaged, 2000; Khakhar, 2001; Buckley, 2002; McPherson, 2002; Surry and Ely, 2002; Levy, 2003; Svensson, 2003; Ensminger et al., 2004; Menchaca et al., 2004; Psycharis, online). While there is a strong focus on organisational issues, there is none on the transition from adoption to institutionalisation.

This review reports similar findings to earlier studies (Kezar, 2002; Taylor, 2004; Woodside and Biemans, 2005) in that there is a lack of understanding of the adoption of educational innovations and their impact on organisational structures, processes and culture. But it needs to be taken into account that this review covered only a small and specialised sub-set of the overall literature. However this is because they were the only researchers covering this topic.

One of the challenges facing universities is the increasing tendency for learners to use the internet to study outside of traditional institutions. E-learning can help them meet this challenge. But this involves a different set of modalities based around social networking and media when previous e-learning delivery modes have not as yet been successfully institutionalised. This is likely to mean universities will have to adopt more decentralised approaches and loosen their controls over the learning process.

Institutions need to adopt proactive rather than reactive strategies to deal with the introduction of e-learning. While people and institutions are not automatically hostile to change, they should be provided with sufficient incentives and support to make change possible (Punie et al., 2006). Institutions tend to improve existing processes rather than consider alternatives.

This review suggests that informal initiatives have yet to be translated into formal procedures. This means that there is a need for a systematic study analysing the implementation of emergent e-learning innovations. In addition, the process from adoption at an individual level to institutionalisation, and the linkage between individual and organisational purposes, needs to be addressed.

Benefits of e-learning benchmarks: Australian case studies

Author: Choy, S.

Reference number: 25

Introduction
The Australian government has invested a substantial sum to enhance e-learning in their vocational education and training (VET) sector through the Flexible Learning Framework. This was based on anecdotal and research evidence that outlined the benefits of e-learning (Block and Dobell, 1999; European Commission, 2000; Phillip, J., Phillip, P., and Zuniga, 2000; Roffe, 2002). But there is no consistent approach to how these benefits are measured.

At the time of writing, e-learning benchmarking was in its infancy in Australia. In the VET context the benchmarking indicators developed for e-learning were to be used to help individual institutions plan for and benchmark e-learning. It was not intended to be used for a sector-wide comparison.

The main purpose of this paper was to report on three case studies of VET institutions and how they have approached e-learning benchmarking, the benefits they experienced and the lessons learned. Based on the case studies, a set of practical strategies is derived that can be used by other organisations interested in benchmarking their e-learning activity.

E-learning
The total e-learning solution comprises the integration of three elements: content, technology and services (Henry, 2001). From an organisational perspective, e-learning is seen to have a number of benefits including its ability to provide flexible learning options, its cost-effectiveness, its ability to personalise content, its increased interactivity, and its ability to be updated rapidly. UK organisations report similar benefits (Roffe, 2002; Young, 2002).

But initial investments in e-learning are costly so there is considerable interest in its performance, quality, usage, effectiveness and efficiency as a learning solution. According to Dublin (2004, p. 294) there are six fundamentals to ensure e-learning is embraced by organisations. These are that it:

1. provides a business solution
2. provides a return on investment and expectations
3. enables learning, not training, and drives performance
4. focuses on people – learners, managers and executives – not technology
5. energises organisations and motivates learners
6. ultimately becomes 'invisible', interwoven into the very fabric of an organisation and its culture.

To this list Ettinger, Holton and Blass (2005) added providing high-quality technology and content, gaining support at senior levels, providing proactive support for e-learners (and their managers) through communication, promotion and marketing, and creating a learning organisation.

Flexible Learning Framework e-learning benchmark indicators
These fall under three broad categories with a total of 12 criteria.

1. Uptake and outcome of e-learning in the VET system:

- % of VET unit enrolments that use e-learning.
- % of VET providers offering units that use e-learning.
- % of VET learners who via e-learning have increased skills and confidence in using ICT
- % of VET learners who through e-learning have, or expect to have, improved employment outcomes.
- % of VET clients who believe e-learning and e-business gave them flexibility in when, where and how they engaged with the sector.
- % of clients satisfied with their e-learning experiences in VET.

2. Uptake and impact of e-business:

- % of VET providers offering e-business client, support and administrative services.
- % of VET clients using these client, support and administrative services.
- % of clients satisfied with e-business experiences in VET.

3. Uptake, use and outcomes of e-learning on VET teachers and trainers

- % of VET teachers/trainers delivering units that use e-learning.
- % of VET teachers/trainers who through e-learning have changed teaching practices in the design, development and delivery of units.
- % of VET teachers/trainers who believe increased access to e-learning resources has improved teaching and learning outcomes.

Case studies
These involved three institutions relatively new to e-learning. This was intended to provide useful data for less mature e-learning organisations and inspire a wider uptake of e-learning benchmarking. Data for the case studies was obtained from face-to-face and telephone interviews with each institution's project managers and their e-learning support staff as well as relevant documentation.

Key benefits of e-learning benchmarking
All the case study institutions recognised that benchmarking could improve products, content and service development, professional development, change management for e-learning, IT and business planning, and marketing. Three broad benefits of participating in e-learning benchmarking by the case study institutions were: a reporting framework, performance measurement, and service improvement.

Reporting framework
Benchmarking data contributes to reporting frameworks by verification of anecdotal data and testing of stakeholder assumptions. They also provide real evidence of performance. They

support decision making at various levels throughout the organisation and also substantiate justification for the allocation of resources to support e-learning such as IT hardware and software, and staff time. The overall data set, when added to others, can also be used by government agencies for comparisons and drawing evidence-based conclusions.

Performance measurement
Monitoring progress using performance measurement is a common approach in all organisations. Benchmarking data can be used to assess performance against existing standards as well as assisting with setting targets to exceed these. They inform team-level performance and could therefore contribute to internal recognition and reward systems. Dissemination of success stories gathered from the benchmarking data helps increase staff confidence. Finally, in this context the data can be used to compare learners regarding common services.

Service improvement
Benchmarking data can help identify high- and low-performing services. Importantly, it can identify specific areas for improvement to enhance services and course delivery. It enables teachers to monitor, evaluate and reflect on the impact of changes in teaching strategies and choice of content and resources as well as the use and appropriateness of e-learning tools, technologies, and their associated services. This in turn helps inform future planning and development of e-support services.

The data helps review the effectiveness of professional development content and delivery and inform strategies for equipping teachers with the right knowledge and skills so that the quality of online content and student services can be improved. They also provide a baseline to not only improve, but also be competitive and innovative in educational delivery.

Suggested strategies for e-learning benchmarking
Based on the lessons learned, three broad categories were identified to assist organisations who are considering benchmarking their e-learning: data collection, data interpretation, and implementation of e-learning.

Data collection
- Allow flexibility, for example by providing both online and offline data collection methods as well as having students' complete surveys independently or with assistance from teachers/trainers.
- Provide support for learners with literacy problems.
- Clearly define both e-learning and e-business.
- Create a supportive relationship with the target audiences, to ensure improved response rates.

Data interpretation
To draw valid conclusions or make comparisons, data must be interpreted within the contexts of the team, faculty or organisation. Data interpretation can be compromised by an overemphasis on technology.

Implementation of e-learning benchmarking
- Have a clear change management process in place that considers the changing roles and responsibilities of all stakeholders. This will minimise confusion about task allocations and timelines for collecting, analysing, interpreting and disseminating data.
- Use a phased approach, to ease the cultural change. When planning e-learning benchmarking, managers need to engage and work in partnership with all stakeholders including HR, IT and management staff.
- Communicate clearly defined goals and timelines to all stakeholders through a change communications and marketing communication plan so they know what to expect and when (Dublin, 2004).
- Invest adequate time in planning and developing e-learning content.
- Include a framework of recognition and reward. According to Ettinger et al. (2005) this will help enhance motivation.

A stakeholder approach to implementing e-learning in a university

Authors: Cook, J., Holley, D., and Andrew, D.

Reference number: 26

Introduction
This article reports on a reusable learning objects project undertaken at the London Metropolitan University.

Theoretical perspectives on institutional change
Brynjolfsson, Renshaw and van Alstyne (1997) developed a model of institutional change that attempted to help managers and stakeholders to identify critical interactions among processes as well as emphasising the need to recognise interdependencies among technology, practice and strategy. Shaw (2006) modified this model by mapping out organisational maturity stages in terms of their e-learning use.

For this study the Shaw model was used with the addition of the concept of 'tipping point' (Gladwell, 2000). This refers to the situation where sufficient individuals in a system have adopted an innovation and it therefore becomes sustainable. This is particularly important in an e-learning context, where a critical mass must adopt it before the average individual benefits.

This model places more emphasis on informal, practitioner-led change rather than traditional top-down, senior management-directed activities. For this to work, rigorous self-inspection is critical. In this initial phase extensive effort is spent on examining localised technology use and internal coordination of processes. Analysis in this phase identifies existing and target processes; systems interactions that are both complementary and competing are noted.

Their analysis found that localised areas were making use of centrally provided resources to produce e-learning materials. This occurred without centralised control, which is in contrast to many developments where this process is driven by institutional requirements to place materials within a Virtual Learning Environment such as a Learning Management System.

In the second phase there is a need to determine the level of difficulty in the transition from existing to target practices. By encouraging a more localised, organic-type process in this phase, the institution was able to move towards the medium-term e-learning innovation goals of 'feasibility and sequence'.

This approach also meant student-led initiatives could be included prior to the development of an institutional e-learning strategy. There may be less change effort required in this phase as the organisation adjusts to the process redesign. At the time of writing, they were about to enter the third phase, which is where large-scale transformations become self-sustaining.

Method and context
The focus of this annotation will be on one of the key themes that this paper addressed: institutional change and resistance. The research method used was interpretive (Schutz, 1973; Schwandt, 1994). The context was the embedding of reusable learning objects within their department of business and service sector management. A small number of key staff were interviewed to collect the paper's supporting data.

Institutional change and resistance
The interviewees identified that a critical interaction is required between senior management commitment and changes at the bottom of a bureaucracy. This importance of top-level support is widely reported in the literature, particularly for e-learning developments. In this context top-level support was provided at management level and through relevant policy channels. These included existing institutional structures such as subject standard boards and quality committees, and departmental plans.

But ensuring that this top-level support effects the necessary changes throughout the organisation is more challenging. This is because of the difficulties associated with a lack of

departmental management buy-in, including project team members not obtaining release time to participate in the project despite top-level approval.

These challenges mean moving the whole institution will take longer. For this institution these challenges meant adopting different strategies for different areas. But this project has demonstrated that rapid change is still possible if local conditions are favourable. However, there are still large parts of the institution that have not reached the tipping point and it is envisaged that this will be addressed through their recently developed e-learning strategy. Obstacles to this process include the need to change mindsets, particularly the assumptions of their corporate functions that are resistant to change and are not customer focused or facing. This is combined with staff who are also typically resistant to change.

Important factors to overcome these obstacles and challenges were e-learning champions and early adopters combined with how well regarded the project team was in the university's departments. But the most crucial components they identified in change implementation were:
1.   the coordination and dynamic extension of existing informal change processes
2.   the careful application of general principles of organisational change – to utilise and align important institutional stakeholders and processes in order to support the informal processes that in turn develop towards the tipping point
3.   continued and patient building towards the tipping point within a networked organisation.

Good-practice recommendations
To bridge the gap between the top-level and localised areas of the institution, informal interventions were developed. To achieve middle management buy-in these informal interventions included staff workshops. It is also important that teams are empowered in the change process, for example by ensuring that they all make significant contributions to it.

Including the student voice has been critical in their deliberations with the various powerful internal institutional stakeholders. The single most important element of change in e-learning within this institution has been forgoing the traditional team work approach and instead adopting one that represents all stakeholders and pays particular attention to students.

Intermediaries and infrastructure as agents: the mediation of e-learning policy and use by institutional culture

Authors: Czerniewicz, L., and Brown, C.

Reference number: 27

Introduction
The literature acknowledges the importance of specific institutional contexts and cultures when considering e-learning adoption and organisational change. A major challenge is how to make this discussion generalisable without getting diverted by specific local issues. This means that developing taxonomy of institutions is important. But the one in most common usage which splits institutions into research-led or teaching-led categories is flawed because research-led universities have excellent teaching and vice versa. Other categorisations focus on structural rather than cultural difference (Clayton, Fisher, Harris, Bateman, and Brown, 2008). Others focus on specific academic cultures but do not include policy (Bergquist, 1992; Kezar and Eckal, 2002).

The framework used for this study is adapted from McNay (2005) and is based on four cultural types: collegium, bureaucracy, enterprise and corporation, along two axes both ranging from loose to tight. Loose and tight refer to the control of implementation and policy definition. The collegium type is characterised by loose policy definition, informal networks and decision points, and innovation at individual or departmental level. The organisational response is typically one with few targeted policies or processes (Rossiter, 2007).

The bureaucratic type is characterised by loose policy but strong regulation, dominated by committees of administrative briefings. In contrast, the corporate type typically has tight policy definition and implementation and a culture of strong top-down directives, implemented by institutional or senior management. The enterprise type has a well-defined policy framework with a student-centred approach being the dominant decision-making criterion. Here leadership is devolved and the market is a strong focus.

It is important to note that an institution is unlikely to fall neatly into one of these categories. It is more useful to consider an institution having a dominant culture at a particular point in time. These dominant cultures may also well change classification over time. Despite these limitations, this framework has been used widely to discuss various aspects of e-learning adoption, institutional culture and change (Cornford, 2002; Mackintosh, 2005; McNaught and Vogel, 2006; Conole, White, and Oliver, 2007; White, 2007).

Framework and relevant research
The table below shows the categories the authors used to differentiate institutions in an e-learning context.

	Structured[11]	Unstructured
Senior-level formal support	Policy document	No policy document
E-learning structures	Centralised support unit	No formal support unit (but possible fragmentary or ad hoc support)
Institution-wide systems[12]	Institutionally supported online Learning Management System (LMS)	No (or ad hoc) online LMS

There is no indication in the literature that the specific locality of e-learning structures is relevant to adoption. There is also inconclusive evidence supporting the need for e-learning policies to be stand-alone or merged into related documents (Inglis, 2007; Nichols, 2008). What is more important is that structured institutions do not necessarily only adopt centralised approaches or lack local innovation because policies can develop in response to micro-level change, which then scales up across the organisation (Rossiter, 2007).

Research suggests that e-learning policy is not the only factor necessary for its successful adoption by institutions. 'Bottom-up' or local change driven by e-learning champions, innovators and early adopters is also important (Cook, Holley, and Andrew, 2007; Holt and Challis, 2007). But that is not to deny the importance of policy, which is the most visible expression of senior management support and strategic ownership, essential for the uptake and rapid diffusion of e-learning in institutions (Boezerooij, van der Wende, and Huisman, 2007; Nichols, 2008).

Other important factors noted in the literature are institutional champions, students as drivers, and individual staff innovators (Weedon, Bricheno, Higgison, and Chidwick, 2004; Czerniewicz and Brown, 2005). But it is accepted that the essential requirement for successful integration of e-learning is a system-wide approach. However, these system-wide directives must be accepted at an individual level (Rossiter and Crock, 2006). There is also a contrast in policy and actual practice as well as a distinction between usage and the internalisation of the importance of e-learning.

The role of institutional policy
Policy is associated with frequency of use and critical mass. But critical mass does not shed light on the quality of use, the extent of genuine integration or how embedded usage is. For

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[11] In order to consider an institution as structured, all three dimensions had to be present.
[12] The institution is assumed to be the university as a whole, although it is possible that sections of a university exist formally as separate institutional entities.

example, it has been observed that critical mass only becomes integration when it is widely used and valued without any sense of coercion (Rossiter and Crock, 2006). Policies can create barriers if they are seen as coercive or they are reactive (Stiles and York, 2006; Conole et al., 2007; Clayton et al., 2008).

A policy's efficacy depends on how it is mediated through institutional cultures. Otherwise it can be a major risk for an institution's long-term sustainability because funding tied to policies can become a narrowly specific driver rather than an enabler of improved, creative and responsive front-line practice. Institutions should use infrastructure proactively to enhance connections between central initiatives and front-line practice (Cummings, Phillips, Tilbrook, and Lowe, 2005) through measures such as hardware and software that is customisable to local conditions. This might mean easy access to appropriate equipment or enabling multiple configurations to support flexible learning environments.

Standardisation or flexibility
The effective use of new tools is likely to see institutions exerting greater control (Collis, 2005), but this may mean academics feel they are losing their independence and ability to choose. This is the crux of the challenge: an infrastructure that enables sustained flexibility must by its very nature be constructed with standard, formal tools. The central challenge for institutions arising from this is to manage what appear to be competing imperatives through the creation of consistency by maintaining standards supported by formal, explicit processes and procedures on the one hand and ad hoc, flexible, local activities on the other.

The 'middle out' approach
Balancing these competing requirements demands a different approach. This is because while top-level policy is important it is counterproductive when it is coercive. But local initiatives cannot become institution-wide without systemic support. How can an adequate, efficient and flexible e-learning infrastructure be developed within large and complex institutions?

According to Rossiter and Crock (2006), truly embedding ICTs into a university's core business has four dimensions: critical mass with regard to adoption; integration into organisational values; legitimisation; and sustainability. Even where policy exists in the form of clearly articulated principles, a mediation role between its intentions and practice is important

Middle managers can and should play this role. They are the key change agents most likely to interface between standardised institution-wide infrastructures and systems and local needs. They also have a vital role to play in ensuring smooth allocation, management and maintenance of e-learning resources and infrastructure, an important component of the overall policy framework. Active and innovative middle managers can change institutional and local policies and practices.

Cummings et al. (2005) term this approach 'middle out'. They see these approaches as being characterised by 'problem-solving, problem-oriented, best fit, facilitation, collaboration, opportunistic, negotiated, functional, and operational, low-level funding, project management, and professional development' (p. 14). This approach also mitigates situations where there is a limited top-level vision, insufficient resources or poorly enforced policy documents. Their skills and capabilities may even be a form of innovation as they can bring to bear their deep knowledge of the interplays between ICT affordances, organisational dynamics, and local culture.

Conclusions
The diversity and differentiation of institutions imply that a one-size-fits-all set of policy provisions will be inadequate. The integration of e-learning into the dynamic and complex cultural ecology of higher education institutions requires policy and implementation structures and processes that mirror the flexibility of ICTs themselves.

E-learning for adult literacy, language and numeracy: a review of the literature

Authors: Davis, N., Fletcher, J., Brooker, B., Everatt, J., Gillon, G., Mackey, J., and Morrow, D.

Reference number: 28

Introduction

This was part of a wider Ministry of Education-funded research project, whose main purpose was to investigate how e-learning can be employed as a means of reaching greater numbers of adult learners, and how to better meet their learning needs. As well as outlining the extant literature relevant to the primary research question, this review describes and discusses the key success characteristics that emerged in relation to engaging adults in e-learning designed to develop their literacy, language and numeracy (LLN) skills.

This annotation will focus on two of these characteristics: staff development and educational organisations. Realising the potential of e-learning in this context depends on ongoing professional development for staff and may also require changes to programmes and resources within organisations.

Key findings – Staff development

Professional development should be specifically targeted at staff who use computer games, the internet and mobile devices in supporting adult learners' LLN acquisition. E-learning professional development should also be provided for staff teaching English as Second Language (ESL) students, and for support personnel in libraries and other appropriate and relevant areas.

E-learning professional development should be informed by research. Staff need to know why they are using e-learning and how they can best use it to achieve their teaching aims. A range of both formal and informal professional development opportunities should be provided. In the informal context, organisations could support networking opportunities so staff can share knowledge related to successful e-learning activities. Supporting staff action research projects is also a valuable professional development strategy.

Professional development should also include e-assessment and organisations need to provide the appropriate infrastructure, systems and processes to support this. Organisations can also encourage the appointment and active engagement of e-learning and LLN champions (who would be regarded as experts). They would support other staff in their e-learning endeavours. Staff partnerships that allow them to develop their use of e-learning in numeracy and literacy should be encouraged.

Professional development needs to be able to meet the needs of different staff. Leaders and managers should be encouraged not only to promote and establish, but also to participate in e-learning professional development, including the preparation of relevant materials such as case studies. Organisations need to recognise that professional development in e-learning is an ongoing process and it is important to acknowledge when staff reach important milestones.

Key findings – Organisational approaches to e-learning

It is also crucial that leaders recognise that where staff are not in a supportive environment they are less likely to make desired progress and may revert to existing practices if things become too challenging. The active support of a senior manager for an e-learning innovation should be encouraged. Conflicts over resource allocations arise particularly where multiple innovations are being introduced. These should be resolved by organisational leaders. Organisations should recognise that often e-learning-related innovations are at an early stage of development and that those responsible for them will need to maintain or improve their attributes if they are to be sustainable.

Buy-in from middle management is critical because they can facilitate or block developments. They should be heavily involved in the development of organisational strategies. Organisational leaders should be encouraged to apply Rogers' (2003) characteristics of innovation, that is, relative advantage, compatibility, complexity, trialability and observability to improve the coherence of multiple innovations with the institutional vision and available resources.

Organisations can also ensure tutor support is provided for new ESL students as well as developing and/or adapting resources so that they meet specific learner requirements and are more customisable. Transition programmes should be developed where these involve e-learning skills. This will help organisations to obtain students. Organisations can partner with Māori and Pasifika leaders and their communities to develop the e-learning skills of these communities.

E-learning solutions should be implemented to support learners with special needs. Hardware and software should be adapted or modified to accommodate each learner's identified skills and abilities. Software should be both interoperable and, where possible, generic. For students with special needs, organisations should provide both learning and technology support services and facilitate cooperation between them to aid their skills development. Support should also be available for off-campus learners.

Systems and infrastructure need to be reliable and robust so that user interface and technical issues do not undermine learners' (often fragile) confidence in using e-learning to develop their LLN. Interfaces should be as simple as possible. This is also advised as not all students will have access to ICT that can support high-end interfaces. Organisations should not assume that learners will have access to a continuous internet/broadband link and plan their e-learning activities accordingly.

E-learning strategies and accredited professional development should align with the vision that staff and management have collectively developed in relation to e-learning for adults with LLN needs. Staff should be provided with the appropriate tools and infrastructure, including a laptop computer with common office applications, multimedia tools, and e-learning resources. Organisations can also support the development and maintenance of appropriate and relevant communities of practice. Sharing of knowledge and resources can be encouraged and supported by organisations adopting open licensing systems, for example creative commons.

A study for JISC into the integration of technology into institutional strategies

Authors: Duke, J., Jordan, A., and Powell, B.

Reference number: 29

Introduction
This study was commissioned by the Joint Information Services Committee (JISC) in conjunction with the Leadership Foundation for Higher Education to assess current awareness, practice and issues relating to the integration of technology into UK higher education institutional strategies. The aim of this study was to encourage higher education institutional leaders and senior managers to engage more with the strategic technology agenda both within their own organisations and across the sector.

Methodology
A representative sample of managers and academics including members of the senior management team, planning officers, heads of IT services, and Governors from 28 higher education institutions formed the basis of the study. Other people from the sector and executives from commercial and public sector organisations were also interviewed.

The overarching interview question was why and how is ICT strategically important to higher education institutions. The supporting sub-questions included:

- How do senior management teams ensure their strategies are attainable with available technology?
- How significant is the transformational capability of technology to institutions when they are developing their strategies?
- How should institutional strategy take technology into account?
- Is there a role in every higher education institution for someone on the senior management team with strategic responsibility for and an understanding of the technology?
- 'A Vice-Chancellor does not need an understanding of ICT.' Is this essentially true, and if so, what does it imply for the management of the institution?

Key findings

There was a discernible difference in perceptions between those who see institutions as being business driven from the top to achieve outcomes in line with its mission in a competitive marketplace and those who see organisations primarily as a community of scholars. Only a minority of institutions are giving effective consideration to technology as either a strategic or transformational enabler in their strategic planning.

There are few senior managers who have a deep understanding of technology. Most institutions rely on collaboration between individuals with complementary skills to deliver effective insight into the actual and potential contribution of technology to the overall strategic aims of the organisation.

There are two main models of strategy development in this context. The integrated model is where the main strategy development process stimulates and drives a parallel process of development of separate sub-strategies for major functional areas and academic units to support and deliver the institutional strategy.

The disjoint model is where a centralised strategy is developed that informs thinking and sets boundaries. However, a combination of budgetary autonomy and academic independence allows local strategies to emerge, sometimes in complex ways. The disjoint model is the most common. This was the case even within institutions which seemed more likely (because of their language and expectations) to adopt a relatively managerial approach.

Technology can play a role at three levels in strategic planning. The first of these is at a transformational level when it is used to reshape the institution in a different form. Secondly, it can be a strategic enabler when it is needed to implement the strategic goals set by management. Finally, it can be an operational enabler when its role is to support the core activities of the institution. There was little evidence of its use as a transformational change agent and only slightly more where it was seen as a strategic enabler. Most common was its use as an operational enabler.

An issue of great importance that emerged from the interviews was the organisation of roles and responsibilities for the strategic exploitation of technology. In particular, the concept of a senior manager with the responsibility for a technology strategy emerged from the discussion around the role of Chief Information Officer. This has proven successful in the private sector and has been adopted by a number of innovative institutional leaders in the UK and internationally.

While an equivalent role on institutional senior management teams would be of significant benefit, similar outcomes could also be achieved by effective organisation of information and communications. But despite this alternative, and adoption of a dedicated senior management team member by some institutions, the study concluded that generally there were significant shortcomings in the capability of senior management teams in higher education institutions to identify and exploit the full strategic potential of technology.

Good-practice suggestions

The study suggested a number of good practices that institutions could adopt as they develop more technology-oriented strategies. These include the suggestion that strategy initiation should be top-down. They also stated that senior management teams should thoroughly consider the

role of technology in delivering the corporate strategy. In short, should technology be seen as transformational, strategically enabling or operationally enabling?

In regard to consultation on strategy development, they suggested that first and foremost it should be comprehensive and timely so it can better inform the final version. This will help increase acceptance, particularly where a disjoint approach as outlined above has been adopted. Using technology to support the consultation process reinforces its importance. A representative and influential Information Systems Policy Group is vital to institutional buy-in and ownership of the technology strategy. Finally, consultation on a technology strategy should embody a challenge culture.

When the strategy is completed it must be presented to its target audience in a way that is comprehensible to them. Effective communication uses institutional not technological language. Technology expertise should be present within institutional governing bodies. Governance structures are central to ensuring that technology developments will meet institutional requirements. This is best achieved through a Chief Information Officer, or equivalent, who not only represents the institution's technological expertise but can also gather the needs, aspirations and views of users.

The CEO and Chief Information Officer should have a close working relationship. The CEO also plays a critical role by visiting departments so they can highlight opportunities as well as establishing a group of 'thought leaders'. These thought leaders would be specialists who, as part of their role, would do future development planning as well as regularly providing advice.

Blended learning enters the mainstream

Authors: Dziuban, C., Hartman, J., Juge, F., Moskal, P., and Sorg, S.

Reference number: 30

Background
The number of colleges and universities offering web-based provision has increased substantially over the last decade. The US Department of Education reported that 56 percent of all degree-granting institutions provided distance education courses and that universities now use the internet as their main method of delivering distance education (Ashby, 2002).

Improvements to computer-based technologies and the internet, combined with a substantive amount of research, have helped encourage institutions to explore how best to use them to improve teaching and learning. In some cases this exploration has resulted in institutions transforming their practice (Dziuban, Hartman, and Moskal, 2004).

Many undergraduate students are familiar with the internet and use it to support their study. They report spending an average of 12 hours per week on the internet (EDUCAUSE, 2003). Many of these students are older (i.e. aged over 24).

Institutions have tended to adopt blended approaches in response to these learners and the extra e-learning provision necessary to cater for their preferences. Many see these approaches offering the best of both e-learning and traditional delivery. This is partly because they offer additional flexibility, which allows learners to balance their study and external commitments more effectively. They also tend to have higher levels of interaction than traditional delivery and facilitate access to materials and experts that otherwise would not be available.

From an institutional perspective, blended learning allows for the more efficient use of classroom space, and so institutions are adopting these approaches in an attempt to reduce costs. They also see benefits in improved student retention and enhanced learning outcomes through the increase in interactivity and active student engagement. However, these efficiencies have not been realised to their full potential because of lack of coordination from instructors.

There are clear benefits in a blended learning approach, but if it is to be educationally effective, quality course design is critical. This includes providing appropriate and timely technical support for both staff and learners.

Blended approaches at the University of Florida
The university predominantly determines the fully online provision, whereas blended learning is generally the domain of faculty and staff. But the relevant college deans and chairpersons determine the priority for developing these courses through consultations that occur once each academic term.

A blended approach was adopted in response to the majority of learners that were enrolled in the initial fully online offerings also studying through traditional delivery. The popularity of these courses and the approaches that underpin them has led to a massive increase in enrolments.

The university has interpreted blended learning as meaning the substitution of some traditional delivery with online activity. In practice, this is normally one face-to-face meeting per week with the rest of the course being done online. While students themselves are critical in determining the success of blended approaches, faculty success in adopting these approaches is vital if they are to be sustained.

But many staff are not familiar with the theory and practice of teaching. Therefore to better support blended learning, the university's staff are required to participate in an intensive development programme so they can teach more effectively in this environment. However, it is expected that their participation in online learning will be voluntary.

Professional development approaches
They use a simulation course in which staff participate as students and instructional designers take on instructor roles. This is an intensive programme (more than 60 hours over an eight-week period). As well as labs and modules covering subjects such as best practices, online interaction, assessment, group work and learner support, it also provides for one-on-one consultations with instructional designers.

Before each session, an initial consultation is conducted by an instructional designer to assess the staff member's technical skills, their particular course requirements and any concerns or expectations they may have. These consultations occur on a regular basis and the instructional designers also do a quality review before any course is posted online, as well as providing support once the course is released. Participating staff are granted a one-course release or equivalent stipend and a new wireless computer with pre-loaded with a standard software package.

Many staff initially make use of this support but eventually transition to a self-service model. Benefits for staff include being able to use instructional resources and techniques not available through traditional delivery or in a fully online environment and improved learner perceptions and performance. The institution has made a conscious effort to mainstream their blended learning provision. But internally directed initiatives require greater emphasis on systemic approaches, attendance to issues of campus and faculty culture, and more of a student business and academic support services to be accessible online.

Blended learning outcomes
A recent EDUCAUSE initiative suggests that assessment is a fundamental component of higher education transformation. The Sloan-C consortium has developed a model for assessing quality education in an asynchronous learning network (Moore, 2002). Two critical components of this work are learning effectiveness and student satisfaction.

The university used a declassification strategy to determine learning effectiveness by grades. This involved reducing grades to a binary format that defines course success. But there are challenges, including a wide variation in grade distributions across departments because of differences in instructional and assessment philosophies as well as accepted academic norms.

The declassification approach attempts to resolve these idiosyncratic differences by sacrificing some specificity to gain reliability. In practice, this means all A, B and C grades are considered as a success and the other grades as not successful. Another important variable they consider is the withdrawal rate of students in blended courses compared with roughly comparable traditional delivery and fully online courses.

They have found that the success rates for blended learning are comparable with or higher than their traditional delivery or fully online counterparts. In addition, the withdrawal rates for blended learning are generally comparable with their traditional delivery equivalents.

Blended learning's role in institutional change
It is important for institutions to realise that blended learning is not strictly an instructional phenomenon. All aspects of the university must be involved in a systemic way including colleges, departments, faculty, support services, and infrastructure to enable staff and learner success in an e-learning environment.

If these elements are in place and functioning effectively, blended learning can produce satisfied and high-achieving learners, professionally satisfied faculty, opportunities for innovative and responsive programme design, more efficient and effective use of facilities, and better engagement with the community. In this sense blended learning can be transformative. But it is a complex system that, at an institutional level, will inevitably have both desirable and adverse side effects.

Implementing guidelines: a pilot case study – New Zealand Tertiary College

Author: Fox, S.

Reference number: 32

Background
The New Zealand Tertiary College (NZTC) is a Private Training Establishment specialising in training early childhood education teachers. They chose to adopt an e-learning approach by adopting the e-Learning Guidelines (eLG), the development and initial implementation of which was funded primarily by the Tertiary Education Commission but with some support from the Ministry of Education. These guidelines incorporate researched best-practice standards for New Zealand tertiary institutions wishing to provide education using e-learning as a delivery mode.

Change drivers
NZTC's decision to adopt e-learning arose from an international collaboration with a US provider. There was also strong demand for more flexible learning options from their students. In adopting the eLG, NZTC posed a number of critical questions: are they suitable for the early childhood sector, what changes would be necessary to make them more suitable for the sector, so they work for NZTC, and how is NZTC meeting the requirements of the eLG in their current form?

Approach adopted
The NZTC management and executive teams extensively reviewed the eLG and consulted with all their departments including the IT team, academic staff, and Student Services and Administration. Based on this, an additional review was undertaken to assess their suitability for the different areas within NZTC. This approach was critical in ensuring that the eLG were adopted and had buy-in organisation-wide. This approach also ensured that this adoption was supported by the creation of cohesive policies and processes.

To assist implementation, NZTC appointed a dedicated project administrator to oversee the process and create a resource that allowed staff to review and make comments relating to each item within the eLG, noting relevant references. Staff identified areas that needed further attention and suggested possible further developments. The project team reviewed these

suggestions and recommended the preferred option for future development. The policies and processes arising from the eLG were then incorporated into NZTC's quality management system and now fit into their annual review process to ensure ongoing relevance and oversight.

Key outcomes

The eLG have helped inform the development of NZTC's key supporting e-learning system and confirmed the suitability of all their current practices. The eLG offer a practical entry to discussing teaching in an e-learning context and provide a platform for all staff to contribute their expertise to them. This led to the eLG not only being adopted across NZTC, but also being embedded in their development and planning activities.

The eLG have provided NZTC with robust criteria for identifying good e-learning practice, and with an up-to-date awareness of international research. This has contributed to NZTC's priority objective of being at the forefront of quality e-learning practices both in New Zealand and internationally for the early childhood sector, and assists their aim of improving e-learning and e-teaching practices for learners.

Next steps

NZTC will continue to apply the eLG's principles to all their future planning and development. They will monitor the changes they have implemented based on the eLG.

Steps to implementing eLG

1. Identify good e-learning practice.
2. Implement the eLG organisation-wide.
3. Assess the suitability of the eLG for the organisation's relevant sector.
4. Assess the suitability of the eLG for the organisation.
5. Assess the impact of the eLG on students' learning practice.
6. Assess the organisation's current practice against the eLG.
7. Identify areas that require further attention and development.
8. Assess the future sustainability of the eLG.
9. Assess the eLG's contribution to the organisation's mission statement.

Role of instructional technology in the transformation of higher education

Authors: Garrison, D. R., and Akyol, Z.

Reference number: 33

Introduction

E-learning could be a paradigm shift in the thinking and practice of institutional staff and leadership. The main drivers for e-learning are the convergence of technology and constructivist, collaborative approaches. However, new and emerging technology and tools are catalysts for new educational paradigms.

The paper focuses on the convergence of technology and constructivist, collaborative approaches and argues that the changes this is bringing about are evolutionary rather than revolutionary in transforming educational practice. The successful use of instructional technology in higher education will be driven by the combination of constructivist, collaborative approaches with the existing and emerging technologies and tools. The critical question is whether this is transforming higher education or merely supporting and reinforcing existing practices.

Instructional technologies

These have a lengthy history (Saettler, 2004). The introduction of each one has initially been met with great promise, and there was a great deal of hope, enthusiasm and interest in their potential impact on institutional practices (Eraut, 1994; Reiser, 2007). This has led to a massive

influx of technologies into educational environments. But despite this, the much anticipated impact on institutional practices has not eventuated (Grineski, 1999; Merrill, 2002; Reigeluth and Joseph, 2002; Salomon, 2002; Reiser, 2007; Salinas, 2008).

This situation has trigged significant debates about the effects of technology on learning. For example, some think that technology is critical but others believe it is has little impact and the critical element is teaching practice (Clark, 1983; Kozma, 1991).

The latest instructional technologies are broadly categorised under the term Web 2.0. Examples of these technologies include wikis, blogs and social networking. This particular set of technologies is attracting attention because they allow for much more interactivity and collaboration (Maloney, 2007; Ajjan and Hartshorne, 2008). These emerging technologies are believed to be causing a paradigm shift in distance education (Kesim and Agaoglu, 2007) because they allow much greater learner control and input (Nagy and Bigum, 2007).

So are these technologies being used to sustain traditional approaches and how are they being used in educational environments? Traditional approaches appear to dominate (Reigeluth and Joseph, 2002) and this is impeding the most effective application of technology. As Salomon (2002) points out, technology cannot make a difference if it is totally subservient to existing practices. According to Howard (2004), technology has not fundamentally reorganised teaching and learning and as yet it is unclear how to make them transformative.

For this to occur, some argue that there needs to be a change in the learning paradigm (Merrill, 2002; Reigeluth and Joseph, 2002; Salomon, 2002; Salinas, 2008). This would mean a shift from teacher-centred to learner-centred educational environments. In short, adoption of instructional technologies must be driven by innovative ideas.

But it is not simply a lack of imagination or innovation. Other factors are also important in impeding the effective use of instructional technologies. These include instructional workload and responsibilities, too much emphasis on the technology, and a lack of support for faculty (Merrill, 2002; Salomon, 2002; Meyer and Xu, 2007).

Collaborative constructivist approaches
Successful use of instructional technologies is not simply to mitigate the deficiencies of current institutional realities such as lectures and large classes. Rather, the successful use of educational technologies will be directed to capturing the ideals and associated practices of higher education, for example critical thinking and discourse. The current instructional technologies can support this through the creation of an educational environment where students increasingly collaborate and construct knowledge.

This will help overcome the constraints in education that have made the large lecture a necessity. Instructional technologies can meaningfully engage students in a cost-effective manner, and sustain that engagement over time.

Community of inquiry framework
Moving beyond deficient individual practices in higher education requires an integrative model that would guide the design of collaborative constructivist approaches to teaching and learning. The community of inquiry framework could be this model (Garrison et al., 2000). This is because the purpose of this framework is to guide the use of instructional technologies to create deep and meaningful learning through reflection and discourse in e-learning environments. The empirical support for and adoption of the framework are increasing (Garrison and Arbaugh, 2007; Arbaugh et al., 2008).

The framework is underpinned by the concept of three presences: teaching, cognitive and social. There is growing evidence demonstrating the importance of teaching presence for the successful use of instructional technologies to support online learning communities (Meyer, 2003; Murphy, 2004; Wu and Hiltz, 2004; Swan and Shih, 2005; Vaughan and Garrison, 2006).

Teaching presence through task specification and active facilitation and moderation is the key to achieving cognitive presence. Instructional technologies have the potential to best serve the

development and support of cognitive presence in a learning environment. For example, according to O'Reilly (2005) the power of Web 2.0 technologies is their ability to harness collective intelligence by enabling users to add and discover new content and websites.

Social presence is about developing effective relationships in a learning community context. Web 2.0 technologies can facilitate this. For instance, personal blogs or social networking and media could support the development of social presence by providing mechanisms for self-disclosure or to express emotions, leading to a learning environment where learners know and trust each other more and as a result feel comfortable during the learning process.

It is unlikely that effective communities of inquiry can be developed in higher education institutions without the intelligent use of educational technologies. But despite its potential, the impact of instructional technologies has not reached the tipping point in terms of transforming higher education. Most educators are aware of the potential of instructional technologies and the necessary instructional expertise to support its adoption is in place. However, its uptake and application are being hindered by a lack of institutional leadership.

Institutional leadership

Large-scale adoption of instructional technologies in higher education institutions has most often been met with resistance. Despite its potential for educational gains, there is a general resistance to change within higher education (Duderstadt et al., 2002). This means that a concerted effort is needed to achieve institution-wide adoption of educational technology. Strong leadership requires the combination of vision and communication with action strategies. Approaches based on productive collaboration are more likely to be effective.

Transformational change at an institutional level will only occur when the idea of collaborative leadership is understood and adopted. In short, the successful implementation of instructional technology requires collaborative effort and cooperation among leaders at various levels of the organisation.

This involves all participants having a sense of ownership and the ability for input to be derived from a variety of sources. Leadership at various organisational levels is required because instructional technology must be adapted to specific contexts and needs. Clear direction, that is, policies, plans and communication, sustained commitment, and financial incentives, must be provided by senior leaders. Deans and department heads must provide ongoing academic support and recognition.

New leadership approaches are required. The successful implementation of instructional technology will depend on generative leadership. This approach brings together participants at all levels of the organisation to question deeply held assumptions and practices and, in the process, change the way higher education approaches teaching and learning.

Teaching and learning support is critical if instructional technologies are to be successfully adopted (Merrill, 2002). As such, they are gaining importance in higher education institutions. The range of services they offer is also increasing. These include instructional development, faculty consultation and professional development, multimedia development and production, and distance learning support and consulting services. These centres need to be supported by administrators if they are to achieve their goals.

Consistent with the idea of collaborative leadership, faculty involvement in the identification of appropriate and relevant programmes and policies is critical in creating a sense of ownership (Nworie, 2007). Without generative leadership and concerted support, the probability of large-scale, institutional adoption of instructional technology will approach zero.

Blended learning: uncovering its transformative potential in higher education

Authors: Garrison, D. R., and Kanuka, H.

Reference number: 34

Introduction

As e-learning becomes increasingly commonplace in higher education, educators are being forced to confront existing assumptions about teaching and learning. It is also challenging institutional leaders who increasingly need to position their organisations to meet the connectivity demands of prospective students and demands for higher-quality learning experiences and outcomes.

It is likely that the internet will be the defining transformative innovation for higher education in the 21st century. Transformation of higher education learning environments to meet the requirements of an increasingly electronic world is critical to ensure that e-learning's benefits are fully realised (Williams, 2002).

A source of this transformation is the ability of students to connect to a learning community at a time and place of their choosing. The increasing convergence of e-learning and traditional delivery (referred to as blended learning) is also having major impacts in higher education. Blended learning is an effective and low-risk strategy which positions universities for the increasing uptake and impact of technological developments that are likely to occur.

To meet their (and their stakeholder) expectations, higher education institutions need to discover their transformative potential and this is best achieved through the possibilities of more flexibility for learners and unlimited educational discourse provided by the internet.

Blended learning defined

Blended learning can be defined by establishing whether the technology component is effectively integrated into the teaching and learning or if it is merely an 'add on' to the traditional delivery. Blended learning should represent a significant departure from both a fully traditional delivery and a technology-led approach. It represents a fundamental reconceptualisation and reorganisation of the teaching and learning dynamic. Its complexity is further increased by the fact that no two blended learning designs are identical.

Effective blended learning has at its core more and higher-quality interactions and greater engagement through communities of inquiry. The internet can also facilitate a simultaneous and independent learning experience. If the goal of achieving higher levels of learning is to be sustained these communities need to operate effectively at both a cognitive and social level. Blended learning offers a distinct advantage in supporting higher levels of learning through critical discourse and reflective thinking. This is in part because blended learning can provide the independence and increased control essential to developing critical thinking.

Meaningful educational experiences

There is a large corpus of literature highlighting the potential of internet technologies and tools to support meaningful educational experiences (e.g. Hiltz, 1997; Marjanovic; 1999; Rimmershaw, 1999; Williams, 2002; Garrison and Anderson, 2003). But arguably more significant is the view that internet-supported discourse allows participants to confront questionable ideas and faulty thinking in more objective and reflective ways than might be possible in a traditional delivery environment. The rationale supporting this view is that there is a greater focus on the substantive issues and less distraction or noise in an internet-supported learning environment.

Blended learning supports more effective learning communities. These communities are necessary to sustain the educational experience over time and are essential to move learners to higher levels of thinking. Learning communities are also important because 'students with [a]

stronger sense of community tend to possess greater perceived levels of cognitive learning' (Rovai, 2002, p. 330). A community is also essential to engender commitment and ensure learners progressively move through the phases of critical inquiry.

The transformative potential
There is evidence that blended learning has the potential to be more effective and efficient compared with traditional delivery. Learners are also satisfied with a blended learning approach (Heterick and Twigg, 2003; Twigg, 2003). This may be because blended learning approaches allow professors to devote more time to individual learners and enhance the quality of the course through sustained development and innovation as well as teaching development.

Operational issues
Most traditional universities offer blended learning to selected learners based on individual faculty interest. As a result, the numbers involved tend to be small and there is little need for supporting administrative policy. But one of blended learning's defining characteristics is its ability to provide an interactive approach to large numbers of learners. If this is to be achieved, there is a need for a more formal approach to the development of policies and operations to support blended learning approaches.

Related to policy is planning. Two essential levels of planning are required to develop and sustain blended learning approaches: strategic and operational. Strategic planning involves identifying needs, goals, objectives, potential costs and available resources. Of these, cost identification is the most complicated and important. Costs that need to be determined include technology, delivery model and schedules, human resources such as administrative support, course developers, instructors and technical assistance, and infrastructure, for example, hardware and software, internet access, and office space.

Operational plans are necessary to operationalise the goals and objectives in an action plan. In a blended learning context, operational planning involves attending to non-teaching components including: promotional and advertising strategies, registration and fees, managing technology, and creating an effective assessment process.

The resources necessary to support blended learning fall into three broad categories: financial, human, and technical. While blended learning will require start-up monies in the longer term, it may be more effective and efficient (Heterick and Twigg, 2003). It is also necessary to provide release time and support for design and development. While these costs can be met by reassessing priorities within existing budgets, commitment from senior management is needed for this to occur.

Human resources are first and foremost the necessary personnel to support blended learning. But in addition to these skills and expertise, there should also be individuals who can provide personal attention and motivational strategies for teachers who are not convinced of the value of blended learning approaches.

Technical resources that are transparent and dependable are required so that technology enhances, rather than obstructs, the learning process. This means there must be course management tools in place that have the capability of meeting the learning needs and are up to date, and any technical tools must be reliable and easy to use.

More flexible or different scheduling of courses may be necessary to support blended learning approaches. But changes to this are a considerable challenge within traditional higher education institutions. Of even greater importance is the provision of support for both staff and learners. At a minimum, the provision of effective support requires an understanding of the teaching and learning environments that are used, in addition to situational, dispositional, informational and institutional barriers.

More specifically, there needs to be a dedicated student service support centre to help learners with technology access, which includes not only access to the requisite hardware and software but also the necessary skills to succeed in a blended learning environment. Teachers also need support, but unlike learners this is often not in place. Teachers require assistance with course

development, time management for the new delivery and teaching mode, and technical assistance.

The most effective support systems for teachers are those that provide a course development team to create blended learning courses. This team typically comprises the teacher as content expert, an instructional designer who assists with course design, and a media specialist who assists with the technical creation of course materials.

Organisational and leadership issues
While higher education institutions are typically resistant to change, blended learning is being increasingly adopted because it is an approach that can preserve and enhance higher education's traditional values. The current challenge for administrators, policymakers and staff is to acknowledge and accept that there have been significant and irreversible changes in societal demands, funding shortfalls, competition, technological innovations, and student demographics.

These changes mean there is a critical need for institutions to move creatively and assertively to confront and adapt to them. Successfully responding to these demands involves a change in mindset and a commitment to reposition higher education institutions in a teaching and learning context. Successful adoption of blended learning approaches by institutions requires:
- creating a clear institutional direction and policy
- framing the potential, increasing awareness, and gaining commitment
- establishing a single point of support, quality assurance, and project management
- creating an innovation fund to provide the financial support and incentives to faculty and departments to initiate blended learning approaches
- investing in establishing a reliable and accessible technology infrastructure
- strategically selecting pilot projects that prove to be exemplars of effective learning
- developing formal instructional design support through a blended format
- systematically evaluating satisfaction and success of the teaching, learning, technology and administration of the new courses
- creating a task group to address issues, challenges and opportunities as well as communicate and recommend new directions to the institutional community.

Achieving this will be a considerable challenge but will be easier if leaders apply the core values of higher education, scepticism, and inquiry to the way they conduct their core business. It also means that senior administrators cannot continue to manage at a distance. They must take positions and commit resources to developments that potentially have substantive academic returns. Effective institutions will respond with 'thoughtfulness and creativity, driven by a compulsion to turn unrealised potential into results; [less effective organisations will] react and lurch about, motivated by fear of being left behind' (Collins, 2001, p. 162).

Equality and diversity training online

Author: Godwin, K.

Reference number: 36

Background
E-learning (defined here as learning or training delivered using technology) is more popular in the UK than other European countries for workplace learning and its use by employers is increasing (Chartered Institute of Personnel and Development (CPID), 2010). This may explain why employers are rating its effectiveness more highly. Its main benefit is its cost-effectiveness, particularly when delivering training to large numbers of people.

Other benefits include its flexibility, uniformity of training delivery, an ability to present visual and audio information as well as text, ease of updating information and ease of tracking and personalising training. But e-learning will not work if learners are unprepared and unsupported. E-learning needs to be appropriately presented and adequately resourced.

Equality and diversity training at the University of Manchester

The University of Manchester introduced e-learning as the method to train its staff in equality and diversity primarily because of its cost-effectiveness. While the training is available institution-wide it is not compulsory. The university is unclear why some have not participated but believe it is largely due to time pressures. This training was also made available to learners because the institution decided it was important that its graduates leave with an understanding of equality and diversity.

Based on a 2010 pilot with learners, the training was made more interactive. This included scenario questions and podcasts. Plans were underway to make this training available to all learners. The university engaged in discussions with various faculties and teaching and learning committees to try and get them to encourage student uptake. Some parts of the university made this training compulsory, but others did not (this could be reviewed based on participation).

While e-learning may have limitations, the institution would have been unable to deliver standardised training on this scale solely using traditional delivery methods. It provides greater learner control and in an equality and diversity context the anonymity and privacy offered are also beneficial.

Recommended approaches

Institutions should try and embed e-learning training in their processes and systems. Preparation is critical in ensuring that e-learning is tailored to the institution and its policies and procedures. Organisations also need to do preparatory work in considering how e-learning training will align with existing induction and appraisal systems, and whether or not it should be compulsory.

CPID outlined the following recommended principles to underpin an institutional e-learning strategy:

- **Start with the learner** – recognise the limitations of the target population.
- **Relevance drives out resistance** – if the e-learning material is viewed as relating to something that matters in the organisation, people are more likely to use it.
- **Take account of intermediaries** – e-learning requires an intermediary to advise and direct the learner. It will not be successful if taken in isolation from other learning.
- **Embed activity in the organisation** – e-learning modules should be seen as one element in an organisational learning strategy; where possible their use should be linked with teacher-led courses and other HR management systems including performance appraisal.
- **Support and automate** – e-learning should not be used to automate all learning processes. It should be viewed as a powerful new element in a wider strategy which requires support for learners in the context in which they learn.

Perceived barriers to the effectiveness of e-learning in organisations that were identified included:

- ensuring learners have the time and space to participate
- providing appropriate learner support
- gaining line-manager support and commitment
- employee hostility towards e-learning
- motivating learners to complete the course
- sourcing attractive, relevant and high-quality content
- lack of basic ICT skills in the workforce
- limits of current technology infrastructure.

Sustainability factors for e-learning initiatives

Author: Gunn, C.

Reference number: 37

Introduction
New Zealand (NZ) tertiary institutions, like their international counterparts, pursue strategies to bring the pedagogical and practical benefits of e-learning to all staff and students. A common capacity-building approach is an institution-wide adoption of online Learning Management Systems. There are also a number of localised, teacher-driven enhancement initiatives that have evolved to become an integral part of the e-learning environment.

There is ample evidence that both institution-wide and localised developments enhance teaching and learning, yet the potential to transform practice is very different. This paper focuses on factors that challenge and enable long-term sustainability of localised initiatives across the NZ tertiary sector. The literature identifies this as a common challenge across many years and national boundaries (e.g. Darby, 1992; Alessi, 1997; Campbell, 2003; O'Grady, Rouse, and Gunn, 2009).

The wisdom of supporting localised initiatives has been questioned because of the complexity of supporting diverse e-learning systems. But there is compelling evidence of the educational benefits they bring to their host institutions and user communities. These include reuse of complex learning designs, transformation of large class teaching, enhancement of learning through peer assessment, and learner-generated objective test item banks (Gunn, Woodgate, and O'Grady, 2005; Gunn and Harper, 2007; Hamer, Kell, and Spence, 2007; Denny, Luxton-Reilly, and Hamer, 2008).

Based on this evidence, the study made two assumptions:
- While localised e-learning initiatives may not have the potential to scale up to institution-wide application, the scope for their dissemination does warrant support, and the work of the enthusiasts that drive them deserves greater acknowledgement than it currently receives.
- The investment of time, effort and resources in these initiatives could achieve greater educational and economic returns if appropriate forms of support were available. The lack of support creates high-risk situations that could be addressed for the benefit of all concerned.

Challenges that arise in sustaining localised e-learning initiatives include:
- embedded institutional structures, policies and support systems that are at odds with evolving strategic goals for e-learning
- A lack of influence on e-learning development, dissemination and uptake and their associated accountability measures
- the effectiveness of strategies for maintenance, ongoing support, and dissemination and for ensuring continuity for successful e-learning systems and practices.

Defining sustainability in an e-learning context
For the purposes of this study, an e-learning initiative is considered sustainable when all three of the following conditions have been met:
- A learning design involving information and communications technology has been developed and implemented within a course or courses of study. It has been through a proof-of-concept stage and has been judged, on the evidence provided, to be beneficial to teaching and learning.
- The e-learning concept, design, system or resources have proven potential to be adopted, and possibly adapted, for use beyond the original development environment.
- Maintenance, use and further development of the e-learning concept, design, system or resources do not remain dependent on one or a few individuals who created them, to the extent that, if their involvement ceased, future prospects would not be compromised.

Methodology

The study was grounded in a capacity development framework with two strands of activity: to identify and remove barriers to strategy implementation and to explore and reconcile different stakeholder perspectives (Horton, 2002). To collect data, semi-structured interviews with 30 staff from six of New Zealand's eight universities and three polytechnics were undertaken. Staff represented heads of the academic development unit, e-learning support staff, and lecturers.

Findings

The main findings from the study were that:

1. sustainability of e-learning initiatives is a common challenge across the tertiary sector regardless of the project's focus and scale
2. there is no one-size-fits-all approach to sustainability
3. notwithstanding 2 above, strategies that have proven successful in different contexts are available for consideration
4. accommodating different stakeholder perspectives is a critical success factor that needs to be interpreted with reference to specific contexts.

These findings support a similar Joint Information Services Committee study. Supportive organisational structures are critical to the success and sustainability of localised e-learning initiatives. But typically there is a considerable gap between policy and practice. This gap can be reduced or overcome by:

- an overall teaching and learning strategy that includes a vision for e-learning that is relevant, coherent and shared, with accountability measures at both management and practitioner levels
- flexible but measurable goals for e-learning that are reviewed on a regular basis with well-defined means of assessing performance against these goals.

But some institutions do not have an overall vision or strategy for e-learning; or if they do, many people are unaware of it. Other institutions focus exclusively on centralised initiatives such as Learning Management Systems implementation. This typically results in localised developments being relegated to the realm of enthusiasts who are prepared to work with low-priority status and without institutional endorsement.

As well as leading to a lack of support for these localised initiatives an over-focus on centralised projects means that, where deficiencies are uncovered, a work-around often has to be adopted. This means that the integration of these emergent systems is happening in a haphazard way and the pace of change is unacceptably slow.

Institutions that were attempting to either support both localised and centralised initiatives or integrate them with existing organisational systems and processes typically had measures in place such as information technology staff being able to deal with staff and student support requests for new e-learning systems. But often it is left to developers to offer this type of support and raise awareness of it.

High workloads, the difficulty in locating resources, a lack of real incentives to be creative, and limited tangible rewards were common experiences identified as impeding e-learning implementation. This was compounded by none of the sample institutions having effective accountability measures related directly to implementation of an e-learning strategy.

Supportive leaders tend to be based on personal relationships rather than being determined by policy or institutional practice. However, to succeed, integration of e-learning requires the same conducive conditions, incentives and performance measures as any other strategic initiative. At some institutions, e-learning initiatives are acknowledged in performance review, promotion, and award schemes. But accountability at senior levels is less common. This has adverse impacts on resource allocation and perceptions of priority.

Some initially successful e-learning initiatives were abandoned. Reasons for this typically include:

- pressure on key individuals to maintain discipline-based research outputs rather than focus on teaching and learning enhancements
- lack of access to ongoing funding after initial monies or fixed-term grants had been used
- low levels of interest from colleagues and other potential users
- developers with limited knowledge of dissemination strategies
- staff changes resulting in loss of continuity
- lack of awareness of, or failure to use, central services that could contribute to the initiative.

This highlights the risk for institutions of relying on key individuals for what, in some cases, has become an integral part of the teaching and learning environment in many departments as well as in other organisations. One initiative uncovered in this study was sustainable. It adopted a different approach: team teaching with tangible support from the department head. This support took the form of resource allocation, workload accounting, and recognition of teaching and learning enhancement initiatives in performance review and promotion processes.

This team approach ensures continuity and reaps the benefits of an internal community of practice. But despite its success, its wider uptake is doubtful because most institutions do not analyse successful examples or use them to inform e-learning strategy implementation.

Conclusions

It is important that organisational culture changes alongside the existence of key success parameters. But changing organisational culture takes time, partly because it is not simple or uniform or easily shaped by managerial intentions (Lisewski, 2004). Competing priorities can also hinder changes to organisational culture.

It is important that institutions consider development and dissemination as separate activities, with different teams being responsible for each. This is because the skill sets required for these activities are different to the point separating them is not only appropriate but necessary. An alternative approach to discontinuing educationally successful e-learning ventures would be to reconfigure central services so that they offer greater flexibility and stability.

This would mean initiatives would respond to student demand rather than being forced to fit within existing funding and support structures. This would involve a culture shift to a more collaborative approach. This alternative approach would also more likely be successful if institutions mandated central services to work with localised initiatives.

It is important that key players in e-learning strategy implementation define the nature of the supporting actions and identify appropriate lines of responsibility and accountability measures. Strategic initiatives driven from the centre often fail to appreciate the impact at practice level. Recommendations that fail to acknowledge various impact factors may also fail to address critical success factors or value the wisdom gained from front-line experience.

Expecting an individual to manage all aspects of an e-learning initiative is inefficient and unrealistic. This is because it is unlikely to succeed in institutional environments that at least promote, and in some cases demand, collaboration. Support for a low-risk proof-of-concept phase followed by collective action to disseminate and maintain it could both streamline and bring useful expertise to the process.

E-learning challenges many embedded traditions, which will take time and targeted action at different institutional levels to shift. Willingness to work with a new collaborative model to devise and implement strategy, as well as supporting localised e-learning initiatives, is particularly challenging for institutions with long-standing hierarchical traditions. This collaborative approach to strategy development allows local knowledge to inform strategic initiatives.

A balance needs to be struck between standardisation and central control on the one hand, and freedom to experiment and choose on the other. This often requires power shifts and establishment of new roles and functional relationships, which can be challenging to achieve. A

supportive environment would help more localised e-learning initiatives to prosper and allow educational design to drive the strategic e-learning agenda.

Organizational models for faculty support: the response of Canadian universities

Author: Haughey, M.

Reference number: 38

Background
As universities have introduced e-learning, what support structures have they put in place? What was the focus of these organisational units? How were they positioned within the institution and what was the rationale for this? How did they link with other units? How did they change over time? The focus of this article is on addressing these key questions that institutions should consider when they are developing and implementing e-learning.

E-learning support models
Traditionally, universities have developed a large number of services to support teaching. They range from scheduling and allocating classrooms to establishing technical services for the maintenance of appropriate instructional equipment. There was often a dedicated media unit for producing instructional materials. Depending on the institution, there may also be a dedicated unit for enhancing these materials and managing distance delivery.

But economic pressures have transformed this situation. Government priorities and directives, which have often led to the widespread introduction of technology, have also brought about change. Initially, technology was viewed by institutions as an effective means of obtaining greater administrative efficiencies and not necessarily to support their core activities of teaching, learning and research.

This focus is still important. However, the infrastructure demands are significantly different because there is a need to accommodate the increasing use of the internet and the growing use of personally owned technologies by learners. This was seen in the high uptake by institutions of Learning Management and other similar systems. But now institutions are becoming increasingly interested in how technology might better support teaching and learning, in addition to the administrative efficiencies it provides.

Canadian University case studies – University of Toronto
The University of Toronto has an 'Information Commons', a centrally run unit, which links library, media use, academic technology services, and teaching advancement, and provides support for staff and students with learning technology issues. The university has also established a specialised unit to support the use of emerging technologies in teaching, learning and research.

This unit's responsibilities include advising the university on trends and best practices associated with emerging technologies, evaluating existing software, and developing new technology-based services to support teaching and learning. They also cooperate with the Office of Teaching Advancement to offer seminars to staff related to technology integration. They also provide more discipline-specific technology support through their faculty-based Learning Commons units. Constituent campuses also have Teaching Support Units that combine enhancement of teaching with technology integration.

Queen's University
Queen's University has an Information Technology Services unit that develops, promotes and supports the application of information technology through group and individually based initiatives related to teaching, research, scholarship and administration. These initiatives range from the provision and maintenance of the computing infrastructure to developing IT expertise throughout the university. This unit is accountable to the Operations and Finance division.

A division of this unit, Learning Technology and Multimedia Services, consists of three smaller, specialist areas that provide support to faculty and undertake media production as well as maintaining and supporting 'smart' classrooms and portable technologies. One of the smaller units has a mandate to help develop educational computing applications for classroom use. This unit funds four part-time, one-year positions to support faculty in the critical and effective use of technology.

University of Western Ontario
This university, too, has an Information Technology Services (ITS) Unit which includes responsibility for all aspects of the information and communications technology infrastructure such as cabling, and network and systems services. It also provides web and instructional support for software applications through their Instructional Technology Resource Centre.

This centre supports faculty to integrate technology into their course as well as to develop selected multimedia and online projects. It is managed by an Advisory Board that comprises the Library Directors, Teaching Support Centre, Centre for Continuing Studies, ITS, the Coordinator of Summer and Distance Education, and a representative from each faculty on campus.

The Teaching Support Centre works in partnership with the Library and the ITS to (among other things) support learning technologies and online course development, and to provide information literacy and research skill development. The university has developed a strategic plan on instructional technology that maintains a faculty focus but accepts the need for increased professional staff and financial resources.

University of British Columbia
One of the goals of the University of British Columbia's learning plan was to fully integrate information technology into instruction throughout the university. This led to the development of a dedicated e-learning strategy. This was managed by the equivalent of a Deputy Vice Chancellor steering committee. Specific initiatives arising from this included a wireless e-learning infrastructure, redesigning of business processes to gain greater efficiencies, and a one-stop portal.

Support was provided through a variety of institution-wide and faculty-based units. In addition, each faculty developed a specialist e-learning support unit to provide a range of computing, media and pedagogical support for faculty. Further support is available through their ITS, which provides technology support to faculties, especially those without decentralised technology services.

At the institutional level, they have an Office of Learning Technology, which was created with a mandate to facilitate new and improved approaches to teaching and learning through the use of technology. They have attempted to achieve this through joint sponsorship of workshops and lectures, facilitating stakeholder discussions and coordinating cross-campus learning technology projects.

The other relevant centralised units are the Centre for Teaching and Academic Growth (TAG) and the Distance Education and Technology unit (DET). As part of its responsibilities, TAG provides workshops and seminars for faculty to assist them in making appropriate decisions about technology integration in their teaching. Both TAG and DET report to the equivalent of the Vice-Chancellor, Academic.

University of Alberta
After the introduction of the institutional Learning Management System (LMS), a dedicated unit called Academic Information and Communications Technology was set up to provide an integrated service for campus computing needs. Within their client support services, a specialised sub-unit called E-Learning Services provides expertise and support for other centrally supported teaching and learning technologies, professional development opportunities and training for faculty and staff, and course design development and support.

The continued growth of e-learning led to the establishment of another two specialist units, the Technology Training Centre, and University Teaching Services, which works closely with the E-Learning Services unit. The Centre provides workshops on their LMS and software applications for interested faculty and staff. The Teaching Services Unit offers some workshops on technology integration. Based on internal research they have proposed a dedicated unit to integrate services and provide policy support and direction for e-learning.

McGill University

McGill established a Teaching and Learning Services (TLS) unit. Its mandate was to promote teaching and learning initiatives, conduct research, and support the development of policies related to teaching and learning enhancement for both e-learning and traditional delivery. To support this mandate, TLS offered a wide range of professional development opportunities including workshops on course design and teaching with technology.

It also administered the Teaching and Learning Improvement Fund, which provided $50,000 (Canadian) annually for seed grants to encourage teaching and learning enhancement. They also have a specialist unit, called Instructional Multimedia Services, which provides multimedia design, development and production services including television production, and lends and maintains audio-visual equipment.

Key findings

The case studies suggest that the most common structure was an umbrella unit, centrally located, that coordinated the work of several specialist and/or service units. The focus of the units varied, with some focused on technology itself while others were more concerned with how this would be integrated in teaching. There are also indications that, for some, e-learning is an add-on to traditional delivery rather than being an integral part of teaching and learning practices and activities.

Cooperation tended to be complementary, with some of the units involved primarily in raising awareness of e-learning while others specialised in learning designs involving technology. Many of the units were centrally located but others were decentralised. These decentralised units in some cases were highly specialised, discipline-specific centres providing learner access to computer-mediated environments, while others were more closely aligned with faculty. Some had clear links to the umbrella unit and the wider institution while others had less transparent accountabilities to these particular areas.

Most universities had moved to greater coordination and integration of computing technologies with their audio-visual, multimedia, library and teaching enhancement units. Differences reflect varied responses from universities to the following issues: the extent of centralisation and the importance of decentralisation, the value of coordination and the advantage of competition, the separation of e-learning from traditional delivery, and the value of a mandated, top-down approach or allowing bottom-up development.

Learning for and in the workplace

Authors: Haughey, M., Faruque, A. M., Hensley, D., and Robinson, B.

Reference number: 39

Background

There is a significant need for workplace learning for those who have already left school. While they may be employed they may also lack the skills for further advancement or to set up a business. They may also be in a job they do not want to do long-term. Alternatively, they may be unemployed or under-employed. There are three case studies in this article. The one relating to Australia will be included but the others will not as they are not part of the bibliography's prescribed jurisdictions.

Apprenticeship training in the boat- and ship-building industry in small ports and Newcastle

The Hunter region is the traditional home of Australia's ship-building industry. Its largest city, Newcastle (sixth largest in Australia), is one of Australia's leading ports. The sustainability of its local vocational education provider is viewed as being directly related to the sustainable growth of the region.

For example, the Hunter Institute (the institute) has created numerous learning partnerships with community bodies and industries to support regional economic growth. The institute has also fostered systemic organisational change aimed at integrating technology and the flexible learning that it can support more broadly into its core teaching and learning.

To resurrect their boat- and ship-building provision they consulted widely with their local relevant industry. They identified a training need that was largely unmet because of the restrictions of the existing traditional delivery structures, which, for example, mandated classroom attendance and had courses delivered in a rigid sequence.

A safety issue was also identified which related to driver fatigue because of the large distances that had to be travelled to participate in training. From an employer point of view, particularly small and medium enterprises, learner absence was a major barrier to the uptake of traditional delivery training.

The institute has entered into a three-way partnership with industry and learners. For example, they use industry employees as workplace mentors to ensure that the apprentices satisfy the industry and institute competencies. The success of this partnership is determined by effective and ongoing communication between them.

The success of the new blended boat- and ship-building course has been identified in:
* learner retention rates
* strong industry links and satisfaction
* an increase in national and international enquiries to undertake the course
* growth in staffing and students.

The course provides for multiple entry points and attendance choices in addition to individualised learning plans. Resources are available in many different forms including online, through email, video-conferencing and document cameras, phone calls, printed workbooks, and traditional delivery skills workshops. It also has a blended pedagogy which encompasses live and self-paced modes of study. Assessment is carried out online and face-to-face.

Major lessons
* The importance of developing complementary and sustainable partnerships that involves the genuine sharing of expertise and ongoing consultation.
* The importance of open distance learning in meeting the needs of learners who cannot access campus resources.
* A plan that includes short-term success and long-term positive outcomes and is based on local community resources.
* The necessity of quality learning designs and the involvement of a range of stakeholders in the development process.
* Conditions that will engage and encourage commitment from learners and instructors are essential.
* The importance of employability skills and a focus on employment as an indicator of programme success.
* The issues related to how practical skills will be assessed. There may be more possibilities than institutions realise.

Taking the lead: strategic management for e-learning

Authors: Higgins, A., and Prebble, T.

Reference number: 41

Background

This annotation focuses on the executive summary of this report, which was the result of a collaborative research project by Ako Aotearoa and the Ministry of Education. This summary (and the full report) is intended for chief executives and senior executive officers of New Zealand's (NZ) tertiary education institutions and organisations so that they can consider their contribution to the strategic development and management of e-learning in their institution or organisation.

E-learning in its various guises is transforming the way NZ institutions are teaching and supporting their students. This transformation involves not only fast-developing technologies, but also complex redesign and integration of institutional systems, and the recruitment of new categories of specialists to assist teachers and managers to use these new technologies.

Much of the detail of this transformation process, quite appropriately, will be managed by specialist staff and middle managers rather than senior executives. However, if these developments are to achieve the key strategic institutional objectives, senior leaders and managers do need to exercise strong leadership in a number of key areas.

The purpose of the study was to identify these key areas and provide guidance for institutional leaders as to how they might be addressed. These areas are ones that can only be addressed by institutional leaders. Where appropriate, these are linked to individual institutional case studies, full details of which are provided in the larger report.

There were nine areas identified in the larger report and these were drawn from an earlier study on quality assurance for e-learning. This report reduced this number to six: strategy, structure, resourcing, decision making, collaborating and outsourcing, and selecting technologies.

Strategy

The critical questions to ask in this context are:
- What are the medium- and long-term strategic goals and objectives of the institution?
- How are these strategic goals reflected in the institutional teaching and learning plan?
- How are these strategic goals reflected in the institution's specific plans for e-learning?

Many institutions promote and endorse e-learning solutions without a clear understanding of the strategic objectives they are intended to serve. The five reasons given for an institution to introduce e-learning are to:
- meet the service expectations of students, staff and stakeholders
- allow an institution to enhance the quality of the student learning experience
- improve access and flexibility of study for learners
- increase enrolments by targeting new groups of potential students
- deliver teaching services more efficiently.

But it is unlikely that any individual institution could meet all these objectives. It is also important for institutional leaders to note that a quality e-learning programme will not be significantly cheaper than its traditional delivery counterpart. The key challenge for institutional leaders in this context is to ensure that institutional strategy drives the e-learning strategy. Successful New Zealand examples noted here tend to have e-learning strategies within their broader teaching and learning institutional plans and strategies.

Structure

In this context important questions for senior leaders to ask and address are:
- How should the institution organise and manage for e-learning?

- More specifically, who should be responsible for what and how should their various efforts be integrated and led?

Traditional delivery tends to be an individually led activity which typically lends itself to autonomous decision making. But e-learning requires new or different variations of existing roles such as development of online resources, management of the Learning Management System, and the provision of a range of network services. Some important decisions must be made about how each of these roles will be supported within an institution.

For example, to what extent will teachers be supported in the development of online materials? Ideally a production team consisting of an instructional designer, a multimedia expert and a web developer would assist the teacher, who would act as the subject matter expert. But the realities of cost and time tend to preclude this ideal approach. Most institutions instead opt for a small, centralised unit or team that comprises instructional designers to assist teachers to develop and manage their e-learning courses. The extent of support depends on the size of the support unit and the number of courses that are developed and redeveloped.

The location of this centralised support unit is also critical. One option is to create a separate e-learning support unit. While this has the advantages of a concentrated focus, it is also likely to create problems because of its overlaps and discontinuities with existing institutional teacher and student support. As a result institutions are increasingly incorporating e-learning support within these existing teacher and student support structures. Institutions may also wish to consider if their teaching units should have their own e-learning facilitators to ensure more customised and responsive support for teachers. But this too is an expensive option.

Institutions generally split teaching and network support for e-learning between their teaching and learning and IT units. This is appropriate. However, problems may arise if the accountabilities between the units are ill-defined or there is inadequate institutional leadership for its e-learning. The best example of these problems is the replacement or purchase of an institutional Learning Management System. IT and teaching and learning units will have different and often conflicting views and perspectives on this. It is the role of senior institutional leaders to become involved so a balanced decision is made.

Leadership support is critical. While ideally it would be the chief executive (or equivalent), this is not always practical or appropriate. It may be just as effective if another member of the senior team acts as the driver and champion of e-learning. But there is a risk in delegating this role to middle management such as the director of an e-learning unit. They are likely to lack the resources and mandate to drive a strong institution-wide strategy.

Specialised middle-managers such as directors of e-learning units can find it difficult to obtain the continuing cooperation of their counterparts (or more senior managers). This is particularly the case where their resource and system requirements are in competition with the very people whose cooperation and support they need.

Successful New Zealand examples have adopted similar approaches by embedding e-learning support within larger structures and in one case the library. Leadership for e-learning is being driven from different levels within these New Zealand case studies, from chief executives to senior managers and at a middle management level.

Resourcing
Chief executives need to be clear about two questions with respect to the resourcing of e-learning:
- How should e-learning be resourced within the institution?
- What will it cost?

While the focus tends to be on the second question, the first is more important. The process for resourcing e-learning among New Zealand institutions is typically as follows: early adopters are supported by targeted grants; a pilot programme receives similar funding; as the demand increases gaps are identified in the provision of services; central units are established and

resourced to address these gaps; e-learning support services are made available at no charge; as demand for this grows, these units are compelled to reduce their offerings.

By this stage institutions have two options. The first is to 'ring fence' and centralise e-learning funding and resourcing and treat it as a stand-alone activity. Under this option the development of e-learning strategies is generally resourced by 'top slicing'. Only selected courses, typically resourced by development grants, are developed to a pre-determined standard.

The second approach has the strength of allowing a corporate and strategic decision to be made about which programmes will incorporate e-learning. This is because it tends to adopt a programme-wide, rather than a piecemeal course-based, approach. An additional benefit of this approach is that it may act as a strong incentive for programme groups to make the effort to develop their e-learning components.

But in a regime of devolved funding, targeted central funding can distort the decisions that programme managers are making about how their particular programmes will be delivered. In addition, as the scale of an institution's e-learning grows, this method of funding it will represent an ever-growing proportion of each unit's total funding. This is unlikely to be conducive to ensuring the accountability of individual unit and programme managers.

The other option is to provide minimum centrally funded support services and devolve the decisions about what delivery mode to use and how this will be funded from current income to divisional and programme leaders. In theory this should encourage them to make rational and cost-effective decisions. But the downside is that this will significantly hinder the uptake of e-learning compared with a centrally supported approach. Of greater concern is the likelihood that this localised resourcing option will lead to variable quality and range of approaches across the institution.

On balance a centralised approach is supported. Institutions that have centrally provided development grants can target e-learning on a more strategic basis and ensure greater standardisation of provision. The scale of these grants within New Zealand institutions varies considerably: from $100,000 to $1 million. The case study institutions are adopting both localised and centralised approaches in this context. However, Otago University and the Auckland University of Technology have competitive grant systems that deliver modest support for selected programmes.

Decision making
The key question for institutional leaders to ask in this context is: who within the institution makes the decisions about which courses and programmes will adopt e-learning approaches and how will these be implemented? There is a continuum of options and approaches that institutions can adopt. At one end are individual teachers who are the primary decision makers. Most New Zealand institutions allow teachers to determine if they will adopt e-learning or not.

Where institutions provide e-learning related support it is typically provided centrally and covers a range of services such as how to use the institutional Learning Management System or more targeted training. But only rarely are teachers directed to deploy a given mix of e-learning tools to support their course delivery. Rather, academic developers in these institutions see their role as encouraging and supporting teachers to adopt teaching practices and delivery methods that best suit them. It is not their role to enforce an institutional standard or to compel unwilling staff to adopt e-learning.

But some institutions are adopting a programme-level rather than course-level approach. This is partly to ensure continuity for students in their mode of study rather than the variation inherent in a course-level approach. This variation is particularly problematic when the programme has been developed to meet the requirements of specific student groups (such as part-timers) but not all of its components do so.

A programme-level approach will require the active intervention of programme, and ideally of divisional, leaders. But it should not be viewed as a threat to academic freedom. It is no more of

a threat than the expectation that traditional delivery courses will be held in lecture theatres and classrooms.

Further along the continuum are institutions where the decisions about where and how courses are taught are made at a corporate level and for strategic ends. This model typically provides a strong injection of central resourcing and support. This approach was favoured in the earlier e-learning literature. Potentially it allows resources and efforts to be concentrated on those programmes that are likely to yield the greatest educational and financial return for the institution. It also provides for a relatively rapid development and implementation of a high-quality product.

However this approach requires institutions to make hard choices between competing options for scarce resources. It is more likely to be successful in institutions with a relatively corporate culture. It also requires a high level of commitment among the institutional leadership team to a shared vision and a steady uptake of this vision by staff. At one New Zealand case study institution the senior executive team makes these decisions based on rigorous business plans developed at the programme level.

Collaborating and outsourcing

Senior executives need to consider if any of their e-learning activities could be supported through collaboration or outsourcing. Reasons for adopting this approach include to:

- gain access to specialist expertise, knowledge, systems, courseware, networks or hardware.
- expand the presence of an institution's teaching programme
  leverage the presence and support services of providers in other regions
- achieve economies of scale by increasing both the student population and institutional capacity to meet their requirements
- comply with an external policy, regulatory or funding requirement for such collaboration.

Benefits for institutions in collaborating or outsourcing include enabling an earlier commitment to a new service, planning and controlling their costs more reliably, and the purchase of services outside their core business. But there are also negative aspects that institutions need to consider before adopting this approach such as a loss of direct control over these activities, reduced likelihood of developing the services in-house, potential disconnect between the services and the service provider, and the high costs associated with maintaining these relationships.

But rather than reject this approach out of hand, institutions are advised to consider the merits of this on a case-by-case basis. This view is supported by the fact that some New Zealand institutions have adopted both large-scale collaborative ventures and outsourcing successfully.

Selecting technologies

Periodically chief executives need to make decisions relating to the purchase or upgrade of their ICT systems. These are typically high-cost items in both capital and recurring terms. This is compounded by the complexity and challenges of the technology, which are difficult for non-experts to fully, appreciate. Institutional leaders may feel 'ambushed' by this process, particularly where it is presented as 'mission-critical', with few alternatives offered.

It is unrealistic for chief executives to master the technical details. But leaders need to have some way to make a decision based on a reasonable understanding of the fit between the strategic needs of the institution and the particular solution being offered. Ideally, they should have a set of diagnostic questions that they can ask of each proposed solution.

A basic (but substantial) list would consist of the following:

- **Strategic questions**: What is the problem that this technology will solve or assist the institution with? Do teachers/learners wish to teach/learn in this way? How do we know students will achieve their learning outcomes? Will the institution suffer if the solution is not adopted?

- **Staff development questions** – what are the implications for staff workload? Can this be managed? Can teachers use and manage this technology themselves or will they be dependent on support personnel? What are the implications for staff development?

- **Marketing questions** – will the technology open up new markets (geographic, demographic or subject)? How does this solution impact on the existing mix of technologies both for supporting and delivering teaching and for administrative/support systems? Does this technology offer the necessary range or quality of functionality and interoperability? What are collaborators and competitors using? Why would the institution want to use the same or a different system?

- **Finance questions** – is it a cost-effective solution in terms of capital and recurrent costs? How do the anticipated costs compare with current technologies? Will it displace any current services and associated costs? Can the institution control and/or anticipate future costs?

- **Technology questions** – is it a robust technical solution? Is it established, emerging, 'bleeding edge' or 'twilight edge'? What is the size of the user base? Can support be accessed both locally and remotely? Is this technology readily scalable? Can the technology be supported/maintained by the institution or is this dependent on an outside supplier? What infrastructure will be needed to support this system? Is it already in place? If not, what will it cost to develop? What level of disruption will this technology bring to existing operations? How dependent will the technology make the institution on outside suppliers? To what risks is the institution being exposed? Is there an exit strategy in place for the technology?

- **Intellectual property/privacy questions** – what implications does the technology have for intellectual property (IP) – both the hosting institution's IP in the technology itself and others' use of their learning materials developed using this technology? Does this technology bring with it any implications for learners/staff privacy?

Enhancing learning and teaching through the use of technology: a revised approach to HEFCE's strategy for e-learning

Author: Higher Education Funding Council for England (HEFCE)

Reference number: 42

Introduction
This document builds on HEFCE's 2005 e-learning strategy by incorporating reflections on how technology can support individual institutions to achieve some of their key strategic aims.

Key points
E-learning needs to be viewed in such a way that it fully describes the widespread use of learning technology to enhance institutional teaching, learning and assessment activities. The outcomes and benefits of e-learning will be different for each institution. Underpinning infrastructures, management practices, architectures, and services (both e-learning and general) have an impact on teaching, learning and assessment.

Using e-learning is one of a number of ways institutions can address their strategic missions. While agencies can support institutions, it is up to them to identify where they wish to focus their attention. Benefits may be felt at three different levels, depending on the type of intervention:

- Efficiency (i.e. existing processes carried out in a more cost-effective, time-effective, sustainable or scalable manner).
- Enhancement (i.e. improving existing processes and the outcomes).
- Transformation (i.e. radical, positive change in existing processes or introducing new processes).

The review suggests that technology can make a valuable contribution to the achievement of institutional strategic goals and priorities. Institutions need to consider how the use of learning technology is reflected in learning, teaching and assessment strategies. Institutions need to use technology effectively to support their wider aims and should take a strategic approach to achieve this.

Benefits of e-learning include significant improvements in learning, teaching and assessment and this is translating into improved learner satisfaction, retention and achievement (JISC, 2008). Institutional drivers for adopting e-learning include meeting learner expectations, enhancing the quality of teaching and learning, and attracting new student markets (Universities and Colleges Information Systems Association (UCISA), 2008).

Institutions need to conduct periodic and in-depth reviews of the use of technology which would cover:
- the extent of senior management support and strong central planning to align e-learning with institutional policies and processes
- obtaining a better understanding of the costs and workload requirements for both academic and support staff
- the challenge for institutions to move beyond pockets of innovative practice carried out by enthusiasts (Higher Education Academy, 2008).

Institutions have an opportunity to engage further with technologies with the intention of supporting learners in building knowledge collaboratively and engaging in social learning. They need to provide staff with support so they can effectively exploit the potential of the new technologies. Institutions need to be aware that learners increasingly expect to be able to use their own devices in institutional contexts, and to personalise institutional services to meet their requirements (UCISA, 2008).

E-learning can assist recruitment and retention of international students by providing more flexible approaches and better access to course information as well as enhancing curriculum development and delivery. E-learning needs to be a strategic priority for institutions when they are making investment decisions.

Staff development will support this investment. This is because strong pedagogic skills will enable staff to make good use of e-learning, and be better placed to revise approaches as technologies change. Senior management teams play key roles – both in increasing their own knowledge and understanding of the direction and use of technology, and in championing this among staff.

A suggested framework for institutions to enhance teaching and learning through the use of technology
This framework provides a range of suggestions for how e-learning can improve teaching and learning and what institutions should consider in order to support this. These include ensuring:
- tutors have access to a wide range of quality tools and resources
- the curriculum effectively supports e-learning
- technologies are 'joined up' to support institution-wide scholarship
- Web 2.0 technologies are effectively used to support communities of learning and research
- students can access personalised services, support and information at a time and place of their choosing
- there is continuity across teaching, learning, research and administrative environments to support joined-up processes
- technologies are used to support learners with special needs and to foster improved connections with local and regional communities
- technology is used to assist students to connect formal study with their work
- joined-up information systems are used to support learners in transition or while studying at more than one location or institution

- all staff have opportunities to practise and develop their skills for enhancing learning through the use of technology
- staff skills for e-learning are recognised in their roles and responsibilities and in reward structures
- institutional strategies include consideration of potential enhancements through technology
- enhancements through the use of technology are taken into account in quality assurance arrangements.

Teaching and learning with technology as enabler: a case study on flexible learning for postgraduate nurses

Author: Honey, M. L. L.

Reference number: 43

Introduction
This annotation will focus on the sections of this unpublished thesis that relate to its case study institution. The overall study focused on how this institution was providing flexible learning options for its postgraduate nursing students. The study noted that institutions face a number of important external pressures when they are considering flexible learning options. These include reduced funding and the need for many to focus their efforts on research.

The University of Auckland approach to e-learning
The University of Auckland has increasing flexible learning as part of its ongoing strategic direction. It states in its mission, goals and strategies that it aims 'to become rapidly responsive to changing information systems and capture the benefits of technology for its staff and students (The University of Auckland, 2001a, 2005). This strategic direction is reiterated in auxiliary policies and departmental strategies.

This strategic direction is based in part on the university's recognition that 'new teaching and learning technologies are transforming the educational experience of students worldwide' and as a response to this they will encourage and promote 'the development of flexible modes of teaching and learning, the use of new teaching and learning technologies, and computer assisted course management systems' (The University of Auckland, 2003a, p. 8). This suggests an organisational direction for e-learning that involves both staff and students.

Centre for Flexible Learning
This was established by the university in 2002 to provide an institution-wide focused service that would offer consultation, design and development of digital learning resources. The Centre is also responsible for:
- the ongoing development and refinement of the university's flexible learning strategy in consultation with the university's community through an advisory group
- promoting the appropriate use of educational technology
- promoting organisational research into the efficacy of flexible learning and promoting innovation for new pedagogy (Centre for Flexible and Distance Learning, 2004).

The centre employs staff with a wide range of expertise including learning, multimedia, and graphic design, project management, photography, video production, and web development. The centre invites expressions of interest from the university. Faculty submit project proposals. Once accepted, the project goes through a cycle of distinct phases: planning, design, development, implementation and revision. Progress is monitored according to a design plan developed by the project team. The project team consists of the teacher or content expert and the centre staff with relevant expertise.

The establishment of the centre was perceived as a way to operationalise the university's flexible learning strategy. This unit would provide the guidance that would enable the persistent and sustained development of flexible learning. But there was an early recognition that some

embedded political issues needed to be resolved. These included the university's stance towards distance education when they were a campus-based institution and pragmatic decisions concerning specifically the Learning Management System, and more generally information technology and information systems support and resource allocation.

But this centralised approach does have its drawbacks. It has hindered both the development and the support for e-learning at the faculty level. Faculty staff have noted that the centralised services were less flexible in meeting individual teacher needs.

Information technology services
The university centrally manages all IT infrastructures, facilities and services including the library, Learning Management System, and the student administration applications. IT support is provided for both staff and students through websites, and a central and library help desks. However, interviews with teachers indicated that sufficient resource allocation did not follow organisational strategic direction.

The confusion over which Learning Management System would be adopted, unanticipated demand, and less than optimal functionality meant its uptake was lower than planned. The decision to choose an in-house solution was also not met with universal approval, with some faculty and students preferring proprietary solutions. This was compounded by inadequate communication around the process and reasons for this decision. But the negative views did prompt an overhaul of the system which led to notable improvements in both its functionality and the way it was supported.

Staff development
Workshops, seminars and consultations on flexible learning and the use of multimedia and information technology in teaching and learning are available, along with specific courses on the Learning Management System (LMS). These LMS courses are provided at introductory, intermediate and advanced levels. But these LMS courses were seen by faculty as being irrelevant or difficult to access. However, when short, focused sessions were held on-site, attendance was excellent and they were fully subscribed. To be most effective this training needed to be just-in-time so it was immediately applicable.

Incentivising staff and recognising e-learning
One recipient of the university's top teaching award won it for their work in adopting the LMS, which resulted in 'not only streamlined course management, but (also) had a major impact on student access to constructive feedback, the mode of course delivery, and the extent of resources that could be easily made available to students' (Wilford, 2002, p. 5). The university also provides an annual one-day conference on teaching and learning and papers count towards staff research outputs.

To support improvements in teaching, targeted grants are available, in addition to specific funding for flexible learning initiatives. The university has recognised that these options need to be highly visible so more applications are received, and the results highlighted, as this is more likely to result in improvements to teaching and learning.

Copyright and intellectual property
Institutions need to be aware of potential copyright and intellectual property issues with the increasing use and sharing of internet-based resources and materials. For example, their staff may share the common misconception that information published on the internet is free from copyright restrictions (C. Haigh and Jones, 2005).

Faculty response
As noted, the university had developed a mission statement and goals towards increasing flexible learning. But the translation of these goals into practice was partially devolved to faculty level. The Nursing faculty recognised that in flexible learning there were potential benefits for both staff and students 'in terms of convenience, access and enhanced educational processes… However, these benefits would not be easily or quickly achieved and that the

organisation as a whole had a long way to go in facilitating and supporting achievement of its strategic goals' (Gunn, McCormick et al., 2002, p. 232).

Faculties use existing committees to support flexible learning. Proposals for changing a course's delivery mode are initially presented to a School Curriculum committee. The Faculty Teaching and Learning Quality Committee provide advice on curriculum, teaching, learning and related issues. The Flexible Learning Unit reports to this committee.

They also recommended the establishment of a Flexible Learning sub-committee, to consider faculty-wide flexible learning developments and issues. But this sub-committee was largely ineffective partly due to lack of guidance at institutional level. Explicit university strategy and leadership would have assisted the understanding of university goals.

The Nursing faculty ran a local flexible learning unit. It primarily offered video production facilities but was disestablished less than two years after formation and was replaced by a centralised equivalent. But the removal of a local service had a negative impact on the faculty.

This was because the local unit had been located in such a way that it encouraged collaboration with staff. It was also due to the fact that the centralised unit did not support video production so staff felt their efforts in this context had been wasted. The centralised unit also did not provide educational design services. These problems contributed to the local unit being re-established.

One key difference in this new iteration is the fact that it is supported by a faculty strategy and associated teaching and learning framework. They have a project management strategy based on their centralised equivalent. The expressions of interest are restricted to faculty but a robust selection process is used. The Unit Director meets with the different school representatives and they prioritise the projects, which are then approved by the Teaching and Learning Quality Committee. There is considerable variation in the projects and they range from providing advice to authoring solutions using multimedia software.

The Flexible Learning Unit provides faculty-specific support. It occupies a key position in the institution between staff and the centrally provided support structures and systems. Despite a mixed picture when it comes to LMS uptake, with some schools having high usage while for others it is low, flexible learning is considered to have 'improved academic service delivery within the faculty' and also 'the competitiveness of the Faculty; and the competence level and skills of graduate and postgraduate nursing, pharmacy and medical students' (Doherty and Honey, 2005, p. 67).

The study also suggested that many staff were being hindered in when trying to adopt e-learning by costs being incurred even when sharing between different faculties. Some teachers were also reluctant to share materials.

School level
At the school level, 'lone rangers' have been considered 'essential for getting innovation started, demonstrating the potential of technology for teaching, and ensuring technology is used when there is no systematic support from the organisation' (Bates and Poole, 2003, p. 139). One of the strategies used to assist the introduction of flexible learning at this level was the promotion of a school-based champion. They had responsibility to coordinate and facilitate flexible learning and provide support for it. This just-in-time support had a major impact on the increased uptake and usage of the LMS within the school.

The champion implemented flexible learning at this level through a formal project plan. It used a student survey to assess their needs and technology options. This plan aligned with institutional goals by supporting the progressive uptake of flexible learning across all their postgraduate courses. Flexible learning in this context had e-learning acting in a support role for traditional delivery, a more substantive role where more of the course was done online, and fully online options. There was initial resistance to the plan but the issues and concerns were mainly technical and practical, rather than pedagogical.

The uptake of e-learning in the postgraduate courses was heavily influenced by its success at undergraduate level, where students accepted its use early and readily and where teachers had increased confidence and demonstrated proficiency. At postgraduate level, a programme, rather than a course-by-course, approach was adopted. This programme approach was supported by the literature, where it was perceived to have much greater success (Abel, 2005).

Conclusions

There was a lag between these organisational goals and implementation. This is in part due to the constraints that the university faces as it tries introduce new initiatives at the same time as the requirement to provide business as usual. Valcke (2004) noted that higher education institutions often do not anticipate major changes when they are introducing flexible learning and that organisations tend not to approach these changes in a strategic manner. However, while this makes sense from a business perspective, the absence of a change management approach upholds the inadequate allocation of resources.

An organisational definition of flexible learning is advisable to facilitate discussions on related policy, development, academic and administrative practices (Gunn, 2002). This case study institution devolved key areas of responsibility to faculty and school as noted above and in response they developed separate but associated strategies. It is important to recognise that this can lead to a situation where strategies compete with and undermine each other, particularly within large and complex organisations (Marshall, 2004).

Ideally, strategy leads policy and resource allocation. One of the barriers to flexible learning is a lack of resources, specifically the lack of finance being apportioned, so while student numbers increase there are no additional resources (Bates and Poole, 2003). The lack of strategic direction in this case meant slower than anticipated take-up of flexible learning.

The organisation needs to support innovation. To achieve this, Barone (2005a) recommends a planned and progressive approach to the introduction of flexible learning. In terms of funding, Barone suggests that as projects are completed by innovators and early adopters, and flexible learning becomes business as usual, the budget and funding should already be in place to ensure scalable and sustainable advances. This includes funding for staff development in both pedagogy and the use of technology in teaching.

To provide a consistent institution-wide approach, rewards to support teacher innovation should be incorporated within organisational policies (Gunn et al., 1999). Much of the literature maintains that best practice requires rewards and incentives for teachers to encourage effective flexible learning (McNaught, 2001; Gunn, 2002; Abel, 2005). These rewards could also apply to teachers who take the risk of changing their practice (Ehrmann, 1995).

Mandating flexible learning through such measures as compulsory staff development and the use of educational technology being part of a teacher's assessment (Valcke, 2004) may become a deterrent to its uptake. Less direct measures are recommended, such as having clear accountability measures which allow for progress to be evaluated in annual performance reviews at each level (Marshall, 2004). But this does not mean that the organisation can reduce workloads or fund development time for flexible learning.

Staff development should be continuous, centred on pedagogy, with a technology learning curve that is not steep, and include follow-up of training sessions, and these should be readily available (Meehan, Obler, Schiorring, and Seban, 2002). Specific technology training must also reference the organisational LMS. But a model of personalised, on-demand staff development may not be sustainable (Barone, 2005b). Administrative staff need to be aware of relevant information and services that support flexible learning because their support is imperative for this to be effective (Cravener, 1999; Billings, Connors et al., 2001; Harris, 2003).

Complete, stable and reliable technological infrastructure is important when providing flexible learning. The importance of this infrastructure and associated technical expertise and support is well recognised (Cho and Berge, 2002; Marshall, 2004; Valcke, 2004). Organisational standards

for hardware, software, data transfer, and processing all contribute to the reliability of technology performance (Billings, Connors, et al., 2001).

But despite its importance, there is little guidance in the literature about the specifications that contribute to a reliable technology infrastructure. This is because each organisation has different requirements. However, recommendations from the literature do support an institution-wide approach as this has the potential to avoid historical silos, where administrative, research, teaching and library data and resources are all handled separately (Steinbrenner, 2003; Newman and Logan, 2006).

Limitations
Because this study related to only one institution, its findings may not be generalisable to other organisational contexts.

Future research
The following areas/topics were recommended:
- Flexible learning in other organisations.
- Impact of the organisation on student satisfaction, completion and success.
- Teachers' transition to flexible learning.

The promise and practice of e-learning within complex tertiary environments

Authors: Johnson, E. M., and Walker, R.

Reference number: 47

Background
In the transition to a new Learning Management System (LMS) this research project aimed to provide a 'snapshot' of existing e-learning-related instructional practice within a School in the case study institution. It was noted that much has been published about the potential of technology to transform education, but realising that potential has frequently proved difficult (Goldberg and Riemer, 2006; Kopyc, 2006).

The main goals of the project were to establish and evaluate the main features of the existing LMS used by staff, the activities and tasks that can be best supported in that environment or using other technologies, and the ideas and plans staff had for e-learning in the future, and to prepare a description of the state of e-learning within the School. The School covered a wide range of disciplines including languages, linguistics, geography, history, psychology, sociology, and media studies.

Methodology
Only e-learning courses were selected and from this a short-list of 60 staff was compiled, about half of whom were contacted. In addition, to provide a more comprehensive picture, selected members of the School's administration and University e-education committees were invited to participate. From this final list 15 semi-structured interviews with 17 participants were conducted. While not totally representative, it did provide a sufficient overview for this project's purposes.

Key findings
These can be summarised under Butler's (2006) description of successful organisational change within e-learning environments, which identified five key interacting factors including vision, skills, incentives, resources and action plan. The case study institution did have a publicly stated vision for e-learning. The relevant strategic goal was (in part) to foster innovative teaching methods. The stated policy to achieve this noted that developing innovative teaching and learning methods included normalising 'e-learning as an integrated dimension of teaching to enhance student learning' (University of Waikato, 2006).

However, e-learning is not defined. Understanding of what is meant by e-learning varies across the institution and there are different perspectives from agencies and students – from basic loading of materials online or on a CD to a more blended approach. This ambiguity about what e-learning means, combined with a lack of skills, incentives, resources, and a coherent action plan, severely compromises the ability of staff to achieve the institution's e-learning vision.

Despite individual manifestations of good e-learning practice, the lack of a cohesive community of e-learning teachers had limited the School's e-learning achievements. While initial training was sufficient, limited or no support had been provided on how to incorporate technology in a pedagogically sound manner into their teaching.

While staff identified time as the major constraint, the study believed it was more related to a lack of skills in effective e-learning practice. For example, much of the increased workload and time constraints was due to staff attempting to replicate traditional delivery pedagogies and practices in the e-learning environment and not leveraging the available LMS functionality to their advantage, for example in managing the increase in student interactions. The implication is that knowledge from other institutional contexts was not systematically informing their instructional practice.

But while a properly functioning e-learning environment does not need to consume large amounts of staff time, it remains the case that the initial transformation of a paper delivered by traditional methods to one that is delivered solely or partly by technology does involve a substantial (even if initial) investment of time. For example, an e-learning course requires a major re-evaluation of how students will be organised, how content will be presented, and how assessments will be undertaken.

However, this additional effort was not being encouraged, supported or recognised by the School. Not only was there no reduction in workload for other courses, but also no formal recognition through the promotion process (or any other mechanism) of e-learning-related leadership. This study believes that this lack of incentives has been a major contributing factor to the uneven and limited application of e-learning within the School.

Departmental resources and support for e-learning were unevenly applied across the School, which did include instances of good support. In contrast at the School level no support was made available for e-learning. There was also a perceived lack of knowledge and understanding about e-learning at the top administrative levels. At the institutional level support through a dedicated group within the IT department was reported as being excellent. This support was not only just-in-time and one-on-one but it was also flexible in where it was provided, and covered pedagogical as well as technical aspects.

However, this group had been incorporated into an arm's-length commercial enterprise. The respondents did not believe this expertise had been adequately replaced at an institutional, departmental or School level or even with the establishment of a dedicated committee. The help desk had become the main support avenue. But staff would have preferred a dedicated person within the School who would play a coordinating role by bringing together technical and teaching staff.

There was no overall strategic plan for e-learning and this could mean that e-learning developments at this School level would continue to stagnate. Staff are aware of the potential for technology to support and improve their teaching practice.

All of the study's findings suggest that there is a critical need for planning and careful liaison between School technical support, the IT unit, institutional level e-learning support, and teaching staff within the School. Most importantly the study's authors believe that there is a need for strong leadership. However, another major problem is the institutional view that e-learning is a technical, rather than a pedagogical, issue. This was demonstrated by the disestablishment of the e-education committee and the reassignment of its e-learning advisory functions to the IT department's technical staff.

As a result of the study's findings, the authors developed five major recommendations which were intended to maximise the organisation of staff expertise, provide a clear and visible sense of leadership and direction, increase the dialogue about e-learning processes and possibilities within the School and across the institution, and address the study's identified issues. This has led to public support from the Dean, development of a planning team whose first task is to clearly define e-learning, and technical and teaching staff meeting online and face-to-face so that new technology developments can be explained and pedagogical approaches shared, debated and trialled.

Strategic alliances – collaboration for sustainability

Authors: Johnstone, S. M., and Conger, S. B.

Reference number: 48

Background
Traditionally, universities only taught their knowledge to their on-campus learners. But now they can take their resources to students regardless of their location. However, this shift in location requires many adjustments to be made. Faculty members and other learner support staff must change what they do. None of these changes are simple or inexpensive because institutions must also continue to meet the needs and requirements of their on-campus learners. To make these transition costs acceptable, institutions are forming strategic alliances with others.

Provision is more complex with a wider range of disciplines to cater for. However, technologies can be used to link to other institutions that can provide these specialised or unavailable courses and programmes. Institutions could also work together to develop a distributed set of faculty members so each participant contributes some of the intellectual resources, and students registered at any of the partners can benefit.

As well as extending each institution's resources, these alliances can also improve an institution's reputation and capabilities (Daniel et al., 1986). But if they are poorly managed it can have the opposite effect as well as wasting resources. One of the most challenging issues in forming strategic alliances is working through all the details and expectations of the partners.

There have been some major distance and open-learning partnership failures. Arguably the most notable was the failure of the UK's e-Universities Worldwide venture, which despite considerable investment only managed to enrol about 900 students. There has been much commentary as to why this occurred.

In a 2004 article, the Observatory on Borderless Higher Education noted that one of its problems was bad timing, as it occurred around the same time period as the dotcom bust. But it also appears to have been funded as a reaction to international events rather any empirically supported estimate of global demand for, and interest in, fully online courses from English universities. The venture's management team made an expensive decision to create a course management system from scratch rather than using existing ones. Finally, unrealistic expectations around learner enrolments were set.

Interestingly, it is often as difficult to form alliances within a jurisdiction as with others from different countries. The most obvious reason for this is competition. Another problem is that institutions are established to serve different purposes, which can make it difficult for them to find common ground. Therefore it makes most sense to look for alliances among institutions that serve similar groups of students in equivalent subject areas without any history of competition between them.

There are two different ways to examine types of open and distance learning partnerships. One relates to the purpose of the partnership and the other is to do with who the participants actually are. The purposes range from working together to offer students degree or certificate level programmes, to hosting academic programmes from others, to testing or demonstrating equipment from a corporate partner. The simplest type of partnership can involve faculty from

different institutions working together in teaching a course. This does not generally involve the business side of the institution.

They can also involve different institutions offering unique courses but to the same learner cohort with formal agreements between them. These tend to be more complex, as they need to ensure that these unique courses are compatible with the learner's existing programme.
An example in practice is a virtual campus in Texas in the US where eight different institutions worked together to develop an online master's degree in business. The academic deans from the business faculty in the different institutions helped plan the programme. They agreed on a standardised fee structure and on which institutions would offer which courses to any student enrolled in the programme.

The institution where the learner originally enrols is their home campus and it maintains their records and issues the degrees regardless of where else the learner participates. Each institution contributes equally and they share the revenue, with a small fee going to the virtual campus to maintain the programme.

How innovative technologies are influencing the design of physical learning spaces in the post-16 sector

Author: Joint Information Services Committee (JISC)

Reference number: 50

Background
The efficient and effective use of physical learning spaces is a major issue for many educational institutions. This is because in an environment of reduced funding they are expensive to build, maintain and support. They also need to be able to support an ever increasing range of learning scenarios. The pace of technological development makes decisions about learning spaces particularly challenging. In addition, these decisions will seriously impact on the future direction and success of an institution.

This study arose from the recognition that many institutions are integrating learning technologies into their new and upgraded learning spaces. The outcomes of the study are to provide guidelines for senior managers to understand and manage the risks involved in projects to develop learning spaces and provide possible future scenarios.

Methodology
The project consisted of the following components:
- An initial questionnaire on current practice and planned developments. It comprised both qualitative and quantitative questions and was sent to over 700 post-16 educational institutions across the UK.
- Desk-top research into technological and pedagogical developments.
- Follow-up questions to expand on the questionnaire responses.
- Site visits to gain an in-depth understanding of institutional developments.

Current practice and trends
While learning spaces are diverse, for the purposes of this study they were allocated to one of four broad categories: teaching spaces, open access spaces, social spaces, and other learning spaces. In this context the main findings were:
- To allow for the rapidly changing technological environment, building and refurbishment projects need to 'expect the unexpected' and incorporate contingencies for future changes.
- While the use of wireless networking and mobile devices is growing, there is still a need for institutions to provide wired networking and fixed, desk-top computers.
- The provision of power sources for mobile devices is important and will be necessary for at least the medium term.

- The management and development of technological facilities within open access and social spaces is growing in importance.
- The design of all learning spaces needs to reflect the trend towards more student-centred, collaborative and group learning.
- The use of learning technologies within social spaces is of growing importance.
- Access to services originating outside institutional boundaries is increasing rapidly.

Strategic management

Despite differing job titles and names of management groups, the management structures were very similar. Larger institutions tended to use committee structures, whereas smaller ones typically relied on permanent, often pre-existing management groups. Drivers for institutional change fall broadly into two categories: operational and pedagogic.

Operational drivers were those that contributed to the effective, efficient and sustainable management of the institution and include such things as the need to refurbish poor estates, the physical infrastructures, consolidation of sites, and increases and decreases in student numbers.

Pedagogic drivers in contrast derived mainly from institutional teaching, learning and assessment strategies and/or changes in teaching and learning methods within faculties, schools, and individual subject areas. They typically related to the quality of student learning.

The evidence from the site visits suggests that where innovations were most successful both drivers were evident. This ensured that the innovations supported improved learning by improving organisational efficiency and by enabling pedagogic development.

Funding

This was obtained in three main ways: direct (often ring-fenced) monies from external agencies, monies from within the core institutional budget, and other external, often private-sector, funding. The most common source was agency funding followed by institutional budgets. The other key factor noted here was the distinction between recurrent and non-recurrent funding.

Recurrent funding allows for longer-term planning and a more organic approach to innovation. In contrast, non-recurrent funding has the benefit of enabling developments to be carried out quickly and institution-wide. While both have their place and bring benefits, the challenge for institutions is to obtain an appropriate balance between the two.

Change management

Innovation will bring change and this can involve some or all of the following: physical infrastructure, teaching and learning methods, staff roles, student expectations, and support systems. The development and implementation of innovative learning spaces will require effective change management. If the following components are in place, the change process is more likely to be successful:

- **Shared sense of purpose** – the project team need a shared vision to help establish and focus on their key aims and how they are going to achieve their goals.

- **Key stakeholders** – all key stakeholders need to be involved and share the sense of purpose for the innovation. Key stakeholders include a wide range of staff from senior management to support, as well as students.

- **Learning from others** – it is important to learn from other institutions and keep current with their developments. Site visits are recommended where staff and students are met, experiences are discussed, and innovative learning spaces are experienced.

- **Expect the unexpected** – while it is difficult to predict the future in terms of the development and use of learning technologies and spaces, it is important to have flexibility in the use of space. For example, if possible, new learning spaces should not be constrained by the building's physical structure. In terms of technical infrastructure, it is critical to factor in robustness in addition to flexibility.

- **Ownership** – this is a key aspect of effective change management. Academics, support services, and students must all have a strong sense of ownership about any innovations that occur. To achieve a shared sense of ownership and purpose, they must all be involved in the innovation's development. Ownership is also important on project completion. In order to ensure successful uptake, it is important that the end-users feel a strong sense of ownership.

- **Appropriate and timely staff development** – this is a critical part of any change process. Different teaching and learning methods can require significant changes in both academic and support staff roles. In order to enable staff to maximise these new roles, development opportunities need to be made available.

- **Appropriate and timely student induction** – sometimes referred to as orientation, this is also a critical component of the change process. As far as possible, technology should be transparent to students, so they can concentrate on learning rather than on the ICT. Where new skills are required, appropriate support should be made available to students at the time it is needed.

Senior managers' checklist

Senior managers need to consider the following critical success factors when changing or upgrading institutional learning spaces: strategic drivers, project management, practical aspects of learning space design, detailed design considerations, working with external organisations, commissioning (i.e. implementing, ownership and maintenance), and a procedural checklist.

For managing projects it is recommended that a working group is established to facilitate the project. To be successful this group needs to be led by someone with the appropriate authority and access to the necessary resources, have a membership that covers all the necessary skills, understand the project's key drivers, and represent all key stakeholders, including any external organisations, group or individuals.

It is essential from the outset that the project is fully specified. This specification should clarify the learning space's purpose, the envisaged usage and users, and the overall project budget and time frame. It should also be sufficiently detailed that all groups understand the project and their particular role within it.

The physical context of the learning space needs to be thoroughly understood before a project to redevelop it is undertaken, including its location and footprint and its relation to its immediate physical environment and wider institutional layout. Once this is understood the following factors should be considered:
- The relevant supplies and services such as utility services, power, data and telecommunications.
- The internal layout.
- Its sustainability and whether or not an 'intelligent' building design should be considered, although the study notes that this option will cost more initially and may be less flexible.
- Security.

Factors affecting classroom design include whether or not the:
- existing teaching space is in the right building or place
- classroom is the correct size. For example, is it large enough to comfortably accommodate the expected number of students?
- available technology can support the teaching
- space is flexible enough to meet future teaching and learning needs.

Other considerations include legal and compliance issues, fixtures, fittings, furnishings and equipment, control system, and the technical infrastructure.

It is recommended that pilot projects are used to support the implementation of these types of projects, as this not only familiarises staff and students but also provides the platform from which a set of guidelines and recommendations can be created for new users of the space. The

institution also needs to address who should be responsible for looking after the space and ensuring that it is maintained to a high level.

A procedural checklist would (at a minimum) include:
1. Identify from the institution's academic and other strategies the following: the specific need for the new space, and its primary use and user group; the vision for the space and where this fits with the wider institutional vision.
2. Appoint a project manager to lead the project working group, who, with the support of the institution's senior management will:
- define the project scope and produce an outline plan, both of which should be reviewed and refined regularly
- estimate total costs and identify available funding sources
- identify key stakeholders and establish a project working group to progress the design. However, all key institutional personnel outside this group need to be kept well informed of its plans and progress. In addition, the requisite external consultants need to be identified and appointed, such as architects and building contractors
- review the literature on similar work undertaken elsewhere within New Zealand and internationally
- undertake fact finding missions to other institutions that have completed a similar project.
- carry out the detailed planning and design
- ensure that measures are in place for the space's ongoing management and support and that its use will be incorporated into mainstream institutional business
- commission the space and hand it over to the user group and carry out a review to assess the effectiveness of its utilisation.

Further research
- Funding models – does recurrent funding limit innovation in the use of learning spaces?
- Management structures – what are the most effective management structures in the development, implementation and management of learning spaces?
- Evidence-based decision making and cultural factors such as risk acceptance – who are the risk takers and how do these people bring their teams together?

The teleological reason why ICTs limit choice for university learners and learning

Authors: Jones, D., and Muldoon, N.

Reference number: 51

Introduction
It has been suggested that e-learning is a major force for change in higher education institutions, which will potentially have a profound effect on the structure of higher education (Green and Hayward, 1997). But there appears to be evidence in the literature that the adoption of e-learning is limited in terms of the level of adoption, its diversity, and the level of flexibility and choice it provides to the majority of students.

The almost universal approach to the adoption of e-learning at universities has been the implementation of a Learning Management System (LMS) (Salmon, 2005; West, Waddoups, and Graham, 2006). Despite the potential choices for an LMS, institutions have tended to purchase only a limited number of models and have adopted a one-size-fits-all approach to their implementation and use (Feldstein, 2006).

But despite this universal implementation, use of the LMS within institutions is not comprehensive. Most universities are struggling to engage a significant percentage of students and staff in e-learning (Salmon, 2005). The limitations inherent in standardised products like the LMS, and the largely unfavourable views among the academic community about the value of

e-learning, are two of the major impediments to its widespread adoption. Allen and Seaman (2005) suggest that only a small minority of academic leaders agree that their faculty accepts the value and legitimacy of e-learning.

The growth of e-learning has only been incremental and it has not fundamentally challenged traditional delivery (OECD, 2005, p. 68). Most LMS use is merely transferring existing traditional delivery pedagogies to the new medium (Salmon, 2005). For example, evidence suggests that LMS use is restricted to administrative purposes and transmitting course documents to students (Morgan, 2003; Dutton, Cheong, and Park, 2003; OECD, 2005; Malikowski, Thompson, and Theis, 2006). These practices tend to validate the view that to date the adoption of LMSs and e-learning has not quite measured up to expectations (Twigg, 2001; Reeves, Herrington, and Oliver, 2004, Zemsky and Massy, 2005 cited in Wise and Quely, 2006).

But Cradler (2003) points out that whether or not e-learning is effective depends on how and in which context it is used. This paper argues that many of the limitations of university e-learning implementations are due to a design process that is arguably unsuitable for the higher education context and especially for the adoption of e-learning. The paper discusses what it sees as the dominant design process and how it limits the flexibility and choice in e-learning.

Teleological design
In theory, if not in practice, most universities follow a purpose-driven approach to setting strategic directions (McConachie, Danaher, Luck, and Jones, 2005). A purpose-driven approach is concerned with setting and achieving goals and objectives and this is the essence of its success (Introna, 1996). Strategic goals, operational plans, working parties, benchmarking, and quality assurance are all examples of concepts and processes from a teleological design perspective.

A good example of this approach is the selection of an institution-wide LMS. The purpose of this is typically established by a small group consisting of organisational leaders who draw on expert knowledge to perform a diagnosis of the current situation and then identify an ideal future state and how to get there. This approach will generally involve identifying user types and developing evaluation rubrics, and other similar tools and devices.

But the problem with this approach is that it assumes that, and can only work if, the system's behaviour is both stable and predictable (Introna, 1996) and universities are in an environment of rapid and intense change (McNaught, 2003). For example, digital technology disrupts conventional planning processes (Duderstadt, Atkins et al., 2002). This complexity is compounded by the increasingly diverse student body and provision (Jones and O'Shea, 2004).

This need for stability to recoup the costs of the upfront analysis, design and implementation phases inhibits the organisation's ability to adapt (Truex, Baskerville, and Klein, 1999). This can be observed when shifting from print-based to technology-supported e-learning or the widespread adoption of LMSs slowing down the introduction of alternative technologies such as Web 2.0.

The intermediate goal of a teleological design process is to achieve its purpose efficiently and effectively. In practice this means that any activity or idea that does not move the organisation closer to its stated purpose is viewed as inefficient. The importance of achieving this purpose is enshrined in institutional policies and practices which constrain activities within accepted bounds.

For example, the best return on investment from an LMS is when most (if not all) staff and students are using it. Innovation at an individual level is limited by institutional structures and policies, including those relating to copyright and intellectual property (Dutton and Loader, 2002). The resulting restrictions limit the capability of the system to learn and expand its scope of actions (Introna, 1996). The focus on efficiency leads to systems that users perceive to be insufficiently dynamic and often completely inappropriate for their needs.

Design focus and scope
The focus of teleological design becomes how to achieve the stated end, and in particular how to reduce the distance between the current state and the stated purpose. Such a system can become trapped in an ongoing process of 'problem solving' and does not engage in systemic thinking and reflection (Introna, 1996).

Some examples of this limitation from current institutional e-learning practice associated with LMSs include: filling job positions based on experience with the particular LMS being employed, a focus on workarounds to existing problems, and its influence on long-term strategy where some levels of the organisation consider LMS and e-learning to be synonymous, without considering other options or approaches.

This process also adopts a reductionist approach to complex problems, where the large problem such as implementing an institution-wide LMS is reduced to smaller and more manageable components that can be solved separately. This is problematic because the division, and subsequent isolation, of the resulting separate components do not reflect the rich interdependencies of organisational reality (Truex, Baskerville, and Travis, 2000).

This creation of isolated silos makes communication difficult and contributes to the organisation losing sight of the whole and limiting academic conversations, which are critical for universities (Laurillard, 2002). Ironically, the creation of institution-wide systems creates highly interdependent relationships between the different organisational entities but the silo approach described is inadequate to manage this (Hawkins, 2006).

Design process
The design process adopted during teleological design focuses on problem solving. Traditionally this separates the analysis of needs from the intervention. Its key assumption is that designers can fully analyse the situation, determine appropriate goals, and then manipulate the system to achieve those goals. But this rational assumption is unrealistic, as individual factors which are overlooked here are important (Truex et al., 2000). It is also unrealistic from a systems perspective, as LMSs can change teaching and learning in unanticipated ways (Coates et al., 2005).

The separation of design and use is compounded by the limited number and composition of a typical design team. Their skill sets are often not well suited to projects of this nature. Even when membership is widened, it generally includes those who have been successful in similar contexts rather than seeking out different perspectives and capabilities. Consequently, the successful experiences of the past can limit future possibilities.

Often there is an emphasis on what works for this small group of individuals rather than how it aligns with larger organisational learning objectives (Siemens, 2006). This limited perspective is also demonstrated by the widespread adoption of LMSs by universities. This raises the question of whether this is in response to prevailing trends or is merely an imitation of others (Pratt, 2005).

Design control
This limited number of individuals also manages and controls the design process. The highly centralised structures and policies that support this type of management and control often take considerable time to respond (if they respond at all) to local requirements, particularly where they are a poor fit.

This small group also manages conflicts that arise. Those who disagree with the chosen goal must be convinced to agree through various change management strategies. But these strategies are teleological and create more conflicts. Subsequently, a great deal of organisational effort which could go to other more productive activities is devoted to resolving internal conflict (Introna, 1996).

Conclusions
However, despite its limitations, most staff are wedded to a teleological world view. This is also reinforced by significant government requirements such as quality assurance and strategic plans, which are very teleological practices. Furthermore, adoption of an approach at the other extreme could lead to organisational anarchy, with no overarching plan for bringing together localised initiatives (Jones, Luck, McConachie, and Danaher, 2005).

An alternative approach is to consider the design attributes of a teleological process but, when implementing e-learning, seek to minimise the limitations inherent in its design. How this might work in practice is being tentatively explored (Jones et al., 2005; Jones and Gregor, 2006) but much more consideration and empirical work are required.

E-college Wales: a case study of blended learning

Author: Jones, N.

Reference number: 52

Background
The introduction of technology to support learning and training is gaining momentum with most universities for example now offering some sort of e-learning provision. Recent European wide strategies have e-learning as their top priority. In the UK one of the largest increases in workplace training is in e-learning. Institutions are also seeing improved learner achievement, interaction and satisfaction in blended learning (DeLacey and Leonard, 2002). Thomson and NETg (2003) found that blended learning had a greater impact on work performance than e-learning in isolation.

UK developments
E-learning implementation in UK universities is being driven in part by their response to demands for greater efficiency and flexibility. Despite the fact that many early adopter institutions failed to implement e-learning successfully because they could not attract or retain sufficient students, e-learning is still becoming widespread across the UK's university sector. The most glaring failure was the UK e-Universities Worldwide venture, which, despite the government investing £62 million, only recruited 900 students. Its failure was due to an overemphasis on technology at the expense of meeting learner expectations and requirements.

A purely online model was not popular among learners and this was reflected in this failure and the lack of success in similar US ventures. What learners wanted was a blended model and this approach has been more successful in Scotland (Flynn, 2004; Higher Education Funding Council for England, 2004b). This move to blended solutions in the university sector is being mirrored by similar developments in workplace training.

But as is the case with fully online learning, institutions need to consider a number of strategic and operational issues when implementing blended learning. These include:
- Start-up costs may be prohibitive.
- There may be a lack of evidence on the most effective course design to support blended learning approaches.
- Incorporating traditional delivery limits the place and time in which courses can occur.
- Offering more choice may pose challenges to the way universities are administered.
- There are challenges associated with quality assurance processes. For example, do the various blends of learning all meet the same learning outcomes?
- Not all students may have access to the supporting technologies including computer access.
- Some students do not want a traditional delivery component.

Definitional issues
One of the problems in implementing blended learning is a lack of agreement about what this actually means. It may also mean the supporting research is misleading because of this confusion around accurately defining what blended learning is. The approach the University of

Glamorgan in Wales has taken is to position e-learning on a continuum that indicates the amount of technology support that would be expected in a particular course of programme. The continuum includes:

- basic ICT usage such as PowerPoint presentations
- e-enhanced, where students can access online resources and the institutional Learning Management System (LMS) are used for course announcements, lecture notes and student communications
- e-focused, where the LMS discussion boards are used, assessment tests are done online and interactive learning materials are provided
- e-intensive, where whole courses or qualifications are delivered and moderated online.

E-college Wales approach to blended learning
E-college Wales was created from European Union funding for innovative online programmes. It offers graduate and postgraduate qualifications. At the time of writing, it had over 800 learners. These are learners who would not have participated in traditional delivery. Most retention issues have been due to the fact that many learners only want certain elements of the qualification, not its entirety.

EU funding meant the courses and qualifications could be offered for free as well as being able to loan computers to learners. E-college identified learner motivation and retention as two critical areas to be addressed if they were to be successful, because the student target group comprised those least likely to participate in open and distance learning without intensive support.

But despite this, the first year retention rate was low (50 percent). Reasons cited for this included work pressures, lack of time, illness and lack of IT skills. However, there were also course-related reasons such as technical problems, incorrect course choice and expected workloads being too high.

While some learners were enthusiastic about e-learning, others were anxious. Learners also reported missing regular face-to-face interaction, which made them feel isolated. This led some learners to conclude that e-learning was not suitable for them. There was a general feeling that motivation levels needed to be higher in e-learning than in traditional delivery and some students found it difficult to maintain the necessary level of focus.

However, alongside the course design, the other main reason for learner withdrawal was a lack of support from course tutors. But this low retention rate is not entirely surprising, as Mullich (2004) noted: 'the dirty little secret of e-learning is that a lot of people who try a computer module or online class won't finish it' (p. 1). This is backed up by Schooley (2002), who reported that 70 percent of those who start an e-learning course do not complete it and that the UK's largest distance provider, the Open University, only has 50 percent completion rates.

This has led many to believe that e-learning is ineffective and that the most effective remedy for this is to adopt a blended learning approach. The e-college has responded to this problem by adopting more intensive support for their learners. This includes a three-day induction programme that was delivered face-to-face. Learners unanimously reported that this reduced their anxiety about undertaking an e-learning programme. It improved their relationships with not only their peers but also their tutors. Garrison and Anderson (2003) concluded that 'such blended learning approaches have strong advantages that go beyond social presence'.

Their evaluation of the online learning programmes found that the most positive aspects of this approach were (in order): flexibility, opportunities to interact with peers, access to wide resources, an effective mode of learning and opportunities to interact with tutors. The most negative aspects were (in order): technical problems, isolation, lack of support, lack of student interaction and absence of face-to-face opportunities.

The traditional delivery component chosen by E-college Wales to support their particular blended learning approach includes face-to-face inductions; student led face-to-face meetings, and printed resources. Technology and online support include video-conferences, CD-ROMs

with instructions on the LMS, electronic library, interactive generic and customised content, e-tutors, technical support, student services, email, discussion boards and chat facilities.

It is important though that technology is not used merely to emulate traditional delivery but to identify the gains it makes possible and use these alongside existing best practices in multi-mode delivery. Younger students value the social and recreational activities and opportunities at university which are absent in fully online environments, and this is why many do not want to study this way. Face-to-face opportunities also contribute to an increase in student motivation.

E-learning is not neutral and technology is not just another way of delivering content. Technology challenges existing practice and its underpinning theories and epistemologies. Blended learning must be grounded in sound education theory; otherwise the risk is that learning is left to chance. The benefits of a blended approach outweigh its costs. Laurillard (2002) notes that the first attempts at e-learning are largely unsuccessful. This can only be overcome through more high-quality evidence.

Exploring the e-learning state of art

Authors: Kahiigi, E. K., Ekenberg, L., Hansson, H., Tusubira, F. F., and Danielson, M.

Reference number: 53

Introduction
While e-learning has been around for a long time, some argue its development is still immature (Hui, Guangzhi, Bo, Yiyi, Zhi, and Shangkai, 2005; Gao, Tong, and Rusu, 2006). While e-learning allows numerous opportunities to support learning, Garrison and Archer (2003) note that creating an e-learning experience involves 'a serious commitment to understanding the different features of this medium and the ways it can be used most advantageously to impart learning'.

It is particularly interesting to note that even in supposedly mature contexts, such as universities, there are wide discrepancies. While some have achieved considerable benefit from its adoption (Meredith and Newton, 2003), others are still struggling to realise the attainment of minimal educational value (Marshall and Mitchell 2002). This is despite skilled and motivated staff and increasing numbers of students wishing to use e-learning as the main delivery mechanism to support their learning.

E-learning changes to the higher education process
The structural changes in higher education institutions over the past decade have been mainly attributed to the introduction of technology initiatives (Singh, O'Donoghue, and Worton, 2005). This is because it has acted as a catalyst to combat the barriers of inflexible organisational structures (Shabha, 2000). As a result, many higher education institutions have adopted e-learning in their curricula.

E-learning has transformed the traditional teaching and learning models and strategies (Graven and MacKinnon, 2005; Suresh, 2005). The competitiveness created by e-learning has inexorably led to the implication that institutions who do not provide e-learning risk losing out. The current transformations of higher education processes have typically been attributed to:
- the drive to join the knowledge society and economy
- the opportunities presented by the advances in ICTs to meet the increasing student needs at reduced cost
- the growing demand in the labour market for skilled and knowledgeable employees
- the larger numbers of learners who seek to continue education in the workplace
- the increasing demand for alternative learning methods and availability of electronic learning resources
- collaborative research opportunities.

But successful e-learning implementation requires more than merely transferring print-based materials online and learning through that medium. To be successful in introducing e-learning requires an understanding of the technology and pedagogy integration for learning to take place effectively (Govindasamy, 2002; Engelbrecht, 2003). These transformations have also been influenced by the shift from teacher-centred to student-centred learning environments, where teachers typically take on a facilitator role and learners take ownership of their learning and personal development (Sherry and Wilson, 1997).

The adoption of e-learning has led to the emergence of new educational issues that have been mainly attributed to the perceived increases in workload and the lack of skills to develop and manage an online course. Serwatka (2002) also points out that the teaching techniques used in traditional delivery may also have to be reviewed and modified because they do not always prove to be effective or necessarily transferable into e-learning environments.

Emerging issues within the higher education context
Despite the advancement of e-learning tools, several emerging issues that impact on successful e-learning implementations in higher education have been cited. These include:

- **Identifying pedagogies that underlie online courses** – successful implementation of e-learning necessitates a two-tier training approach, that is, the learning which refers to the pedagogical aspects and the 'e' which refers to the technologies employed. This implies that the use of technology does not in and of itself cause or improve the quality of learning. Or as Garrison and Anderson (2003) assert, 'to realize (the) potential of e-learning as an open but cohesive system to support learning, it is essential that we rethink…pedagogy'.

- **Improving ICT skills** – the level of ICT skills for both teachers and learners affects the effective use of technology to support e-learning. Muilenburg and Berge (2005) point out that confidence and comfort in using ICT reduces barriers for teachers and learners and can assist student motivation and time management. So the lack of relevant skills interferes with the learning process and often causes problems for teachers and students alike.

- **Technology use** – Miller, Walker and Aayla (2003) assert that the 'arguments against online learning often focus on what is viewed as negative impacts from not having face-to-face contacts and anxiety caused by the nature and quantity of information transmitted through technology'. In a similar vein, teachers are often reluctant to adopt e-learning because they are too traditional in their teaching style, are unwilling to change or have perceptions that their workload has increased (Watson, 2001).

- **Management support** – Successful transitions to more flexible delivery modes require significant buy-in from senior management and a long-term commitment to support as well as foster and monitor strategic change (Scottish Funding Council, 2007).

- **Organisational processes** - Marshall and Mitchell (2002) point out the need to improve the organisational processes associated with e-learning. O'Hearn (2002) supports this view by contending that university structures are rigid and often do not support the incorporation of technological advancements.

Managing change for sustainability

Authors: King, B., Mallet, J. C., and Bates, A. W.

Reference number: 58

Introduction
This article considers a very specific aspect of sustainable open and distance learning: the point at which there is a conscious attempt to change existing practices and processes in a mature institution. The external environments within which institutions operate are constantly

changing. Attempts to manage these pressures lead to change proposals. This is challenging as change threatens not only the status quo but also the ongoing operations of the institution.

Sustainability in this article has three important dimensions. Firstly, there is the capacity of a system to endure over time or have resilience to potentially disruptive pressures either internally or externally derived. Secondly, there is a cost-benefit analysis which examines whether the system can continue to function without an unacceptably high commitment of human or other resources or is beyond the organisation's capacity. Finally, there is the question of whether achieving objectives continues to be worth doing and is defensible by reasonable argument.

Change challenges all three of these dimensions. Pressures for change will arise where current practice fails against any one of these dimensions. Therefore the capacity to manage change for sustainability is a critical skill for senior management and organisational leaders. While the article focuses on three case studies, only the two relating to a Canadian and Australian institution will be outlined here.

The Canadian case study

This relates to the University of British Columbia (UBC), which is primarily an on-campus institution but with some distance education provision. UBC created a specialist unit to help teachers develop appropriate materials and provide support to students. The mandate of this new unit was to move from print-based delivery to online courses and act as a change agent, to support an increased use of technology for teaching both on and off campus. This unit achieved substantive increases in e-learning provision and associated enrolments.

Their strategic plan included a renewed commitment to develop alternative delivery methods. The appropriate committee recommended a major increase in e-learning/distance courses, the development of learning technology support units within faculties and the recruitment of more staff for these. Spending decisions were to be devolved to the faculty level.

The university's senior management supported decentralised control of teaching and the integration of learning technologies. In particular, they believed that transferring expert staff from the centralised unit to faculties would strengthen the use of e-learning to support both traditional delivery and distance education. The challenge for UBC is whether or not the faculties can successfully integrate distance education into their core operations, while maintaining quality and growth.

The Australian case study

The University of South Australia (UniSA) offers both traditional delivery and distance education provision. Dedicated resources and support were provided for distance students. However, UniSA centralised and unified its support and materials in the form of a specialist unit which established 'one-stop-shops' for service provision on campus. But there is a very real possibility that, in doing so, genuine distance students will lose out in this new environment.

The issue for UniSA is how to promote its distance provision without an adequate infrastructure to meet new students' needs. It is unlikely they will revert to past practice. However, new arrangements building on a flexible delivery model for all, but giving greater recognition to the specific circumstances of those students who do not attend on campus, may have to be developed.

The problems of managing change

Managing change within open and distance education is not straightforward and is further complicated by an absence of clear models to guide practice that would lead to success. This is partly because change management models applied to institutions derive from outside education. It is difficult to apply these strategies when the external organisations from which they derive operate within a context where authority patterns may be clearer and their complexity much less than that of their educational counterparts.

However, there are authors who have worked to contextualise the change management literature to educational organisations (e.g. Hannan and Silver, 2002; Hopkins, 2002; Pennington, 2003).

But this has two important consequences. Firstly, it is likely that the resulting models will have to be further adapted and it may also oversimplify what is required. Secondly, any generalisations in this context need to be treated with considerable caution because of the very specific institutional environments into which they are being applied.

More than theoretical models are required. Stakeholder priorities, financial and other constraints, and the goodwill of participants are also critical in the decision-making process. Furthermore, much change in educational contexts is the result not of any conscious attempt to use a change management model, but of a series of 'commonsense' responses by decision makers to changing external contexts or new institutional priorities.

But despite these caveats, these theoretical models suggest common characteristics of successful approaches to change management that:
- emphasise planning and orderly behaviour
- take into account stakeholder views
- trial elements of a larger intended change with a view to discerning how those in the institution are likely to respond to what is proposed
- stress the need for data gathering and reflection on practice during the change process
- alert users to the likelihood of unintended consequences
- provide opportunities for recommitting aspects of the overall vision when the practicalities of implementation start to drive change in unexpected directions.

Most of the literature focuses on deliberate attempts to bring about change (e.g. Havelock, 1971; Miles, 1973; Parker, 1980) but some point out the need to understand more about unplanned change (e.g. Goodman and Kurke, 1982). But this literature also suggests that educational institutions can be quite resistant to change, with staff in particular often being strong advocates for the status quo. As a result, many change management attempts fail.

It also notes that the external environment changes more rapidly than the institutional one and that organisations are more responsive to these pressures in their establishment phase, rather than when they are in stasis (Wolcott, 1977; Meyer, 1979; Parker, 1980). Furthermore, change management in practice may not be as linear and purposeful as the literature suggests.

Institutional change is increasingly being recognised as being as variable as human behaviour. This is reflected in more recent literature that emphasises the role of people in the change process (e.g. Bridges and Mitchell, 2000) and can be summarised as 'we don't manage change, we manage people'. Bridges and Mitchell stress the difference between change being external to individuals (i.e. the intended new policy, practice or structure being introduced) and the internal process of transition (the psychological reorientation that people have to go through before the change can work).

They emphasise the importance of assisting people through the transition process, which can be more protracted than the actual implementation. They suggest that, generally, senior staff move through this transition process more rapidly than others. It is also acknowledged that some will never accept a change to the status quo. Bridges and Mitchell (p. 5) recommend that those responsible for change in a transition-management plan implement the following seven steps:
- Describe the change and its rationale succinctly.
- Attend to details, including timelines, and know who is responsible for each.
- Understand what is going to be lost and what maintained, and who is involved in each case.
- Help individuals accept the loss of the status quo in a manner respectful both of what is being given up and of the interests of those involved.
- Have a transition communications strategy that covers the purpose, the vision, the plan and the individuals' part.
- Create temporary solutions to temporary problems and the uncertainties that occur during transition.
- Launch the new change by articulating the attitudes and behaviours necessary for success and model them.

But it needs to be recognised that there is a difference between the changes necessary for introducing an agreed innovation and for implementing one that has yet to be realised. A pragmatic approach is required because even the best planned and managed change is likely to be altered by contextual factors during implementation. The important consideration in this context is the extent of divergence between intention and actuality and how this is managed.

In a distance education context, e-learning presents particular challenges. For example, it has challenged both the need for a specialist distance education infrastructure and the distinctive contributions made by expert staff.

Change processes
This list of issues to consider is based on the institutional case studies in this article.
1. The nature of the change proposed – the case studies show the importance of communicating change to staff who may feel they have to do more with less support and see the proposals as undermining existing student services. It also needs to take into account that local structures may have a perception that their power is being taken by new, centralised structures.
2. The organisation into which change is being introduced – this involves the organisational culture, potential conflict of the change proposal with existing culture(s), what else is happening at the time in the institution, links to the general planning and improvement processes of the institution, and necessary changes to the organisational structure.
3. The stakeholders – which includes the institutional leadership and the level at which this leadership is exercised, staff and their attitudes to the proposed change, students and their attitudes, other stakeholders, the processes of consultation, and differences of viewpoint.
4. The change-management strategy – which needs to take into account the extent to which an explicit strategy was adopted, dealing with changes to organisational culture, the timing of difficult decisions and the support necessary for taking them, and project management and business planning.
5. Preparing for change – which involves doing the groundwork, ascertaining the resources available for change, dealing with issues of resource allocation, and identifying the sources of likely resistance and developing approaches to dealing with them.
6. Supporting the change – by supporting cultural shifts, providing technical infrastructure, taking into account the impact of periods of expansion and contraction, providing professional development and building staff attitudes in all affected areas, ensuring there is support for students, re-engineering administrative processes to support the change, and making available rewards and compensation for those affected.
7. Outcomes of the change process – with an emphasis on evaluation and measures of success, identifying the achieved outcomes, examining the unintended consequences, ascertaining actual and potential losses, and developing steps to recover lost ground.

Flying under the radar: the importance of small scale e-learning innovation within large-scale institutional e-learning implementation

Author: Kirkup, G.

Reference number: 59

Background
Knowledge is increasingly viewed as a commodity and learners are often viewed by larger institutions as customers. Both the state and learners need to purchase knowledge and the operation and control of this process is referred to by Lyotard (1984) as 'performativity'. E-learning and knowledge media are now part of the process of this knowledge commodification. In addition, through their ability to track students as well as measuring and

controlling their activity, they are part of the system and tools of university performance management.

Using e-learning to control and regulate knowledge, which is associated with centralised control, means that the rhetoric associated with its role in institutional transformation is often viewed cynically by staff, because for many it means a loss of control and subsequent disempowerment and a de-emphasis on their skills. But in a decentralised approach, where educators are able to experiment with e-learning to change or enhance teaching and learning, it can be empowering for them.

Often these two approaches to institutional implementation of e-learning are seen as contradictory, which implies that it is an either/or choice. But because of their diverse nature, universities can adopt both approaches simultaneously. While the decentralised approach may be more successful in achieving transformational aims, there is a tension between this and the centralised approach, which attempts to integrate all e-learning developments into one platform.

The UK's Open University – a case study in how to implement e-learning
The Open University (OU) has been described as a 'mega university', because it has more than 100,000 students who are widely distributed geographically and supported by a range of technologies and delivery modes. However, the OU supports both e-learning and traditional delivery. Its virtual campus is largely for its distance cohort and supporting staff. The OU has used e-learning to support its staff, students and operations since at least the early 1970s.

Research suggests that e-learning has not fulfilled many of its early promises, particularly its adoption by the majority of staff and increased efficiency (Rogers, 1995; Zemsky and Massy, 2004a, 2004b). But despite this, many institutions remain, sometimes zealously, committed to the implementation of a virtual campus.

The OU is still largely wedded to an industrial-type organisational structure where it mass produces knowledge objects, its production and service delivery methods are designed for economies of scale and it is relatively inflexible and therefore unable to respond easily to changes in demand. But other parts of OU are more progressive. This intra-organisational diversity means that the way e-learning systems are implemented and used, and for what purpose, will vary in different parts of the institution.

Systems implementation, its definitions and use can lead to inflexibility. The OU is also constrained in its e-learning operations because of its mission for open access. It has a responsibility to deliver its courses in ways that minimise barriers to access. This has meant that it has not mandated student use of technology, so until recently it was easier for students and part-time staff to access the virtual campus through print, telephone and broadcasting media. While student access to technology is not mandated, all of the OU's courses/modules have Learning Management System websites and students' forums.

To support its e-learning, the OU has adopted a suite of unconnected tools and technologies rather than a systems-based approach. Staff have raised concerns that this does not constitute a proper Virtual Learning Environment (VLE) and there is a risk of interoperability problems emerging. But students prefer the tools-based approach as a systems approach is typically inflexible.

However, despite this, the OU adopted a Learning Management System (LMS) as its VLE. This was based on a centralised approach, and was a move away from the more decentralised path inherent in the tools-based approach. But there are a number of benefits that accrue from a decentralised approach.

The OU's web-based approach to online collaboration rather than using its proprietary system allowed more flexible ways of working that better suited the learners' work and study routines (Mason, 2000). This more flexible approach also allowed learning objects to be used as the underpinning content. Learners felt not only were learning objects more flexible, but they were also easier to use (Mason et al., 2005). It also meant they could be produced in other languages.

Finally, it allowed non-institutional technologies to be used. These included weblogs, podcasts and e-portfolios. This flexible approach and local responsiveness are seen by some as determining the success of e-learning initiatives rather than monolithic VLEs. The cost of developing and implementing these institution-wide VLEs has been very difficult to predict (Van Dusen, 2000; van Rooij, 2007).

Using a cost modelling approach often makes small-scale innovations that sit outside its parameters appear expensive or even invisible. The OU costs its programmes as two distinct activities: production and delivery. While this engages different areas of the OU, costs are allocated centrally through a dedicated, specialist unit. Despite the promise of reduced costs and greater efficiencies arising from the economies of scale possible in centralised VLE development and implementation in the OU, the actual costs of course development are very high.

Institutions should provide space for small-scale innovations to flourish as they allow experimentation to occur prior to large-scale deployment. This will help prevent expensive centralised VLEs being adopted that frequently do not deliver on the functionality promised. Exiting these systems and establishing other centralised alternatives is costly and reduces flexibility. An alternative approach is to envisage the system as a component-based one, integrated through the minds of its users rather than via digital systems architecture.

Call centres in distance education

Authors: Kondra, A. Z., Huber, C., Michalczuk, K., and Woudstra, A.

Reference number: 60

Background
When combined with customer relationship software, call centres can be a powerful tool in developing and maintaining the student-university relationship, and provide a critical link to the institution for isolated learners (Kondra and Michalczuk, 2007). It is important that the call centre's objectives support and enhance the organisation's strategic direction, because this means they are more likely to be effective. They can also provide a competitive advantage for those institutions offering these services. Traditionally, call centres are outsourced, but in an educational context this may not be appropriate.

Recommended call centre model
The recommended model for institutional call centres is to combine the professional and mass customisation models into a hybrid model. This hybrid model uses automation and process re-engineering to keep costs down while providing a high-quality, interactive experience. This model also requires its customer services representatives to exercise a high degree of discretion and skill because they are usually expected to deal with relatively complex user interactions. Technology should complement not replace these representatives.

But regardless of the model chosen, call centres have three main functions: student service and retention, direct marketing where students are advised of additional opportunities and can also be offered additional services, and managing information and student feedback. Given the isolated nature of distance education, this collation of feedback and information is critical.

Student services
Call centres provide an opportunity to provide a single point of contact for technical, academic and more general student support services. Call centre staff therefore need to be able to deal with a range of different issues from the same student. They should also be supported by experts or specialists, particularly for technical and academic enquiries. A rigorous and comprehensive set of Frequently Asked Questions is also critical.

But using technologies and supporting documentation also allows users to solve their own problems. This not only reduces the number of queries to the call centre but typically leads to higher levels of user satisfaction (Lawlor, 2001; Brandt, 2002; Jordan, 2003).

Direct marketing
In education the primary use of call centres in a marketing and promotion context is to field incoming calls from students who have learnt of the institution through advertising, word-of-mouth referral, the internet or some other means (Hitch and MacBrayne, 2003). In a distance education context this can also involve informing students about course availability and their performance and other similar queries that would normally be accessible for on-campus students. In this context student advice services are also important such as programme planning.

While 'cold calling' would not normally be appropriate in an educational context, they could potentially be used as student reminders such as upcoming assignment deadlines. They could also be used to inform or reinform them of potential new course or programme opportunities. But if they were made to students not currently in the institution, these calls would need to be approached with caution, and ideally would only be initiated if strict criteria were met.

Information management and student feedback
Greater accumulation of knowledge and good management of it can allow call centre staff to engage in a wider variety of tasks and potentially allow for greater economies of scale (Mitchell, 2001). Good data management is also important if call centre staff are to locate and disseminate information quickly and accurately.

These measures increase the ability of call centre staff to resolve issues on first contact rather than a call-back or escalation to another level (Kotwal, 2004). Supporting software allows institutions and staff to identify what the key issues are for students and thus allow a response to be developed including extra supplemental material and remedial services to improve student success.

Multiple call centres
This is common practice in the corporate world. In an educational context this could be considered based on student characteristics such as discipline, graduate or undergraduate as well as the type of query, with more complex ones being diverted to another centre. But it is recommended that these potentially separate functions are consolidated within the one support area because student satisfaction is more likely to be increased where different enquiries are dealt with in a single contact rather than multiple contacts with the same organisation.

Critical success factors
Call centres require an appropriate business strategy supported by relevant processes. Policies and standardised procedures are critical. Most importantly, quality monitoring and reporting processes must be in place so that the call centre can continue to meet its objectives. Call centres can add value by acting as a repository for organisational information and providing for more efficient use of staff time, for example by allowing academic staff to deal only with academic queries. In addition, with collaborative systems several representatives can simultaneously work on a particularly difficult student enquiry.

Technology needs to support the call centre's strategy (Evanson et al., 1998) and organisational requirements. It is being used to transform their operations by allowing contact with students in multiple ways and providing an accessible platform for feedback and additional information. But technology-enabled communications channels need to complement not compete with actual staff. It is also important that the call centre adds value to the self-service model that technology provides.

It is critical that call centre staff have customer service skills such as excellent spoken and written communication skills, and a positive attitude. It is also important that staff have appropriate experience and educational background to ensure they are capable of providing quality services to students. Ongoing training to keep up with rapidly changing technologies is also vital.

Call centres at Athabasca University
Athabasca University is Canada's largest distance education provider, with more than 32,000 students as of 2008. It has developed three call centres. Since the Information Centre was

established in 1995 as a first point of contact for students queries have increased greatly, as has contact through email.

The Computing Services Help Desk was established in 1994 to provide technical assistance but mainly for staff. A pilot call centre to support the School of Business was established in 1994 to investigate the feasibility of alternative tutoring methods.

Call centre use to support e-learning
Traditionally, distance education students were supported through comprehensive learning packages. But the call centre allows the separation of key roles such as tutoring and marking. These roles are generally combined and this can form a bottleneck in the effectiveness and efficiency of the instructional function by preventing the use of economies of scale. Call centres also allow for more effective and efficient use of staff time.

Technology allows learner support packages to be updated more easily and frequently as well as more effective distribution of student services. Call centres also allow problems in services or relationships between staff and students to be more easily identified and resolved, and ensure that accurate and consistent administrative information is provided.

Overcoming barriers to call centre implementation
Barriers include resistance to treating students as 'customers' and the intrusion of corporate practices in the educational environment. There are also concerns it may further depersonalise the institution-student relationship.

To overcome these concerns it is important that senior management demonstrate that a call centre is consistent with the institution's culture and values, and with academics' professional values, and is in the best interests of not only the institution but also its students. Call centres allow more immediate and tailored responses to student queries and provide more timely academic support.

But they should not deal with academic queries. They will add more value and gain more support from academic staff if they are able to deal with administrative-type enquiries. This support from staff would be increased if savings generated were used to encourage course designs that increase meaningful student-teacher interactions. Course design could also be improved if it was informed by student feedback and enquiries stored in easily accessible repositories.

Distance education students are more reliant on the institution than their peers, unlike their on-campus counterparts. Call centres can help improve this relationship and allow institutions to be more proactive in their dealings with students. Timely academic assistance may increase both student retention and completions.

E-learning and the first year experience: a framework for best practice

Authors: Krause, K-L., McEwen, C., and Blinco, K.

Reference number: 61

Introduction
The first year of study for university students is critical in determining their retention and engagement with e-learning (Krause, Hartley, James, and McInnis, 2005; Krause and Coates, 2008). E-learning has experienced rapid growth, so it is important that it is characterised by best practice in curriculum design and pedagogy as well as addressing student and faculty needs, and enhancing policies and practices.

But despite popular perceptions about the ubiquitous use of technology, and its capabilities, studies have found that many young, first year students only use a narrow range of technologies and not always effectively (Kennedy, Judd, Churchward, Gray, and Krause, 2008; JISC/Ipsos MORI, 2008). The project reported in this paper places particular emphasis on the relationship

between its proposed areas of effective e-learning practices in first year university study and existing Australian work in this area, particularly the Australasian Council on Open, Distance and E-Learning (ACODE) benchmarks.

E-learning best practices in the Australian context
The ACODE benchmarks and proposed best practice framework areas are compared in the table below.

ACODE benchmark areas	Student induction to e-learning best practices areas (BPA) draft framework
1. Institution policy and governance for technology supported teaching and learning	BPA7: Institutional management; may incorporate BPA1: Assessment and communication of expectations and BPA2: Recruitment and advisement
2. Planning for, and quality improvement of, the integration of technologies for teaching and learning	BPA7: Institutional management; may incorporate BPA1: Assessment and communication of expectations and BPA2: Recruitment and advisement
3. Information technology infrastructure to support teaching and learning	BPA4: Functional technology
4. Pedagogical application of ICT	BPA3: Learning and the learner (some overlap)
5. Professional/staff development for the effective use of technologies for teaching and learning	BPA5: Technology literacy and support
6. Staff support for the use of technologies for teaching and learning	BPA5: Technology literacy and support
7. Student training for the effective use of technologies for learning	BPA5: Technology literacy and support
8. Student support for the use of technologies for learning	BPA3: Learning and the learner (some overlap) **Specific first year issues addressed** BPA1: Assessment and communication of expectations BPA2: Recruitment and advisement BPA3: Learning and the learner BPA6: Non-technical online student support services

Several important features of the BPA framework include the role of advising and assessing commencing undergraduates' readiness to engage in e-learning and the importance of recognising the whole student experience, from managing pre-entry expectations, to supporting first year students with specific technology training, to providing a range of non-technical support services online. These areas are derived from the literature (e.g. Bocchi, Eastman, and Swift, 2004; Herbert, 2008).

Implications
The framework recognises that e-learning good practice shares much in common with that of effective teaching and learning in traditional delivery settings. But it also recognises the unique challenges that institutions, faculty, staff and learners face as they seek to optimise technology use to enhance the quality of student learning. The large numbers of students entering higher

education for the first time means that it is particularly important for universities to be proactive in preparing them for engagement in institutional learning environments, including providing them with sound induction and preparation for e-learning experiences.

Going the distance with online education

Authors: Larreamendy-Joerns, J., and Leinhardt, G.

Reference number: 62

Introduction

The purpose of this review is to place e-learning (which is defined here as fully online with no traditional delivery component) in its historical context, with an emphasis on its linkages with distance education. For example, e-learning initiatives are often coupled with visions of educational outreach, expectations of increased revenues, and renewed scholarly interest in teaching. However, these drivers have their antecedents in distance education and these can be broadly categorised as democratisation, liberal education, and teaching quality.

For the purposes of this annotation the focus will be on the liberal education and teaching quality themes. But current discussions of online education are also helpful in providing factual information about the ventures undertaken (Jaffee, 1998; Merisotis and Phipps, 1999; University of Illinois Faculty Seminar, 1999; Kriger, 2001; Werry, 2001; Tallent-Runnels, Thomas, Lan, Cooper, Ahern, Shaw, and Liu, 2006).

The paper also explores three current visions informing e-learning: the presentational view, the performance-tutoring view, and epistemic-engagement view. The review also covers organisational issues that act as constraints on e-learning as well as its pitfalls and pedagogical affordances.

Methodology

The review incorporates published and grey literature. The authors used both websites and databases, including the Educational Resources Information Centre and the PsycInfo database. Selected sources included journal articles, white papers, conference proceedings, books, newspaper articles and documents cited in bibliographies. Sources were included if they aligned with e-learning and/or distance education, democratisation, liberal arts education, and teaching quality. They also searched for disconfirming information about their emerging positions.

Distance education meets online learning

Distance learning through internet delivery has become a ubiquitous institutional practice. This has allowed learners to engage in forms of study and interactions that were not possible previously, such as virtual museums and labs, asynchronous discussions, and enrolling in online courses as regular residents (Scheines and Sieg, 1994; Feenberg, 1999; Hmelo and Day, 1999; Vrasidas and Stock-McIsaac; 1999; Yaron, Freeland, Lange, and Milton, 2000; Crowley, Leinhardt, and Chang, 2001; Malloy, 2001; Yaron et al., 2001; Cartwright and Valentine, 2002; Davies, 2002; Carnevale, 2003b; Scheines, Leinhardt, Smith, and Cho, 2003; Larreamendy-Joerns, Leinhardt, and Corredor, 2005; Corredor, 2006).

The growing presence of distance education has changed the landscape of formal education. For example, in some institutions e-learning is now mandatory (Carr, 2000). Others including Yale, Stanford and Columbia Universities, as well as the London School of Economics and Massachusetts Institute of Technology, have launched major e-learning initiatives (Woody, 1999; Kriger, 2001).

But these initiatives are dissimilar in purpose, scope and strategies. Some are providing online courses and materials to a wide audience, while others have created a separate business entity with an emphasis on expensive, high-quality programmes. Although some online ventures at top institutions have failed, sufficient have been successful to provide legitimacy to similar ventures in less well-known institutions.

In sum, e-learning has given distance education a new appeal, either by providing just-in-time learning to those who could not previously access tertiary education or by dealing more effectively with the limitations that have traditionally been attributed to distance learning. In this context it is not surprising that universities are moving rapidly to adopt e-learning with the expectation of expanding their reach, increasing revenues, and recovering some of the investments they have made in technology (Holzen and Rickman, 2003). Adopting e-learning also enhances their reputation because they are perceived as being more innovative and current.

There is evidence that e-learning is being driven by both centralised and localised initiatives (Noble, 1998; Feenberg, 1999). This increasing prominence has led to two differing reactions: one view is that this represents an unprecedented opportunity to overcome the limitations of traditional delivery. But the other view is that e-learning threatens the very essence of quality education. These views are similar to those expressed in the past when innovative pedagogies threatened the privileged status of traditional delivery and the teacher's role in it.

E-learning and liberal arts education

E-learning is used in a wide range of disciplines and subject areas. However, this is primarily in response to two visions for distance learning in higher education: firstly, that distance learning is 'opportunistic'; and secondly that it is a substitute for traditional delivery. Opportunistic in the context means providing alternatives for those who cannot or choose not to access traditional delivery. These different views on e-learning and distance education imply not only different stances on the role of institutions, but also different models of financial sustainability.

Teaching quality

Historically, quality holds the key to academic acceptance (Pittman, 1991; Institute for Higher Education Policy, 2000). But it is hotly contested because definitions vary greatly and untested assumptions easily get in the way of fair judgements. So distance education and e-learning are expected to demonstrate that they are at least as good as traditional delivery. Most of the concerns relating to distance education focus on the inherent limitations of the delivery modes it uses as they seek to replicate critical features of traditional delivery: social interaction, prompt feedback, engaging activities, instructional flexibility, and adaptation to individual needs.

Responses to this criticism vary: some have looked to improve distance education, others have attempted to demonstrate that it is equivalent to or better than traditional delivery, and another group have sought to expose the limitations of traditional delivery while at the same time focusing on features or contexts that make distance education unique (or uniquely appropriate). Distance education does have its limitations such as less interaction, being impersonal, and concerns about students cheating. This has meant that often it has been dismissed without careful consideration of its aims, processes and products.

It has also been required to meet standards that are known to be exceptional even in traditional delivery contexts (Jaffee, 1998). Too often, empirical research has focused on the effect of the delivery mode without considering the extent to which principles of good teaching and effective learning are enacted in the instructional environments (Cuban, 1986; Russell, 1999). Finally, claims about the quality of e-learning and distance education have been influenced by the existence of fraudulent institutions that sell degrees with little or no quality control (Pittman, 1991).

Lessons learned

Despite its potential and successes, distance education has also experienced grandiose promises, marginal commitment, and abandonment (Storr, 1966; Allen, 1971; Cuban, 1986; Pittman, 1991; Wright, 1991). Its success and endurance have been primarily due to perceptions of quality and significant institutional support resulting from social visions of their mission.

But it is clear that there is an underserved population that can benefit from distance education. However, this raises the challenge of reaching a vast audience without compromising quality, assuming that an essential component of educational quality is the adaptation of teaching to the

needs and characteristics of individual learners. Teaching has also been shown to be critical because it can overcome the limitations of the delivery modes.

Problems arise when there are significant and noticeable differences between on-campus and distance education faculty in key areas such as hiring practices, academic qualifications, research opportunities, and criteria for evaluation. Finally, the history of distance education demonstrates that quality is undermined when business becomes the prevailing model of distance programmes. This is because it can lead to academic controls and practices being bypassed in favour of supply and demand opportunities if left unchecked.

Sustaining distance education means a strong focus on the following: appropriateness of expectations, attention to student diversity and learners' individual needs, educational quality as it relates to the use of teaching and learning technologies, engagement in these initiatives by mainstream scholars, and observance of academic models of organisational functioning.

Contemporary e-learning
The first view influencing contemporary e-learning can be summarised as the presentational one or the promise of multimedia environments. The proliferation of multimedia use in e-learning has two rationales: first it can make challenging disciplines less so by turning abstract concepts into visual representations. This approach has support in the literature (Larkin and Simon, 1987; Tabachnek and Simon, 1998; Seufert, 2003; Tsui and Treagust, 2003). But Mayer (2001) demonstrated that it could hinder learning because visualisation can focus on irrelevant content and detail. The effect of multimedia in this context is based on its conceptual transparency and instructional relevance.

The second rationale for multimedia use is its ability to more closely replicate traditional delivery by allowing personalisation of what would otherwise be pure content. However, regardless of the rationale, caution needs to be exercised. Good graphics and visualisations do not replace a thoughtful explication of concepts, processes and procedures underpinned by conceptual principles.

The second view important in contemporary e-learning is the performance-tutoring one, or intelligent tutoring systems. These systems recreate complex problem-solving tasks and support critical features of pedagogical exchanges between students and teachers. They can also keep records of learners' online behaviour and therefore can provide just-in-time intervention as well as feedback to faculty.

These systems are designed on a number of key assumptions. Firstly, meaningful learning occurs best when students engage in problem-solving activities and 'learn by doing' (Zhu and Simon, 1987). Secondly, meaningful learning is enhanced when the feedback given to learners is crafted on the basis of their behaviour and a model of their knowledge base (Corbett and Anderson, 1992; Shute, 1993; Corbett, Koedinger, and Anderson, 1997; Swaak, Joolingen, and Jong, 1998; Miller, Lehman, and Koedinger, 1999; VanLehn, in press).

Finally, these systems are necessary because teachers are unable to provide such rapid and personalised critical assistance to their classroom students. This approach has a number of advantages. It increases student-content interactions and can transform passive learning experiences into active ones. It can provide a more personalised experience. These environments constitute exemplars of teaching practice that can be inspected, evaluated, and used to support faculty development (Leinhardt and Larreamendy-Joerns, 2003). It also means student contact time can be transformed to serve alternative educational purposes.

But there are two barriers to large-scale adoption of these systems. First is the cost. If the aggregate costs of research, software development, evaluation, and sustainability are factored in, these systems become prohibitively expensive, except for institutions that possess accumulated experience in the field. The second barrier is whether these systems can ever be sufficiently flexible or possess the intellectual depth to be of use outside limited contexts.

For example, they are based on component pedagogy where learning occurs seamlessly from simple to complex. But excellent teachers engage in uneven, non-sequential pedagogy and as a

result make more detailed higher- and lower-level links than granular teaching methods. It also does not take into account the importance of social features of learning as exemplified through participation and identity formation as part of a community of practice (Lave and Wenger, 1991; Lave, 1997; Kirshner and Whitson, 1998; Wenger, 1998; Packer and Goicoechea, 2000).

In terms of engagement, e-learning provides opportunities for reasonably sophisticated interactions through computer-mediated communications that can take place both synchronously and asynchronously (Scardamalia and Bereiter, 1993, 1994; Cohen and Scardamalia, 1998; Duffy, Dueber, and Hawley, 1998; Hoadley and Pea, 2002; Hiltz and Goldman, 2005). But this may not be sufficient. This is because the tendency within e-learning literature is to view social interaction as sufficient to guarantee learning and community building.

However, the mechanisms responsible for learning in the context of instructional dialogues are unclear. What is known is that reflective learning and co-construction of knowledge are not an inevitable consequence of student-student interactions (Henri, 1995; Tolmie and Boyle, 2000; Picciano, 2002; Hoadley, 2004; Hiltz and Goldman, 2005). It is also clear that successfully orchestrating a dialogue demands fairly sophisticated skills.

Organisational issues
Critics of e-learning acknowledge its ability to significantly increase educational coverage but are concerned that it may lead to education becoming a market commodity to the detriment of the institution and student learning. This could lead to the disenfranchisement of faculty within higher education institutions and the prevalence of non-collegial forms of academic administration.

For example, institutions can adopt e-learning for financial rather than pedagogical reasons, which reduces academic input into decisions that directly affect them. It could also restrict staff power by reducing them to curriculum implementers rather than generators (Jaffee, 1998). To avoid these problems it is important that institutions have teachers and students meaningfully involved in course or programme design.

E-learning could also lead to a 'digital divide' between institutions. The development of quality e-learning materials requires considerable resources, from technological infrastructure to expertise in pedagogy, computer science and programming. Therefore, although the delivery of e-learning may be cheaper than its traditional delivery counterpart, the start-up and maintenance costs of sophisticated online environments can be prohibitively expensive, meaning it is only possible for the select few to offer this type of provision.

Avoiding pitfalls
The major threat to successful e-learning in higher education institutions is the divorce of instructional design and implementation from mainstream academics. If they are not involved, e-learning courses may become didactic oversimplifications of the subject matter or could map the domain inappropriately. No amount of technological innovation can compensate for an ill-conceived e-learning environment.

This separation can occur because of financial constraints, the fact that the initiatives are marginal to the faculty's core activities, or because over-reliance on technical knowledge effectively transfers the control of pedagogical decisions to technical experts. To avoid this separation an institution can:
• secure faculty members' real ownership of their authored online courseware
• provide recognition to tenure-stream faculty for high-level participation in, and community building around, e-learning initiatives
• set equivalent academic expectations for distance and on-campus e-learning courseware
• hold back pressures involved in scaling up
• pay faculty commensurately for the substantive amount of time it takes to produce and run e-learning courses.

Institutions need to be cautious about equating quality and establishing benchmarks on the basis of traditional delivery standards. For example, the fact that there is no significant difference overall between e-learning and traditional delivery could mean that both are mediocre, that e-learning is lacking pedagogical innovation and rigour, or that they are of equivalent quality.

Finally, e-learning must not be used in a one-size-fits-all manner based on what has worked in other contexts. If it is used this way, subjects that have not proven amenable to e-learning will be excluded or alternatively it could impoverish the domain to fit its capabilities. Variability will allow e-learning to meet the expectations of an increasingly diverse student population.

Meeting the promises
Setting realistic expectations for e-learning is important. For example, it plays an important auxiliary role to traditional delivery and could be the difference between a student's retention and their withdrawal. This auxiliary role is also important for faculty members in higher education institutions with limited resources. For example, it can make novel ways of considering and teaching subject matter available to them.

It is clear that the ultimate potential of e-learning to enrich higher education resides less in the technology itself than in the practices and discourses that it prompts both individually and institutionally. It is also important that it does not replicate existing educational deficiencies. It is more likely to meet its potential if it reduces educational inequality by providing wide access to quality learning opportunities that take into account learners' individual differences and the nature of the subject matter.

Institutional policy for vocational education and training delivery

Authors: Le Cornu, P., van der Merwe, D., Moore, D., Nduba, S. K., and Rennie, F.

Reference number: 63

Background
There are three case studies of institutional processes and policies used to support vocational education and training delivered by distance education. But for the purposes of this bibliography, only the one from Scotland is focused on as the other two relate to jurisdictions not considered.

Case Study – The University of the Highlands and Islands Millennium Institute (UHI)
This is a collegiate network of 15 academic partners who have united to create a single institution. This is seen as a transitional step to the eventual creation of a new university for the Highlands and Islands of Scotland. The partners are diverse, ranging from small colleges of further education that are mostly focused on vocational training to larger centres that deal almost exclusively with research issues. This has created tensions within the network, particularly in relation to perceived levels of resources, staff training, and terms and conditions of lecturers.

The region comprises almost 50 percent of Scotland's land mass and has the second lowest population density in Europe (a total of 455,500 residents at the time of writing). In terms of land use and per capita GDP this region is classed as severely disadvantaged.

To support a seamless educational path for learners and the potential creation of new economic and social opportunities, the underpinning provision of UHI is based on their traditional curriculum of vocational education. It has extended its course provision to include undergraduate degree programmes. This route has been chosen because it has been externally validated by the Scottish Qualifications Authority (SQA). But it has chosen to adopt its own, not SQA's, assessment processes as SQA's were seen by staff and students as having too many components that did not accurately determine learners' knowledge.

This approach has had three main policy implications:
• The incorporation of measurable and professional capabilities within UHI's degree work.

- The extension of online learning resources from higher education to include further education courses.
- Network standardisation of assessments and criteria.

But despite this, UHI maintains a strict segregation between its higher and further education provision. Higher education is the responsibility of the network. However, further education is left to the individual institutions to manage. The need to standardise assessments arises because of the increasing provision of tuition between partners. This has meant consistency is becoming more important and there is subsequently greater pressure from a quality assurance perspective to insist on a common framework for the construction and administration of assessments where the course or module is offered by more than one member of the network.

One possibility to achieve this is to create a number of subject centres that will be distributed throughout the network according to participant specialities. They would be responsible for coordinating the administration of a common assessment process.

UHI has also created new programmes to support its economic development objectives including an undergraduate degree in rural development which is delivered fully online. To meet learner expectations (most of them are mature aged) the academic experience is embedded in a real vocational context.

In practice, implementing personal and professional capabilities within their provision has proved challenging. This is partly due to learners' reluctance to be directed towards anything apart from academic tests. It is also due to tutor discomfort over the consistency of assessing learners' personal and professional capabilities. But future plans would make it clear to learners that completion of a piece of learning would indicate not only their academic ability with the subject but also their competence with the process.

Delivery strategies
There has been a gradual shift away from traditional delivery. This is partly in response to lessons learned in the development of remote tuition of students on degree programmes as well as the growing awareness of opportunities presented by the growth of local learning centres. These centres have been established to enable wider access and to minimise exclusion of learners. Some are specially designed while others merely share premises with others. However, they may become less prominent as the supporting high-speed broadband infrastructure increases its reach.

The likely future delivery mode is blended, with traditional or fully online delivery being reserved for a very small number of specialised modules. This move to a more online model follows from developments in higher education. It is in response to both recognition of the ability to spread their catchment areas and also the desire to improve the consistency of tuition and teaching resources for all students.

Institutions are also slowly recognising that the value of e-learning is not in driving down tuition costs but in enabling greater access. This leads to higher enrolments, which reduces per capita costs while increasing income. Development of online resources is emerging as a clear policy objective for some of the institutions within the network. But this response is likely to be varied.

This has also led to a shift in provision, with increasing emphasis on the repackaging of modules at all levels into stand-alone opportunities for continuous professional development. They provide strong vocational relevance and flexibility for students to study in their preferred mode at their own pace. This is particularly important for adult, working learners. Learners now have the choice of completing single modules for personal development or steadily working towards an academic award. The UHI sees this as a future growth area.

Key considerations for institutions delivering vocational education at a distance
Institutions need to implement a range of policies to ensure successful implementation of distance learning programmes for vocational education. This starts with a clear vision of how distance learning will provide benefits to the institution and its stakeholders. Decisions need to

be made about education strategies. These need to include the level of technology most accessible and appropriate to the needs of its learners.

The vocational education and training (VET) institution then needs to plan and implement an effective change process that ensures that the best quality learning resources are selected and/or developed. The required infrastructure and learner support strategies need to be identified and implemented. Staff need to obtain the knowledge, skills and attitude to effectively implement the programmes.

The development of a VET institution's capacity to deliver flexible distance learning is enhanced when there is an appropriate national strategy to support this, such as Australia's Flexible Learning Framework, which has created staff professional development and learning resources underpinned by appropriate research and information. These national strategies encourage the sharing of knowledge and experience across VET institutions and reduce the costs for them to implement flexible distance learning.

Blending on and off campus: a tale of two cities

Authors: Lefoe, G., and Hedberg, J. G.

Reference number: 64

Introduction
While this article compares and contrasts an Australian and Singaporean institution this annotation will focus on the Australian, not the Singaporean, case study as Singapore is not one of the jurisdictions being examined here.

Despite predictions from some commentators, a wholesale move to fully online degrees has not eventuated. There have in fact been some large failures in this context, most notably the UK's e-Universities Worldwide, which follow similar results in the US. One of the common themes in these failures was the low number of enrolled students, suggesting a lack of demand by students for this type of study.

This has led universities to typically favour a blended approach, which involves 'a mixture of IT, traditional, work-based and distance learning to meet the diverse needs of students' (Higher Education Funding Council for England, 2004). However, in Australia the general approach in this context has been to increase student numbers through the expansion of their structures using international partnerships. This is partly in response to the need for universities to be more entrepreneurial and obtain and increase their revenue from non-government sources (Gallagher, 2000; Adams, 2002).

There was also a need to decrease costs. Many universities believed this could be achieved by improving teaching and learning, particularly with ICT (Yetton and Associates, 1997). But the history of e-learning demonstrates that it does not always address the pedagogical needs of staff and students (Hedberg and McNamara, 2002). The educational technology literature supports the view that pedagogy, not technology, should be the determining factor for how it is best used (Collia and Moonen, 2001; Laurillard, 2002).

As e-learning matures, a more pragmatic approach is being demonstrated. Universities are combining the best features of distance and traditional delivery learning environments to produce a blended experience that is supported by the use of technology. Effective blended learning environments take a learning design approach that looks at the learning goals and aligns them with teaching and learning activities and assessments. This ensures the integration and appropriate use of technology (Boud and Prosser, 2002).

This integration can be reflected in wider university systems and processes, for example, the provision of student portals where they can manage and interact with all administrative areas, including subject choice, timetable changes, and personal information management (Cornford and Pollock, 2003).

Institutional context

The wider background to the University of Wollongong's blended approach was government provision of additional funding for the development of satellite campuses and access centres. Universities leveraged this opportunity for expansion by adopting a blended approach. Wollongong has about 20,000 students and has campuses in Australia as well as one in Dubai. Approximately 35 percent of their students are international with most studying in Australia with the remainder at Dubai or partner institution campuses.

In addition they have a large number of mature-aged students. This results in only about 50 percent of their cohort studying full-time. The large part-time cohort wants flexible approaches to delivery and teaching and learning so they can balance their study and external commitments. This resulted in a blended approach being more widely adopted, which involved a range of web-based tools and technologies (including their Learning Management System) being used and supported by traditional delivery methods such as tutorials, workshops and block courses.

The degree-level course that underpins this case study reduced its traditional delivery component through web-based interactions. Students were able to access learning opportunities not only through institutional locations and systems but also at home. This approach also required students to take more responsibility for their learning, in particular by connecting the concepts discussed within their traditional delivery component with the online content and activities.

A number of common themes emerged in the perceptions from Wollongong staff and students of the teaching and learning benefits in a blended learning context. These included:
- the opportunity for students and staff to participate in higher education in their local community
- the small tutorial classes supported by committed local staff
- the learner-centred subject designs.

However, a number of constraints were also identified:
- The selected teaching and learning strategies were not always the most appropriate.
- Emerging roles were different from those experienced on campus.
- Improved communication was required between the main campus and its satellites.
- New skills and understandings related to the changed learning environment needed to be developed.
- Workloads were perceived as higher by students and staff.
- The role of technology was new and unfamiliar.

Key findings

The authors identified a number of common elements from both case studies that can provide some guidance for institutions when they are selecting and designing blended learning contexts. The first of these is learner-centred teaching and learning strategies. These include an activity-focused study guide which provides scaffolding for student learning. Strategies are also required to engage students by encouraging them to make the links between theory and practice and provide feedback on students' learning performance.

Courses should also be designed so they can leverage students' professional role contexts as the basis for their understandings. An interdisciplinary approach was also recommended to broaden student learning. But if course coordinators and other faculty members are not involved in the initial design process it can result in course implementation that differs from the original intentions and this causes concerns for students.

Clear roles and responsibilities need to be established. Students in particular are unclear about what their roles are in blended learning environments (Pargetter, McInnis, James, Evans, and Dobson, 1998). This is because students' prior experiences may have been in teacher-centred learning environments. If students are to take more responsibility they need clearer articulation and expectation of their roles. Mature students appear to be more comfortable taking on additional responsibilities.

New roles are also required for staff. For example, course coordinators may see their role as administrative; however, blended learning environments mean they need to take on more responsibility for communications with staff and students. As roles emerge, it is important to recognise the need for supportive understanding of the changes required and to acknowledge these through policy documents, to suggest new forms of communication, and to clarify roles through clear statements of expectations and responsibilities.

Regular staff-student and staff-staff interactions are critical. This can be achieved by adopting traditional methods or using appropriate web-based tools and technologies such as video-conferencing. These web-based communications are particularly important when face-to-face interactions are not possible, because they assist in reducing students' isolation (Collis, 1998; Kuh and Hu, 2001).

Students need to be encouraged to access ongoing support. This support should include literacy skills development, which consists of three main types, technical, information and tertiary. Support should also be provided on a just-in-time basis. But to make use of these support services students need to know they are available and have flexible access to them (Choy, McNickle, and Clayton, 2002).

Support and encouragement are also required for staff in order for them to engage with their changed roles and responsibilities to develop basic student skills. This needs to be enhanced by changes in the institutional recognition, reward and incentive systems (Anderson, Johnson, and Saha, 2002; University of Queensland, 2002). For example, tutors could be recognised for the additional workload required in this changed role and this could take the form of financial rewards for the extra hours.

Teachers also need to be included in faculty culture through acknowledgement of their skills and expertise. However, for this to occur requires the establishment of effective policies on the working conditions and roles of teachers. Course coordinators will also have changes to their workload allocations which take into account their different nature of the work (Coaldrake and Stedman, 1999; McInnis, 2000). The key message is that teaching needs to be valued as much as research within the institutional rewards and incentives systems, particularly in promotions.

Both staff and students will experience higher workloads. For students, this is in part because they have to take on more responsibility to compensate for reductions in traditional delivery. Student perceptions of a higher workload may also be because their new roles and responsibilities were not made clear, resulting in them seeing it as an increase in workload rather than as part of their expected role in this environment.

This is important because it is more likely students will adopt a surface rather than deep learning approach if they feel their workload is too high (Ramsden, 1992; Kember and Leung, 1998). Increased flexibility for the learner also correlates with greater workloads for academic staff as they move to 'consultant, collaborator, and facilitator' (Niklova and Collis, 1998, p. 60).

Technology plays a critical role in the delivery of blended courses. Its use requires the development of new skills for staff and students. Participants in blended learning often report concerns about inappropriate use of technology such as videotaped lectures and online lecture notes. They also note issues arising from technical difficulties with the equipment. Technical support is also required when participants are reliant on critically time- and place-dependent technology like video-conferencing. However, students do support the use of technology when they feel it enhances their learning experience.

Preparing for blended e-learning

Authors: Littlejohn, A., and Pegler, C.

Reference number: 66

What is blended e-learning?
Some practical examples of blended e-learning are access to a wide choice of alternative digital resources through mobile devices, immersion in online multi-player gaming or multimedia role playing using extended, authentic simulations to explore real-life problem solving, and just-in-time learning using computer-based tutorials and using social networking media for peer interactions.

Most of the drivers for the introduction of e-learning are not about improving teaching and learning. In this review the four major drivers identified were cost, quality, widening participation, and student expectations. However, costs and any associated savings are not only likely to provoke resistance from staff (e.g. Noble, 2003) but are also difficult to determine outside of the corporate world and some examples from the US (Clark, 2001; Twigg, 2003).

Much of the literature comments on the extensive 'hidden' costs associated with e-learning and some argue that as a result e-learning is likely to be more expensive than traditional delivery (Bacsich, Asch, Boniwell, and Kaplan, 1999, 2001; Fielden, 2002). One of the problems is that the major savings in corporate settings around reductions in staff absence and in travel do not translate as savings in educational contexts. Attempts to achieve savings through economies of scale have not been successful either (Weller, 2004; Bacsich, 2005), because of the high support costs and lack of student demand.

The evidence relating to e-learning improving quality is inconclusive. Like costs, it is difficult to determine and quantify in teaching and learning contexts. A large study by Russell (2004) found no significant differences in quality between e-learning and traditional delivery, but another study suggests that in specific contexts there are significant quantifiable improvements that can be derived from using e-learning (Pepicello and Pepicello, 2003).

Despite claims that students will demand e-learning and, if they do not receive it, will bypass formal institutional structures (Prensky, 2001; Downes, 2006), evidence of actual student use does not support this. Technologies do not play the same role in formal learning contexts and there are mismatches in the learning processes involved in classroom settings and social situations (Wojtas, 2001; Kukulska-Hulme and Traxler, 2005). But e-learning in a broad sense is having an impact on tertiary sector teaching and learning (e.g. Golden, McCrone, Walker, and Rudd, 2006).

Distance education institutions or those offering this type of provision are more receptive to e-learning because of its ability to improve teacher-student and peer-peer interactions. However, fully online provision is rare even within distance education. Blended learning is more popular among traditional institutions partly because it is less threatening and risky as it does not involve the complete revision of provision – a huge enterprise and one that most established institutions would not be sufficiently resourced or motivated to undertake.

Blended courses allow traditional teaching and learning approaches to continue largely unchanged. They also have improved success compared with their fully online counterparts, for example increased student retention.

Different approaches to blended e-learning
Despite the actual or perceived problems with fully online courses, institutions may consider them for the following reasons: most of the learners are located at some distance from the institution including those from other countries, the course covers such a specialist area that insufficient students are available to make a viable cohort for traditional delivery, and the courses could be offered to students who have previous experience of distance and e-learning.

Other rationales cited here were:

- The availability of places at institutions may be restricted and insufficient to meet demand, allowing students to study just-in-time and/or at work.
- Wholly online components of a course could be offered as a means of extending the reach of teaching in order to share resources across more than one site.
- Students at some locations may be requested to accept this option as a means of accessing an otherwise scarce resource.
- The learning is based on a stand-alone, fully online package designed to be studied independently.

The costs associated with both the development of supporting resources and the provision of appropriate technologies as well as their availability and alignment with existing resources, systems and infrastructures must also be taken into account, as well as the provision of appropriate technologies. For e-learning to be valued by students it needs to be part of their core activities and assessments (Kirkwood and Price, 2005). Lack of experience and skills also need to be resolved if students are to use e-learning effectively.

Institutions may wish to consider e-learning based on a student's location and experience, which can be categorised as: near and distant (for location) and novice and expert (for experience). A student who has minimal experience of e-learning and is distant from campus requires a blend that introduces e-learning generally and it needs to be recognised that they are typically dependent on e-learning.

In contrast, their on-campus peer, while also requiring a gradual introduction toe-learning, is generally not very dependent on it because they can use on-campus alternatives. A third category of student is an experienced e-learner who while distant from campus can use e-learning without introduction and would therefore find it suitable. Their on-campus peer can make extensive use of traditional delivery and e-learning options and approaches. The common thread here is that each of these four learners could study the course using different blends of technology and activity to suit their preferences and circumstances.

E-learning environments
Institutions can choose between commercial (e.g. Blackboard) and open source (e.g. Moodle) Learning Management Systems. Commercial systems would typically be used if a teacher-centred environment was desired because these systems allow teachers to control the learning space, for example by giving them the power to determine who does and who does not have access to it.

In contrast, open source systems tend to allow students better control over their learning, for example by offering them greater freedom in deciding which groups or activities they would like to participate in and how that participation will occur. These systems are popular because bespoke systems are not usually a realistic option for institutions with limited budgets.

Some institutions are beginning to recognise the importance of providing flexible learning spaces that can support the use of technology in physical environments. Some are experimenting with different kinds of physical spaces, including design studios and wireless interactive classrooms, while others have introduced learning cafés which have also have wireless access.

Sustainable blended e-learning designs
The most obvious way to increase efficiency when planning blended learning is to cut down the staff time required to create learning materials by reusing existing ones. However, migrating 'offline' resources for reuse in blended learning usually requires some time to be invested in repurposing. This is because most resources are intended to be learner-centred and are therefore context specific.

Some institutions such as the Open University consciously develop their resources to be reused both internally and externally. This strategy pays off in the long term because the costs of updating courses are reduced and there is more potential to offer existing versions, which can be adjusted for a new market or even personalised for specific student groups. Positioning these

resources and materials within institutional repositories makes them more valuable and useful as they are much easier for others to access and use.

Systems interoperability is important. While a range of standards is available or in development through such organisations as the IMS and the ISO (International Organization for Standardization), 'the development of a framework that supports pedagogical diversity and innovation, while promoting the exchange and interoperability of e-learning materials, is one of the key challenges (facing) the e-learning industry (IMS, 2002). But this is alleviated somewhat by the fact that learning technology standards are now increasingly built into software systems.

Support structures for blended e-learning
Many support services, such as healthcare and accommodation, may be irrelevant for e-learners. But some support services, like the technical helpdesk, that are critical for e-learners are not important for those studying by traditional methods. Effective student support for e-learning should be both proactive and reactive as well as being available in different formats to take account of differing learner requirements.

A novice e-learner may have difficulty because of the different study skills required and support services typically being offered in unfamiliar ways. This has implications for how much initial support they require as well as affecting where it should be located and when it should be offered. This should include off- as well as on-campus options and be based on how much experience they have as a learner (regardless of the environment).

Institutions are increasingly offering initial student support via their website, including access to essential pre-course materials and information. Institutional websites can also be used to address initial study skills support requirements. While this type of support is typically generic, it does have the advantage that each student can choose the level of required support and can spend as much or as little time on the activities as they wish.

However, like all portal-type web environments, it may be unclear to students what is available, because of the difficulties in navigating such complex environments. One solution increasingly being used by institutions is to allow individual access to personalised versions of the available information. The most user-friendly systems will allow browsing and searching as well as alerts for important things like reminders about assignment deadlines, that books they reserved are now available, or advice about server downtime, during which they will not be able to access online resources.

It is important for institutions to consider when their technical helpdesk will be available. However, if students are accessing the helpdesk outside 'normal' hours, who will answer their queries? This is compounded by the nature of the queries, some of which require substantive subject matter or technical expertise to resolve. For subject matter queries the typical response is to provide a telephone as well as an online option.

But in order to reduce the complexity of the technical queries, and their associated costs, most institutions require students to have access to a minimum computer and browser specification. This raises equity and access issues as it transfers costs to students. Some institutions resolve this by having a laptop loan scheme and they could also create learning resource centres where students travel for their e-learning sessions. However, this too causes problems as institutionally provided equipment may not be able to meet all the students' requirements and some may prefer to use their own devices.

Online peer support
Experience shows that many students can and will establish effective working relationships with their peers online, partly because their increasing familiarity with using technology-supported communications for social networking outside their studies reduces the barriers to building strong online study relationships.

Peer group support has been rated by some distance students as highly as teacher support (Simpson, 2002). The motivation to continue studying often comes as much from peers as from staff. Peer support can be facilitated online and students typically have access to a much greater

support network in these environments. But it is important that a computing code of conduct is developed to prevent or address inappropriate behaviour, language etc and also to alleviate any safety concerns about online communications.

Future student support

An e-portfolio over time will give students a much clearer view of their past support and therefore better anticipate their current and future requirements. It is also likely that institutions will start to make more use of students' own devices to communicate with them and support their studies. The student who is struggling is more likely to take note of a message on their mobile phone than one posted to an institutional email account. The student will also know how to use this technology to respond and ask for assistance.

Technology also allows for more personalised support by offering them support on a just-in-time, as-needed basis, and flagging their availability in response to particular signals. For example, a missed deadline or failed test could lead to offers of assistance; or a new journal article in their research area may be flagged as soon as it becomes available online. Support staff will also become more adept at using the data from e-learning environments to recognise students who are at risk and will have more choices available to them to address those risks.

Ethical issues in blended e-learning

It is important that institutions are careful with their collection, storage and use of student information. Staff can use the additional information available to provide more personalised support. However, this information needs careful analysis and sensitive intervention. Students might reasonably be concerned about their online activity if they believe that every keystroke is captured, analysed and acted on. This could be viewed as unwarranted surveillance and an invasion of privacy. It needs to be established what information is appropriate, usable and useful.

Intellectual property rights have a significant impact on e-learning and this can be a barrier. Academics are concerned about their own breaches of copyright as well as their rights relating to the materials they have created being eroded. E-learning intensifies these issues because the materials are much more widely available and breaches of copyright (even where they are inadvertent) are also more visible.

Repurposing and adaptation of digital materials is much easier than with print-based materials, but detecting this is more difficult. Flexible licensing arrangements such as those available through the Creative Commons scheme can help alleviate and address many of these concerns.

It is important that e-learning does not create barriers for students through either access or expense. For example, if institutions expect students to use their own technologies or have a faster internet connection to access the course, this introduces an additional expense for them. This may also be the case for staff if they are working from home and are expected to carry 'hidden costs' in terms of computer consumables.

For students, institutions can help overcome this through measures such as laptop loan schemes or the creation of learning resource centres to which students travel for their e-learning sessions. For staff, institutions can provide allowances to offset these work-related expenses. The less generous these allowances are the more resistant staff may be to shifting to e-learning.

Teachers will also need to have technical skills that are at least equivalent to those of their students, so additional training is likely to be required. This, alongside the additional demands placed on staff in e-learning environments particularly in relation to student expectations related to their availability, means that staff are likely to be using technology more frequently and for longer periods. Institutions should consider the health and safety implications of this, for example repetitive strain injuries.

Strategies for embedding e-learning in traditional universities: Drivers and barriers

Authors: MacKeogh, K., and Fox, S.

Reference number: 68

International and national e-learning strategies

In recent years there has been increasing pressure from government agencies and other stakeholders to embed e-learning in mainstream higher education. This objective has been influenced by a number of pressures and drivers. The main drivers are national economic and social development policies and priorities, a belief that education has a role to play in supporting these, and developments in educational technologies that would allow these objectives to be attained.

The uptake of e-learning within institutions is influenced by funding and support agencies (Hammond, 2003). A review of national e-learning strategies found the two key drivers underlying its adoption were: the need to up-skill the population to meet the challenge of the knowledge and information society; and the need for flexible and accessible access to tertiary education to meet the changing nature of society and to support the lifelong learning agenda (Anderson, Brown, Murray, Simpson, and Mentis, 2006).

But while there are substantial pressures from national and international agencies and stakeholders including the European Union and OECD to adopt e-learning, the ability of institutions to do so is constrained by numerous barriers, including the availability of funding. This is offset somewhat by agencies supporting institutions to adopt e-learning to meet national e-learning strategic objectives.

For example, the Higher Education Funding Council for England provided a total of £33 million seed funding to 74 universities. As a consequence, the majority of UK universities have now adopted or updated their e-learning strategies. This is part of a switch by UK agencies from funding centralised e-learning initiatives such as the e-University to now allocating funding to individual institutions (Morris, 2008). The New Zealand Government has also funded a number of initiatives including research projects, the e-Collaborative Development Fund and a dedicated online presence.

But e-learning does not necessarily increase access or widen participation for off-campus learners. The main rationale for institutions to adopt e-learning is to enhance their on-campus learning, not their distance education offerings. Achieving lifelong access via e-learning will require higher education institutions to implement policies and strategies that focus on:
- flexible modular frameworks
- innovative pedagogical approaches
- new forms of assessments linked to learning outcomes
- cross-institutional accreditation and credit transfer agreements
- institutional collaboration in development and delivery
- multiple access and exit points from programmes.

Most importantly it will require commitment to equal access for on- and off-campus students.

Institutional e-learning strategies

Several studies have investigated the institutions' rationales for adopting e-learning strategies or engaging in e-learning (e.g. Garrett and Jokivirta, 2004; OECD, 2005; Schiffman, Vignare, and Geith, 2007; JISC, 2008). The majority of these rationales can be put into the following seven broad categories:
- Enhancing reputation.
- Developing information skills/literacies.
- Widening access.
- Supporting disabled learners.

- Improving quality of teaching and learning.
- Increasing flexibility.
- Reducing cost/improving cost-effectiveness.

Analysis of a sample of UK institutions' e-learning strategies indicates that most of them have adopted a 'bottom-up' rather than 'top-down' implementation policy. They tend to give prominence to the potential of e-learning not only to enhance teaching and learning but also to foster a wide variety of learning outcomes. Staff training is also seen as essential to successful e-learning, but flexible support structures and mechanisms are viewed as being more important (MacKeogh and Fox, 2008).

This reflects the fact that most institutions are at a relatively early stage of e-learning development. The University of Lancaster (2006) has made explicit in its e-learning strategy the different stages of e-learning development:

- **Minimum/Introductory** – the minimum standard readily achievable now for all programmes of study. This defines what all students should expect as part of their e-learning experience.
- **Intermediate/Contextual** – development and embedding of activities into local teaching, learning and assessing practices (i.e. blended learning) and customisation to specific disciplines and contexts.
- **Advanced/Transformational** – this is a significant shift in pedagogical practice and greater requirement for technical infrastructure and development.

In developing an e-learning strategy it is vital to:
- have a clear vision of the desired outcomes
- have an understanding of the current capacity and attitudes of the relevant staff
- develop a coherent set of steps to move from the current situation to the desired outcome.

Barriers and facilitators – staff attitudes
It is widely recognised that academic staff acceptance and engagement are key factors in the successful implementation of institutional e-learning strategies (Cummings, Phillips, Tilbrook, and Lowe, 2005). The political support of senior management is essential for the wider adoption of new practices, but innovation cannot be adopted without buy-in from frontline staff. In accordance with the traditions of academic freedom, staff can often choose whether or not to change their teaching practice.

The successful implementation of e-learning requires adoption by enthusiastic innovators, but institutional structures must also be put in place to support the sustainability and mainstreaming of e-learning initiatives. And it must be acknowledged that there are real obstacles in implementing change in a situation of tight funding and competing priorities.

Change, technology and higher education: are universities capable of organisational change?

Author: Marshall, S.

Reference number: 70

Introduction
Investment in technology systems by universities is driven by the expectation that increased use of technology will improve the quality and flexibility of learning (Bush, 1945; Ryan, Scott, Freeman, and Patel, 2000; Bates, 2001; Cuban, 2001; Department for Further Education and Skills, 2003; Oppenheimer, 2003). This investment has been supported by the widespread adoption of Learning Management Systems (LMS) and the computerisation of key administrative functions. The maintenance of an effective technology infrastructure remains a key strategic focus for university leaders (Zemsky and Massy, 2004; Hawkins and Rudy, 2006; Allen and Seaman, 2008; McCarthy and Samors, 2009).

Many institutions have attempted variations on early adopter innovation projects, invested in substantial infrastructures, and developed an awareness of the need for formalised and systematic professional development. But despite this high-level interest and support, changes in the experience of teaching and learning enabled by technology are less apparent.

This awareness that there is a need to go beyond pedagogy and technology to consider organisational aspects is not new. It has long been recognised that leadership and systems are important (Laurillard, 1997, 1999; Hanna, 1998; Ison, 1999; Peters, 1999; Reid, 1999; Ryan et al., 2000; Bates, 2001).

Those leading change in universities need to balance technological, academic and administrative concerns. These include the strategy and culture of the organisation, resource utilisation, sustainability, and scalability and reusability (Laurillard, 1997; Karelis, 1997; Remeyni, Sherwood-Smith, and White, 1997; Bain, 1999; Reid, 1999; IEEE, 2002; Strauss, 2002; Young, 2002; Boyle, 2003; Jones, 2003; McCarthy and Samors, 2009).

Theory of organisational change
Change in large complex organisations can be described as operating at multiple levels: process, systems, structures, organisations and institutions (Seel, 2007; Waks, 2007). Process and systems change often happens as new ideas, technologies or capabilities become available within an organisation and can be driven by individuals or small groups within it.

Where these changes are not disruptive they can be described as interoperable. Historically, structural and organisational change has been managed as a discontinuity process, with organisations undergoing a period of instability before returning to more stable periods. Birnbaum (1998) suggests that universities can manage change more effectively if they adhere to what Stafford Beer referred to as the science of effective organisation.

This is underpinned by organisational structures being organised in a loosely coupled way (Weick, 1976). Christensen, Anthony, and Roth (2004) identify three types of organisational change. 'Sustaining' changes are ones that improve the function of an organisation that are consistent with previous activities such as transferring course materials to an LMS. 'Disruptive' changes create new markets or reshape existing ones. 'Low-end disruptive' changes can occur when the existing product exceeds the needs of some consumers.

Online delivery of degrees is potentially a new market disruption, although the lack of success of virtual universities illustrates the challenge facing providers attempting to realise that potential (Cunningham, Ryan, Stedman, Tapsell, Bagdon, Flew, and Coaldrake, 2000; Zemsky and Massy, 2004). Disruptive change is problematic for dominant organisations as the natural tendency is to protect existing structures and activities, particularly when those are seen as being successful.

It is important to note that technology is by default neither sustaining nor disruptive in nature. For example, it would only be disruptive if it were used by an organisation to undercut the costs of obtaining a qualification, or sustaining when used to replace paper-based distance delivery. It has been argued that e-learning has failed, as it has set itself up in competition to traditional delivery with the same group of students, rather than targeting those not currently accessing tertiary education. So e-learning's failures are about targeting the wrong student market, not about poor course design (Christensen, Anthony, and Roth, 2004.

Should universities change in response to technology?
Do universities need to, and should they, change in response to external forces including technology? Their stability and apparent resistance to change may reflect the value to society of the institution in its current form. One obstacle to change may be the lack of strong evidence that technology is benefiting educational outcomes for learners (Conole, Oliver, and Harvey, 2000; Kenny, 2001; Radloff, 2001; Taylor, 2001a; GAO, 2003; Zemsky and Massy, 2004; Means, Toyama, Murphy, Bakia, and Jones, 2009).

The purpose of change must also be considered. Much of the recent change in universities derives from the need to be more accountable for public funds. Universities also have a range of

purposes, participants and audiences all of whom have different requirements and expect change to meet them. These conflicting purposes challenge universities (Perkins, 1973, p.12).

But universities cannot ignore the implications of government desire to educate those who have traditionally not participated in university education (Daniel, Kanwar, and Uvalic-Trumbic, 2009). The risk for universities is that other institutions and organisations will meet the needs of this market (Christensen, Anthony, and Roth, 2004), and will be in a position to encroach on universities' traditional student markets.

Taylor (2001b) observed that the challenge facing universities trying to make the best use of e-learning is not so much about the innovation itself. Key is the execution of the change – the need for the university to rapidly evolve to sustain the execution of change at the same pace at which new technologies are developed. Most universities have technology, but how it is used to achieve quality and advance organisational goals is more important (Carr, 2003; Hamel and Välikangas, 2003).

Organisational leaders need to distinguish the products of change, the visible uses of technology, from the processes that result in their use. DiMaggio and Powell (1983) identify three mechanisms that drive institutional change and which can influence supporting processes for this:

- Coercive isomorphism, which explains change as a consequence of formal or informal pressures imposed on organisations externally.
- Mimetic isomorphism, which describes the tendency for organisations to adopt 'standard' or popular approaches in uncertain times.
- Normative isomorphism, which is change that is driven by professionalism and the emergence of 'legitimated professional practices' that result in pressure for organisations to conform because their staff are able to draw on organised professional networks and standards that guide their activities.

Change within an organisation can be described as top-down, bottom-up, or a combination of the two. Bottom-up initiatives are generally driven by individual 'early adopters' (Rogers, 1995). While substantial resources have been invested in such projects, wider adoption and use require more. It is also essential to have: leadership, systems, and a supportive climate for change (Southwell, Gannaway, Orrell, Chalmers, and Abraham, 2005).

Birnbaum (1998) noted that leaders can most easily drive significant change from the top in universities that: are in a state of acknowledged crisis, are small, are conspicuously out of date, or have autocratic leadership. But ideally universities need change strategies operating simultaneously and synergistically at multiple levels (Moore, 2006; Russell, 2009; Southwell et al., 2009).

Analysing the capability of universities to change using the e-Maturity Model (eMM)
The eMM measures the capability of institutions in an e-learning context. It does this through 35 processes grouped into five major categories or process areas: delivery, planning, definition, management, and optimisation. These are derived from an extensive review of the literature, international workshops, and experiences from use in institutional assessments (Marshall, 2006b, 2008). The eMM reflects experiences gained from its previous use and the relevant research literature (Marshall 2006b, 2008).

It is intended to go beyond benchmarking to actively promote and support organisational change activities. For example, the optimisation dimension explicitly assesses systematic change in the organisation. In addition staff can use it to inform and improve their practice.

Stronger institutional e-learning capability can arise for a number of reasons. It may reflect existing systems essential to all delivery modes. It might also be the result of activities being under the direct control of individual staff who are able to influence the experience of the learners through their own work. Finally, it could also reflect dedicated investment of resources aimed at the process activities.

It was noted that weaknesses identified across the dimensions demonstrated a lack of institutional engagement with teaching and learning issues. It was also pointed out that while institutions had an LMS and supporting infrastructure they did typically use standards and tended to depend on a specific vendor's products as default solutions. These weaknesses (and others) could reflect the reality that the processes as formulated are not useful.

But they could also illustrate the absence of particular activities relevant to organisational change. For example, most institutions appear to operate on the implicit assumption that their e-learning is sufficient and if there is an issue someone will complain. There is also an absence of formal change mechanism promoting e-learning. This is a result of there being few formal processes, policies or staff development opportunities addressing the implications of technology use by these organisations.

There is limited evidence of a culture of critical self-reflection, which probably reflects the lack of attention by university leaders. This lack of strategic context may be one of the main reasons why technology has not driven organisational change, despite the opportunities for it to do so (McCarthy and Samors, 2009).

Conclusions

Typically, and in the immediate future, the change resulting from new technologies will depend on the change culture and leadership decisions of individual universities. It was noted that the eMM does not provide a specific, predefined mechanism for organisational change. Its intention is to ensure that change is well informed, facilitated by the ability to view areas of organisational strength and weakness and that the impact of change initiatives is apparent in subsequent assessments.

The evidence from these assessments suggests that universities as organisations still show little capability to disrupt their existing educational models. The UK, Australian and New Zealand Governments have repeatedly imposed various performance indicator reporting requirements. But despite this, there is no evidence of a culture of systematic self-improvement driving the examination and use of e-learning. Most universities assessed here have supported early adopter innovations. However, they have failed to provide systems and environments that result in wider uptake of successful ideas (Southwell et al., 2005; Moore, 2006; Russell, 2009).

A clear avenue for further action is finding ways that the experiences of students and staff can be used to frame future technology-supported organisational and pedagogical change. There is also a need for clearly articulated goals for change supported by, rather than led or in response to, technology, or coerced by external drivers. Reasons for change that is enabled by and making effective use of technologies are required. They need to be relevant to the organisation and their staff and students.

All in the mind: programmes for the development of technology-enhanced learning in higher education

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Reference number: 71

Introduction

If higher education is to be transformed, it will require significant changes in the way staff and students view their respective roles and needs. There is an emerging consensus that improving the quality of the learners' experience should be the driver for change, not technology. But the challenge is to try and understand what that actually means for practice. Individual staff have considerable latitude to develop their teaching approaches.

This is supported by a view that innovation by individual teachers can be scaled up to departmental, institutional and even inter-organisational levels. It is argued here that this 'pockets of innovation' process is actually the most effective way that change will occur in

practice and this is how mainstreaming actually evolves, notwithstanding that some innovations will require changes to institutional policies.

But despite this, there is a persistent belief that institutions and agencies have a responsibility to intervene, to drive innovation at an organisational or even sectoral level. The UK has had lengthy and consistent support from central agencies for institutional adoption of e-learning. However, there remains a view that higher education has not fully capitalised on the opportunities e-learning provides (e.g. Cooke, 2008). This may be because there is a lack of clarity about what is to be transformed and how.

Pew Grant: A transformation example
The Pew Grant programme, carried out from 1999 to 2003 in US higher education institutions, attempted to demonstrate how a redesign of higher education teaching approaches could achieve both quality enhancements and cost savings. The associated projects focused on large first-year courses. The programme did demonstrate quality improvements and cost savings. This had a direct impact on the Scottish e-learning transformation initiative.

The basic redesign involved five basic variations. All these basically involved the substitution or replacement of traditional delivery by e-learning, with a smaller number also redesigning the face-to-face component. Two key points emerge from this initiative. First, the redesigns were pedagogy-led. The replacement of traditional delivery by e-learning was supported by a greater emphasis on active learning and formative assessment.

The second key point is that cost savings were achieved by reducing the amount of time that academic staff spent in direct interactions with students. This shortfall was not made up by technology rather it was achieved by employing graduate and peer undergraduate teaching assistants.

The trade-off between cost and quality
Cost savings without compromising quality are often achieved by learners doing more study in less time and taking on more responsibility for their learning. But often lengthy engagement is required to achieve 'cognitive restructuring' that in turn leads to deep learning (Mayes and Fowler, 1999). Furthermore, students taking on more responsibility does not free up teaching time because the active learning approach that underpins this requires significantly more tutor feedback. In fact, as shown above, cost reductions were achieved by substituting more expensive academic staff time with peer-peer or peer-technology interactions.

UK transformation initiatives in e-learning
The initiatives considered here are: the Higher Education Funding Council for England's (HEFCE) benchmarking exercise (in which £8 million was distributed across 70 higher education institutions), and the £6 million Scottish e-learning transformation programme, involving six large-scale collaborative projects. However, previous initiatives have failed to transform the sector and attempts at developing virtual institutions have been decisively rejected after the failure of the UK e-University.

HEFCE's 2005-2015 e-learning strategy can be read as explicitly encouraging the acceptance at institutional level of the responsibility for driving the development of e-learning and embedding it in traditional delivery. Scotland went further by encouraging the adoption of e-learning in the UK's higher and further education sectors and actively encouraging institutions in these sectors to take responsibility for the enhancement of quality across the board.

There were also differences in implementation. HEFCE used an approach that encouraged as many institutions as possible to base their e-learning developments on the results of the benchmarking exercise. In contrast, Scotland, used exemplar projects run by institutional consortia to emphasise e-learning's impact and explicitly encourage transformation.

The results of the HEFCE exercise (run by the UK's Higher Education Academy) show that the value lay in giving institutions opportunities to ask penetrating questions about e-learning rather than the detailed methods. But institutions found it difficult to obtain appropriate data to make

informed judgements about the way e-learning is actually used at course-level teaching and learning. It showed institutions that quality procedures do not typically reveal course level pedagogies.

It also demonstrated that e-learning input does not necessarily directly correlate to output. For example, loading materials onto institutional Learning Management Systems may improve efficiency but have no impact at all on the quality of student learning outcomes. Although most institutions have formal e-learning strategies, these appear to be disconnected from course-level innovations because neither the tools nor quality procedures required from the organisation may yet be in place to encourage fundamental change in the traditional teacher/student roles.

Following on from the benchmarking exercise, a series of institution-based projects referred to generically as Pathfinder were developed. Many of these projects raised awareness of the importance of transforming the course design process. This has started the process of embedding a truly student-centred, enquiry-based e-pedagogy at subject level. This has compelled institutions to consider the implications of this for their suite of policies. Potentially affected areas include assessments (because of e-assessments, e-portfolios, and social networking) and student inductions.

Scottish e-learning transformation programme
The six transformation projects that comprise this initiative can be thought of as individual mini-development programmes for the sector. Each project was required to demonstrate how its outputs would generalise to other institutions, and for three of them how this would cross the higher education/further education boundary. The basis for the programme was a report from the Scottish Funding Council's (SFC) e-learning working group. This report highlighted the importance of developing e-learning within a planned process of organisational development.

This type of transformation contrasts with continuous incremental change and involves e-learning substituting for, rather than simply enhancing, traditional delivery. The largest gains were expected to be achieved through collaboration (at a staff, departmental or institutional level including content sharing), substitution of capital or labour, and where the required skills or training were in place.

These projects fell into two broad groups. The first offered transformation through using e-learning to empower students, while the second would achieve change through collaborating to create and deliver resources. But both hoped to give students a more active role in their learning activities.

Understanding transformation: vertical versus horizontal learning
The main barriers identified here to organisational change are: the institutional, procedural and attitudinal resistance to a radical redesign of large class teaching. Much of UK agency activity in this context is geared towards this by gaining the support and understanding of managers, teaching staff and quality administrators about the required direction for pedagogical change, and then gaining an understanding of the implications for practice. Institutional readiness for change requires a critical level of understanding across a large enough proportion of these individuals.

This can be viewed as a staff development challenge. But it is argued here that while the underlying pedagogical and organisational issues are complex the challenge of transformation relies on two simple models, referred to as vertical and horizontal. It is important to note that while both are necessary there are significant differences in their underpinning pedagogical assumptions. Vertical approaches try to improve learner-content interactions. In contrast, horizontal approaches focus on the students themselves, with particular emphasis on the process of learning and how this is enabled and supported by peers, rather than content.

As a practical example, feedback via a vertical approach would typically focus on minimising human intervention as much as possible and substituting or replacing it with online tutoring. However, a horizontal approach would utilise peers or non-academic staff to provide this same feedback. While initially institutions were favouring a vertical approach, recently there has been

a marked shift towards a horizontal approach. Institutions are also increasingly empowering staff by enabling them to redesign their teaching so they can adopt e-learning. This also acknowledges the key role they play in the change process.

There have also been increasing attempts to empower learners. To achieve this means engaging with the idea that a transformative experience for the student is also one for the institution. It also needs clarity around students' roles, particularly how they can support their peers' learning. This all means that in the end transformation becomes a cultural issue. But despite these increasing moves to empower staff, and in particular students, as the basis for institutional transformation, the trade-off between cost and quality remains the fundamental challenge.

Central Queensland University's course management systems: accelerator or brake in engaging change?

Authors: McConachie, J., Danaher, P., Luck, J., and Jones, D.

Reference number: 72

Introduction
To achieve its institutional goal of being a leader in flexible teaching and learning, Central Queensland University (CQU) is utilising different technologies as drivers of organisational change (CQU, 2003; Cummings, Phillips, Tilbrook, and Lowe, 2005; McConachie and Danaher, 2005; Nunan, 2005; Reid, 2005). They use a range of systems but the focus of this article was on course management systems (CMS), which were defined as software packages that provide web-based tools, services and resources to support teaching and learning processes for e-learning.

CQU has signalled its desired strategic position in centralising and unifying the management of its e-learning and distance education provision for the foreseeable future. This paper analyses this strategic position from the perspective of the effectiveness of CQU's engagement with an institution-wide CMS as one of the identified drivers of change. In particular, it examines whether CQU's approach to the use of this system should be considered an accelerator of, or a brake on, its effective engagement with these change imperatives.

CQU
CQU is a large and highly complex institution that offers both traditional and distance delivery. Its complexity derives in part from its need to consider alternative delivery modes, obtain new non-government revenue streams, and competitive pressures. They have 19 delivery modes serving over 115, 000 students (in 2004). In this context CQU has developed a vision supported by a revised five-year strategic plan. The key point noted here was that this revision was to primarily shift CQU from a highly localised to a more centralised approach. One of the key drivers to achieve this would be the implementation of an institution-wide CMS.

CMS
The authors use this term instead of the more widely recognised Learning Management System as they consider that these systems are about managing content not student learning. It has also been widely used in previous literature (e.g. Katz, 2003; Morgan, 2003; Dutton, Cheong, and Park, 2004). More importantly, these systems have come to dominate higher education institutions (Katz, 2003). Other important systems include those dedicated to administration and accounting, course content, and student management.

But these institution-wide systems are not universally regarded as being useful in achieving organisational goals. This is because by their very nature they will push an organisation towards generic processes, when customised ones may be a source of competitive advantage (Davenport, 1998). By their automation and standardisation, CMSs possess a structure that threatens faculty dominance (Katz, 2003).

Another criticism of CMSs is that because they require centralised monitoring they impose a hierarchical perspective on organisations, and that while institutions may wish to empower their employees few large ones have managed to do so (Davenport, 2000). They also consciously or unconsciously reflect a move towards standardisation. However, as teaching and learning processes are typically highly personalised within higher education institutions, any attempt at standardisation is likely to be radical, painful and problematic (Morgan, 2003).

Using planning to achieve a purpose-driven approach
Planning approaches and their results are varied (Bourgeois and Brodwin, 1984; Chakravarthy and Doz, 1992). While the logic and purpose of integrating technology planning into the organisation's strategic planning are clear, the actual process and appropriateness of doing so are more complex (Porter and Millar, 1985). There are also conflicting views about the value of planning. Some say it is preferable to not having it, particularly in the context of introducing an organisation-wide CMS (Self, 1974), but others question whether it has any value at all (Wildavsky, 1973).

Gaddis (1997) goes further by questioning the very concept of future-oriented management, and prefers an organic approach facilitated if necessary by management. Mintzberg (1994) and Porter (1987) support this view and state that 'strategic planning in most companies has not contributed to strategic thinking' (p. 7). Porter does not advocate abandoning strategic planning altogether but rather rethinking and recasting it.

This line of argument advocates replacing long-term goals with a renewed emphasis on the creation of an organisational identity (Stubbart, 1995; Davenport, 2000; Neuhauser, Bender, and Stromberg, 2000). But a common vision is not enough. Organisational leaders also need to encourage different thinking to overcome the traditional view that change will not occur (Wheatley, 2000).

Some researchers claim that hierarchical cultures have negative impacts on organisations by forcing its members into competition and conflict with each other (Kraus, 1980; Thayer, 1981; Davenport, 2000). Others challenge this sole focus and attribute problems to a broader range of factors (Dunphy and Stace, 1988; Creith, 2000).

Strategic planning should be used to create a common vision, but only if it enables an organisation to develop the right strategies at the right time. The need to achieve common acceptance of a vision and a unitary approach to change is a risk factor that institutions must manage when they are using organisation-wide systems as a driver of change.

Information technology and systems
Some argue that, because of its rapid, continuous and innovative change, ICT has introduced an unprecedented level of complexity within organisations (Cnaan and Parsloe, 1989; Tapscott, 1996). However, this is offset somewhat by the pivotal role ICT plays in facilitating organisational change and by the value it adds (Ives and Learmouth, 1984; Markus and Robey, 1988). But some dispute ICT's value-add because of the lack of quantitative measures and in particular its lack of impact on productivity (Solow, 1987; Brynjolfsson and Hitt, 1996).

There is an important interrelationship between ICT and organisational change. ICT can redefine and change organisational processes, structures and roles, and these can have a corresponding effect on the success or failure of ICT implementation. The success or failure of these implementations is due to the organisation's unique characteristics (Brynjolfsson and Smith, 2000; Davenport, 2000).

However, if an organisation is successful in this context, it is more likely to remain competitive in a rapidly changing external environment. So it is important that institutional leaders understand how ICT enters their organisation and transforms some of their practices (Schein, 1992; Davenport, 2000).

But traditional ICT implementation methods are no longer valid for institution-wide systems (Davenport, 2000), because they are based on assumptions that the underpinning vision is not

subject to debate. In contrast, it is argued here that the vision, goals, strategies and outcomes are in fact political and therefore subject to debate and questioning.

As a result, the problem facing organisations is an overreliance on purpose-driven methodologies to support their planning process. This approach has a number of strengths, including its emphasis on predictability, stability, control of the development process, and its account of rational problem-solving behaviour (Lyytinen, 1987). It is also well supported in the relevant literature and in practice (Introna, 1996; Truex, Baskerville, and Davis, 2000).

However, this does not adequately address the social reality of information systems and this causes significant shortcomings. As a result, many authors have sought to develop alternatives to a purpose-driven, teleological approach (Baskerville, Travis, and Truex, 1992; Introna, 1996; Highsmith, 2000; Truex, Baskerville, and Davis, 2000). For example, Introna (1996) advocates an ateleological approach. Cummings, Philips, Tilbrook, and Lowe (2005) summarise an ateleological approach as: 'a piecemeal process that aims to take maximum account of local emerging contingencies, as well as actively pursuing 'random' unexpected possibilities while maintaining some sense of overall coherence' (p. 30).

Implementing technology-driven change is typically complex for organisations because of the unpredictable, uncontrollable and discontinuous nature of human behaviour; and it is upon people that ICT-inspired change relies for its success (Dunphy and Stace, 1988; Williams, 2000). This variance is manifested in the level of understanding staff have about organisational goals and the requirements of any system (Beck, Giddens, and Lash, 1994). Therefore adopting a teleological approach could result in the hierarchy of goals and objectives leading to conflict.

CMSs as drivers of change
Using data from survey respondents' (n = 91), the majority of whom were academic staff, the authors attempted to establish the viability of a teleological approach to organisational change at CQU and the particular role of their CMS in achieving this. Most of this group had used e-learning and this, combined with an associated consultation process for the introduction of the CMS, meant that staff should have been aware of its role in CQU's organisational change.

They acknowledged that the data presented was selective but it establishes strong evidence to support their view that a teleological approach is not maximising the possibilities of using a CMS as a driver of organisational change at CQU.

Most respondents thought that the CMS would not help CQU achieve its goal of being a leader in flexible teaching and learning. Moreover, the sharp divide between this majority and the smaller group who thought it would achieve this goal meant that a teleological approach would be difficult to implement. The majority of respondents thought that the quality control of the CMS should be undertaken at a local, not central, level and concerns were noted about a loss of power if a shift to the centre in this context occurred. However, some thought there should be more central control.

This concern with loss of control is also demonstrated by the fact that 45 percent of respondents thought the introduction of an institution-wide CMS was driven by a desire for centrally imposed restrictions on the teaching and learning process. However, there was no consensus about whether teaching and learning should be monitored and controlled centrally, by the faculty, school, or at an individual lecturer level. But even those who supported the CMS perceived that management needed to make further decisions to maximise its effectiveness.

Conclusion
But if a teleological approach does not maximise the value from ICT for organisations, what are the alternatives? Some common challenges and issues were identified that are likely to have relevance to CQU and other higher education institutions. Change drivers need to be identified that will increase the level of ownership of the organisational vision.

Institutions also need to manage their complexity without fragmentation and in ways that encourage innovation. There is also a distinct need to regularly evaluate the use of any chosen driver of organisational change (Nouwens, Ross, Harreveld, Thomson, and Danaher, 2004).

These evaluations should be conducted in a systematic and methodologically rigorous manner with their outcomes being used to make informed decisions relating to the update, change or implementation of new policies.

Policies, documented practices, and implementation strategies should be integrated into the strategic and operational fabric of the institution. By increasing the level of understanding about the need for change, this transparent process will also increase the level of ownership of the institutional vision.

While they recommend an ateleological approach, the authors stress that this is unlikely to occur in contemporary institutional settings. This is because institutions are becoming increasingly corporate in their outlook, which suits a teleological approach not the more flexible ateleological process, which is better suited to a higher education institution. They believe that this dilemma can be addressed if institutions ask and answer critical questions including: What should universities in the 21st century be and look like? And how can distance education and institution-wide systems, assist organisations in this process?

Organisational issues for e-learning: critical success factors as identified by HE practitioners

Authors: McPherson, M., and Nunes, M. B.

Reference number: 73

Introduction
The UK government, in response to the pressures on higher education institutions from external competition and the need to prepare graduates for the information society, created an e-learning strategy which asserts that it can revolutionise teaching and learning (Department for Education and Skills, 2003). But can this occur if higher education institutional leaders are not convinced of e-learning's benefits? Leadership support notwithstanding, there is increasing evidence to support the view that technology is radically altering education, training and employment patterns globally (Fox and Hermann, 2000; McPherson, 2003a, 2003b; Stensaker and Skjerski, 2003).

Graduates need to have a skill set and capabilities that will allow them to cope with a working life that is likely to be characterised by unstable employment and roles that increasingly demand innovation and a need for ongoing professional development. This means that the introduction of e-learning into higher education institutions needs to be carefully managed using appropriate organisational strategies (McPherson, 2003b).

Allied research into IT management demonstrates that implementation of information systems requires a new type of strategic planning (Spil and Samela, 1999). It is suggested that this new planning approach take a holistic and dynamic view so all aspects relating to the implementation of IT systems can be managed.

But research on e-learning implementation to date has focused on technological, design and delivery issues, with limited attention paid to organisational and institutional aspects which are critical to its success (Volery and Lord, 2000; Soong, Chan, Chua, and Loh, 2001; Testa and de Freitas, 2003). This paper attempts to address this gap by using generic management theory, which suggests the fundamental importance of identifying critical success factors (CSF) to ensure successful change management (Huotori and Wilson, 2001).

The underpinning research question for this study was: what are the underlying CSF required to support the design, development, implementation and management of e-learning in higher education institutions? To address this question the specific objectives were:
- Propose a theoretical framework that enables the understanding of e-learning.
- Identify CSF that e-learning stakeholders believe have an impact in their practice.

- Analyse, relate and group these CSF in order to provide guidelines for institutional change and to support new initiatives.
- Review and, if necessary, adapt the e-learning framework to guide future practice and research.

CSF in e-learning

CSFs are defined here as: 'those handful of things that within someone's job must go right for the organisation to flourish' (Robson, 1997). In policy terms they refer to 'those components of strategy where the organisation must excel to outperform competition' (Johnson and Scholes, 1998). This study identified five fundamental aspects of e-learning to help inform their CSF analysis: organisational, technological, curriculum design, educational systems design, and e-learning course delivery.

Methodology

The generic approach adopted for this study was critical research, which was supported by a cooperative inquiry approach based on focus group interviews. This approach has support in the literature (Merton, Fiske, and Kendall, 1956; Reason, 1988; Kitzinger, 1995; Heron, 1996; Alexander, 1998). These focus groups took the form of semi-structured interviews in which attempts were made to gain consensus to enable deeper understanding of the data (Franklin and Bloor, 1999; Saulnier, 2000). The interviews took place at workshops at selected e-learning and educational technology conferences and were supported by a comprehensive literature review.

Findings

The organisational CSF identified for e-learning were:
- leadership, structural and cultural issues – which are inherent within higher education institutions and determine any change processes and innovation
- design issues – specifically related to e-learning within institutional settings
- technological issues – specific to the 'e' in e-learning
- delivery issues – the implementation of e-learning.

Organisational policy impacts on the design of e-learning. The transition from traditional delivery to e-learning inevitably involves change management. This change management is difficult and requires strong and supportive leadership as well as changes in organisational structure and culture. Organisational culture refers to values, beliefs, philosophies, ways of doing things, and relating to other people exhibited by members of an organisation.

Staff tend to view the 'university' as primarily centrally controlled entities and senior management. However, senior management view the 'university' as departments, academics, researchers and students. These differing views are expected to coalesce around the organisational mission and vision, and national and institutional strategies and policies, within existing funding and available resources. Students see both leaders and staff as the 'university' (Huatori and Wilson, 2001). This means that learning needs and outcomes, in addition to managing learners' expectations, were identified as fundamental CSF.

Because enthusiasm for e-learning is not universal, numerous perspectives need to be aligned if its introduction is to be successful. This was more likely if the core CSF of good communication and institutional leadership were present. This demonstrates that it is essential for leaders to become familiar with their own organisational culture, structure, and corresponding and potentially conflicting strategies before planning the introduction of e-learning.

It also seems clear that people issues in terms of participation, information, training, communication and stakeholder involvement are fundamental when introducing e-learning. This supports the findings of other relevant research projects (O'Neil, 2004; Khan, 2005; Wopereis, Kirschner, Paas, Stoyanov, and Hendriks, 2005).

By adopting centralised control or allowing organic development, institutions can facilitate or inhibit e-learning initiatives. Institutions need to strike an effective balance between centralised and localised approaches. But implementing e-learning involves much more than basic website design.

There needs to be collaboration between subject matter specialists and educational and technological specialists. However, to be more effective requires a clear division of labour between the pedagogical and technological aspects. Good project management supported by guidelines from institutions and the wider sector relating to design, development, accessibility, usability and testing is critical.

Institutions have to decide what systems, resources and infrastructures are adequate to support e-learning. Suitable infrastructures need to include not only adequate data transmission and communication but also robust security and data and intellectual property protection. Effective technical support and maintenance of the infrastructures are also required. But the success of e-learning is far more dependent on how these technologies are applied to the design and delivery of teaching and learning rather than the particular ones that are selected.

Transforming delivery of courses, modules and, in some cases, entire programmes from traditional methods into mixed or multi-modal environments requires widely embedded changes to information management, organisational behaviour, pedagogical approaches, and staff attitudes (Duke, 2002, p. 25). Staff workloads may be impacted by the introduction of e-learning and they need to be balanced and clearly recognised and rewarded.

An identified CSF in this context is the establishment of institutional e-learning champions who would undertake the following:
- Guarantee delivery according to best-practice guidelines.
- Appropriate training and support fo**r** staff and students.
- The devising of appropriate learning models for each e-learning initiative.
- The establishment of educational standards and ethical delivery roadmaps.

Conclusions
Academics are unlikely to sign up to a centrally imposed 'vision' without real opportunities for debate and negotiation. Staff are prepared to embrace e-learning, but not to the detriment of their profession and careers. Successful implementation of e-learning means the institution needs to manage the change process by proposing and agreeing goals through consensual debate, supporting strategies appropriately, and realising these through common commitment.

Given its complex structure, higher education is not necessarily an easy, robust and secure environment for e-learning. For it to be successful it is critical to determine who the institutional decision makers are and to obtain their support. The role of organisational leadership is to balance competing demands and guide institutions through development of sound strategic change management.

There is a risk that institutions that are characterised by technologically deterministic thinking and/or rigid top-down organisational cultures underestimate the importance of this suite of CSF. Some of these practitioner-derived CSF do not easily fit into objectivist and technology-centric approaches that could be adopted by institutions without appropriate consultation and understanding of the complexities of e-learning.

E-learning guidelines: guidelines for the support of e-learning in New Zealand tertiary institutions

Authors: Milne, J., and Dimock, E.

Reference number: 75

Introduction
This annotation focuses on the summary document that supports the full set of guidelines, which are available at http://elg.massey.ac.nz. They provide information on good practice and can assist with the design of e-learning material. They also provide a basis for evaluating the quality of e-learning teaching and resources. However, as the title suggests, they are not prescriptive but put forward ideas and suggestions to improve practice in an e-learning context.

They are structured in a question and answer format. The questions will be summarised in this annotation but the suggested answers are provided as exemplars on the above website. This is because a simple yes or no is insufficient to address the specific and wider issues that the questions raise. The exemplars are based on the literature and actual practice within New Zealand tertiary institutions. While the guidelines provide an overarching framework, individual institutions can use them for their specific context and priorities.

Ultimately the success or otherwise of the guidelines will be determined by whether or not students have achieved their intended learning outcomes. This requires good processes and inputs into them. Therefore, these guidelines are a blend of approaches. They refer to the desired outcomes and the processes and inputs that the literature suggests will make achieving them more likely. But their emphasis is on process so institutions can monitor and improve their e-learning practice.

How the guidelines were developed
This occurred in two stages. Firstly, current literature on guidelines and standards for quality learning were analysed. A final set of 21 guidelines was selected because they related specifically to good e-learning practice. For national context, the New Zealand Institutes of Technology and Polytechnics[13] Quality standards were also reviewed. The reviewed guidelines covered the entire spectrum of learning, from enrolment to examinations, as well as course evaluations.

The selected guidelines were also reviewed against key principles from the Ministry's Interim Tertiary e-Learning Framework and main strategic report on e-learning produced for the New Zealand government (titled Highways and Pathways). These are summarised below.

The second stage of developing the guidelines involved obtaining input from New Zealand's tertiary sector. Existing projects were leveraged and a national survey sent to e-learning experts and those interested in the field. The guidelines underlying pedagogies are based on constructivism, collaborative learning, authentic tasks, reflection and dialogue (Mayes, 2001).

The guidelines
These are based on the following categories: audience, teaching activity, and e-learning principles. These broad categories are then further divided into sub-categories as follows:
- **Audience** – teaching staff, managers, and students.
- **Teaching activity** – learning design, teaching relationships, and other support.
- **E-learning principles** – learner-centred, best practice, collaboration, innovation and sustainability.

Teaching staff questions
These will be listed by teaching activity and then the associated e-learning principle. The questions identified here relate specifically to e-learning, not wider practice.
- **Learning design/learner-centred** – is the use of e-learning the best way to achieve the intended learning outcomes? Does the e-learning encourage a realistic progression towards self-direction? Has a representative sample of students tested the e-learning materials and have any necessary modifications been made?
- **Good practice** – should students access and use a digital archive and e-portfolio service/system?
- **Collaboration** – what strategies in online discussions will build rapport with students? Should students' present work using online discussion tools?
- **Innovation** – is the design of learning informed by research on effective e-learning? Do students get opportunities to practise meaningful and relevant online research, if appropriate for the course?
- **Sustainability** – are e-learning materials within the boundaries of copyright and licence agreements?

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[13] They were the main peak body for polytechnics in New Zealand at the time of writing.

- **Teaching relationships/learner-centred** – do the scheduling and timetabling provide e-learning that has flexibility and can be responsive to students?
- **Good practice** – are online activities available that will enable students to assess their learning?
- **Collaboration** – are online assessment tools for the course identified and evaluated? Is the library consulted when upgrading to ensure that links to electronic information are up to date? Does the teacher evaluate the e-learning during the course to identify its effectiveness and how to improve it? Do students have opportunities to compare their understandings against their peers in online discussions?
- **Sustainability** – can student activity be measured and monitored in a Learning Management System? Does the course administration system enable online teaching staff to effectively manage student learning activities and responses to their communications?

- **Other support/learner centred** – are staff development programmes for e-learning developed in consultation with teaching staff, in order to identify and meet staff needs? Are staff provided with opportunities to learn online so they experience e-learning from a student's perspective?
- **Good practice –** are systems in place to ensure that student work is not lost if the network connection or computer fails part-way through a submission? Are tools used to detect plagiarism? What ICT support is in place specifically for e-learning and is this support regularly reviewed? Is subject and instructional design expertise available to staff to develop and support quality e-learning courses?
- **Collaboration –** are staff encouraged to participate in networks and learning communities involved in reviewing, developing or sharing good practice in the use of e-learning? Is good e-learning practice available to staff in a way they can adopt and adapt in their own work? Are methods in place to measure staff and student perceptions of the online discussions?

Questions for managers
These will be listed by teaching activity and then the associated e-learning principle. The questions identified here relate specifically to e-learning, not wider practice.
- **Learning design/good practice** – when employing information technologies, are experts on learning consulted on the possible and desirable changes that may result?
- **Collaboration** – do stakeholders such as employers, students, teaching staff, library and other support staff have opportunities to give feedback on the e-learning and to be involved in the development and review of the learning outcomes?
- **Innovation** – how does the institution ensure that student learning outcomes are equivalent for versions of a course delivered by different modes or from separate sites? Does the institution value the work of e-learning innovators by supporting, celebrating and disseminating their work?
- **Sustainability** – is there an adequate budget to achieve the plans for e-learning?
- **Teaching relationships/good practice** – does the e-learning meet the specified expectations of the awarding institution, in respect of the quality of teaching and learning-support material?
- **Innovation** – does the institution review the effectiveness of its e-learning to assure alignment with institutional priorities and educational objectives?
- **Other support/learner-centred** – can staff and students easily use the learning technologies and online resources? Are the materials and activities accessible to all enrolled students including those with disabilities? Are learning technologies designed and implemented that meet student needs and teaching practice? Is there an evaluation process to ensure further upgrades take account of user feedback for improvement?
- **Good practice** – does the institution provide a reliable, secure and up-to-date information technology infrastructure that meets the requirements of the course? Is a mechanism/policy in place for future software/hardware upgrades and improvements? Is the e-learning reliable in operation across all platforms and browsers? Does the institution have a code of practice

for computer use? Are technical standards such as those that ensure system interoperability used?

- **Collaboration** – has the institution collaboratively developed a vision for e-learning that is aligned with its overall vision for teaching and learning? Are there clear lines of responsibilities for e-learning technical and pedagogical issues and problems?
- **Innovation** – does the institution evaluate the support for students in an e-learning environment? How does leadership behaviour demonstrate a commitment to an institution-wide approach of improving teaching and learning through the use of e-learning? Does the institution support creativity and innovation in e-learning? How does the institution monitor the impact and effectiveness of e-learning? How does the institution encourage staff to make effective and innovative use of e-learning and recognise teaching excellence in an e-environment? Does the institution have policies and agreements on ownership of intellectual property relating to e-learning?

Questions for students

These will be listed by teaching activity and then the associated e-learning principle. The questions identified here relate specifically to e-learning, not wider student learning, outcomes and experiences.

- **Learning design/collaboration** – do online discussions enable student-student collaboration?
- **Innovation** – is there a defined process to follow that identifies the feasibility of appropriate delivery modes for the course?

- **Teaching relationships/good practice** – will the e-learning foster students' curiosity and creativity? Do the technologies employed help students successfully meet the learning outcomes?
- **Collaboration** – does the teacher provide advice to students on netiquette, which is how to communicate effectively and ethically for online discussions and email?

- **Other support/learner-centred** – are the categories of e-learning made clear to prospective students? Are prospective students made aware of the teaching style and course delivery approaches inherent to e-learning? Do staff introduce information and technical skills to students? Can prospective students enrol online, by phone, fax or mail? Do students get guidance on study skills for the e-learning environment?
- **Good practice** – do students get an explanation of any differences to the e-learning course compared with a more familiar approach? Do students get training in the use of online information and searching? Do students get appropriate ICT support in a timely manner?
- **Collaboration** – for students taking a web-based e-learning course where face-to-face contact is minimal, how does the institution involve them in the academic community?
- **Sustainability** – are standard technologies used as much as possible, preferably those that do not require the student to install third-party applications?

E-learning in New Zealand Institutes of Technology/Polytechnics

Authors: Mitchell, D., Clayton, J., Gower, B., Barr, H., and Bright, S.

Reference number: 76

Introduction

The main goal of this Ministry-funded research project was to investigate the factors that lead polytechnic teaching staff to incorporate or resist the introduction of e-learning into their practice. The specific objectives were:

1.   Establish a database to ascertain the extent to which polytechnics utilise e-learning in their teaching programmes.

2. Establish the critical factors that influence the varying degrees of commitment by teaching staff to e-learning.
3. Establish the relationship between institutional policies and operational reality with respect to e-learning.
4. Develop a set of institutional guidelines based on the project's findings that will encourage greater adoption of e-learning in polytechnics, and, more widely, in the tertiary education sector.

Methodology
The project consisted of four phases: an annotated bibliography (Mitchell, Barr, Bright, Clayton, and Gower, 2004a), and survey of managers in all the polytechnics to determine their e-learning policies and the extent to which it had been adopted. This phase included analysis of their publicly available policy documents.

The third phase consisted of case studies in three polytechnics at which an analysis of policy documents relating to e-learning was carried out, interviews with key management staff with e-learning roles, and focus group interviews with a range of tutors. Finally, teaching staff in all the polytechnics were surveyed online to determine what factors influence their adoption or rejection of e-learning. The response to this survey was 831 or 23.6 percent of total polytechnic teaching staff. This response rate is similar to other surveys that were reviewed for their annotated bibliography.

Major findings – overview of e-learning in polytechnics
Most polytechnics (44.4 percent) centrally managed e-learning but another third adopted a devolved approach within organisation-wide integration. Only 11.1 percent left e-learning up to individual staff initiatives. Most polytechnic managers believed that e-learning adoption was increasing and for a minority (25 percent) this was rapid. However, none thought it was decreasing and noted considerable increases in the embracers and modifiers categories described below.

The level of adoption by polytechnic teaching staff can be summarised under five categories (and the percentages associated with each category will also be given):
- **Embracers** – have advanced knowledge of e-learning and the institutional systems used to support it, and use it to transform their teaching (11.9 percent).
- **Modifiers** – primarily use e-learning as a means to transmit content, although they understand e-learning and the available institutional systems (45.5 percent).
- **Examiners** – have a limited understanding of e-learning and are mainly exploring or considering its use by, for example, placing some of their materials online (33.5 percent).
- **Doubters** – are not considering adopting it as they are satisfied with their existing pedagogies, although they know a little about e-learning (8.92 percent).
- **Refusers** –are not interested in e-learning and are likely to be philosophically opposed to it (0.2 percent).

Other data largely supports these survey findings by suggesting a small majority (51 percent) were not currently engaged in designing and/or delivering e-learning courses. Tutor use of technologies varies widely, with most utilising relatively unsophisticated technologies such as email. Only the Embracers were using a wider range of technologies such as video- and audio-conferencing, web-based testing, and online discussion/chat rooms. This could be because most polytechnics do not have the infrastructure to support more interactive e-learning approaches.

This means that any professional development approaches must be targeted and customised to be able to deal effectively with the range of attitudes and abilities in respect of e-learning by polytechnic teaching staff. In terms of infrastructure, it is recommended that a Learning Management System be adopted in conjunction with a limited number of e-learning software applications.

Major findings – external influences

Employers' expectations for e-learning were critical in determining the level of adoption by institutions, but these expectations need to be more clearly articulated and communicated to teaching staff. Students' expectations were less important. However, more important than these stakeholder considerations for teaching staff was using e-learning as the basis to establish a competitive advantage. But this was less important for institutional managers.

Major findings – institutional culture and policies

For teaching staff, management support had limited influence on their adoption of e-learning. The importance of e-learning policies for managers was evenly split between those who thought they were critical, to others seeing it as being of moderate importance, and the final group not regarding this as posing a major barrier to its adoption. There were divergent views on the importance of e-learning specific professional development. Teaching staff did not see this as having a major influence on their adoption of e-learning, but the overwhelming majority of managers saw this as being critical to the implementation of e-learning.

It is unlikely that e-learning can be successfully introduced without appropriately resourced and clearly targeted professional development programmes that are customised to meet the varied requirements of staff and draw on the available research evidence to inform their development. However, of far more importance to teaching staff is the amount of time they have available to develop e-learning courses. Managers concurred with this view.

However, the case study institutions indicate a large gap between managers understanding and expectations of e-learning and the attitudes and actual adoption of it by staff. For example, staff feel that managers underestimate how long it takes to develop an e-learning course. Managers, in contrast, either are unclear how long it will take or think that this view is driven by a lack of experience and once adopted e-learning will actually reduce teacher workloads. Linked to this concern was a more specific issue of teacher-student communications, with most teachers thinking e-learning would lead to large increases in this context.

These divergent views can also be seen in technical support for e-learning. Teachers did not see this as being particularly important, but managers did. However, the report recommended that polytechnics ensure there is an adequate technical infrastructure in place to support the development and implementation of e-learning.

Intellectual property was not rated as being of particular importance overall by both teachers and managers. But the report recommended that institutions adopt clear intellectual property policies for e-learning resources developed by staff. Rewards and incentives to participate in e-learning for staff were also not seen as being particularly important by both staff and managers overall.

The size of institution is important: larger polytechnics tend to have higher levels of e-learning adoption than smaller ones. This poses a challenge for smaller polytechnics, where there are no economies of scale as a bare minimum of support structures is required for the widespread development and implementation of e-learning.

Major findings – pedagogical considerations

Most managers, unlike staff, saw flexible working hours as being important to better meet student expectations and requirements. Staff were not concerned overall that e-learning could reduce their direct control over their teaching. Managers were evenly split, with some considering this to be important while the other group did not. But the case study institutions indicate that the view that e-learning will make traditional delivery obsolete was not universally held.

Managers believed that e-learning was applicable to a wide range of disciplines and subject areas. But tutors had divided views. Typically embracers saw it as being relevant to their particular subject or discipline area, while the doubters and refusers did not. This split was also reflected in perceptions of whether or not e-learning had pedagogical benefits. Embracers generally thought it did, whereas doubters and refusers did not. In the case study institutions

teachers wanted to be assured that introducing e-learning would not detract from the quality of their courses.

Overall, staff and managers saw mentors as important, but managers considered them more important. The evidence suggests that the absence of mentors may have inhibited doubters and refusers, but their presence may have facilitated adoption by the embracers. This indicates that mentors could be used for formal and informal professional development opportunities. The report's findings suggest that institutions need to roll out new technology carefully and of particular importance is that its introduction is error-free and technical support is provided, especially in the early stages.

Major findings – teachers' personal attributes
European and Asian teachers were more likely to adopt e-learning than their Māori and Pasifika peers. For example 58 percent of Europeans self-identified as embracers or modifiers, compared with 42 percent for Māori. Teachers who taught distance courses were more likely to adopt e-learning than their on-campus counterparts. Overall, both staff and managers saw technological competence as a moderately important factor in e-learning adoption. The authors suggest that it would be most cost-effective for institutions to place an emphasis on upgrading the skills of those with moderate proficiency.

Major findings – student factors
This was a critical factor in determining the adoption of e-learning by staff. Courses where e-learning was seen by teachers as an industry requirement included business, administration, health and retail, as well as information technology. Areas that had the lowest adoption tended to place a greater emphasis on the acquisition of practical skills including trades, engineering construction, and the media arts or interpersonal communications such as social services, Māori and Pasifika.

Most managers saw attracting new student markets as being of high importance in their adoption of e-learning. These 'markets' included students returning to the workforce and students living in remote areas and unable to access traditional delivery, as well as mature students generally. This is also arguably the most important factor for teachers, who typically want to cater for their students' needs and requirements.

There was general agreement that for e-learning to be successful, students needed to be able to utilise it effectively. This included having access to the relevant software and hardware as well as specific skills related to different literacy and information retrieval. Learners also need technical support. Faculty staff claimed that many students had less experience with computers and fewer technological skills than was generally assumed by management and teachers. This clearly indicates that, if e-learning is to work, students' technological competence and access to appropriate technology must be high on the list of polytechnics' priorities.

Conclusions
A wide range of factors influence the uptake of e-learning by staff. This means that a one-size-fits-all approach to professional development is not appropriate. Staff can be assisted with a simplification of the e-learning tools and technologies available and an institutional Learning Management System could resolve this. It is clear that even the embracers are merely skimming the surface in regard to e-learning's potential.

To improve their e-learning performance institutions must ensure staff are continually exposed to applied research that demonstrates success in pedagogically sound e-learning environments within a wide range of disciplines. There is wide diversity among polytechnics in their commitment to and involvement in e-learning. While a few are at an advanced stage, most are merely commencing the journey.

Institutions need to develop long-term policies and strategies that take account of rapidly shifting developments in technology and attendant pedagogy. They also need to recognise that expenditure on a reliable, robust and secure technical infrastructure to support e-learning is a

critical investment in an increasingly competitive environment with heightened expectations from teachers, students and employers.

Limitations
The findings of this study are strictly time-bound, as e-learning is rapidly developing and evolving in a polytechnic context. The low response rate from tutors limits the extent to which the above findings apply to all polytechnics. There is a potential bias towards e-learning practitioners, although a small majority of respondents were not involved in its design or delivery. Finally, females were overly represented in this study compared with the national polytechnic gender ratio.

Future research questions
How much time is now necessary for e-learning course development with the availability of increasingly sophisticated systems and infrastructures? What is going to be the impact of likely/possible changes in technology on the future of e-learning and how can institutions prepare for inevitable change when the shape and extent of it are largely unknown? What expectations, skills and experiences relating to e-learning are students bringing to their tertiary education and how rapidly are these changing?

What do employers and professional associations expect regarding future e-learning provision? Are they using it to train their staff and will they be increasingly likely to do so in the future? What are the key features of professional development programmes that take account of the literature including this study? How can these programmes accommodate the wide range of e-learning-related skills and attitudes of faculty and managers as demonstrated in this study?

Supporting the online learner

Authors: Moisey, S. D., and Hughes, J. A.

Reference number: 77

Background
Creating a supportive learning environment for e-learners is crucial for ensuring their retention and success. This support is more than academic; non-academic support is also crucial. Institutions that provide distance education generally fall into three broad categories. The first of these is the 'mega university' (Daniel, 1996) with numbers of students in the hundreds of thousands. The second serves students across a wide geographical area. For a large and dispersed student body online support is essential.

Finally, there is the fast-growing category of 'dual-mode' institutions that in addition to their traditional on-campus provision and services are increasingly shifting to online delivery as well. Their main challenge is meeting the needs of two very different student groups. Thoughtful planning and significant financial commitment are often required to ensure high-quality student support for both groups.

But regardless of the institutional context, student support is essential for successful online learning. This support should be flexible, continuously available, easily accessible and genuinely useful. It must have a 'value-add' for students or they will not use it.

Support for prospective students
Key questions for institutions to consider when they are planning or implementing online learning support include: how ready are these students for online learning? What is their access to, and familiarity with, the required technology? What are their individual learning styles or preferences? What are their educational goals?

Institutions need to bear in mind that learners will require different levels and types of support. The focus should be on self-assessment to encourage learner independence but providing back-up where necessary.

It is important that sufficient information is provided so students can determine if they have (or have access to) the necessary hardware, software and connectivity to study online. Short sample experiences prior to course enrolment are also valuable. Online support can also be provided to assist students' career planning and choices.

This also applies to their educational goals and associated study choices. A programme advisor can help learners understand the specific programme requirements. They should be supported by academic advisors for more specific study issues and assistance.

Administrative and logistics support

Daniel (2000) stresses the importance of effective administration and logistics in supporting e-learning. This view is supported by learners, who report that flexible access and smooth administrative support are important in the creation of a supportive learning environment.

Despite institutions now offering many administrative services and support online, including course registration, examination requests and the purchase of textbooks and course materials, challenges remain. Dual-mode institutions need to provide two forms of course registration. This can be problematic because of the likely redundancy and duplication and the higher costs associated with the maintenance of two systems.

Students still need to be able to purchase print-based materials even where they are available online. This can be resolved by providing CD-ROMs or other storage media for some material or in some cases charging students for them.

But above all, learners need to know what services they can expect to receive from the institution and how they will be provided. Standards need to be clear and readily available around essential services such as confirmation of course registration, time for a response to an email query, or how long to receive an examination grade or assignment feedback.

Information and technological support

Determining a clear boundary between academic and information and technological support is challenging and these supports must be coordinated carefully. There are three common methods institutions use for providing information and technological support:
1. Information centre –provides institutional and programme information.
2. Computing helpdesk – deals with learners' technological issues and provides information.
3. Call centre – deals with learners' questions and requests, typically in a particular programme area.

Each of these different support areas would ideally have the following characteristics:
- Reliable networks that have asynchronous access (e.g. email available '24/7') and synchronous access (e.g. toll-free telephone at clearly identified times).
- Quick response, with acknowledgment and follow-up – this includes a follow-through to resolution of issues or difficulties that learners encounter.
- Simple, clear instructions.
- Access by staff to all critical databases and expertise.
- The ability to identify problems with policies, procedures or systems, and to suggest change.

Portals can be used to alleviate the situation where learners are required to interact with a plethora of different websites and the associated problems of multiple logons and passwords. Portals can also assist by individualising and integrating online interactions. This enhances the learner's experience by making access easier and more efficient.

Metacognitive supports

These are important because some learners commencing online study may have been absent from formal education for lengthy periods, while others may not have experienced this mode of study and do not know how best to approach it. Online resources to enhance the metacognitive skills of online learners include:
- resources that help learners develop time management strategies to better balance their educational and other commitments

- strategies and exercises to reduce exam anxiety
- assistance in writing papers, including the facility for students to submit draft assignments and receive feedback on them before their final work
- intellectual property-related resources to help students avoid plagiarism, including teaching them how to cite the sources they use to complete their work appropriate and accurately
- community-building tools and social software for facilitating learner interactions including 'study-buddy' connections for peer assistance, electronic bulletin boards, text-based chat, audio-conferencing, blogs and wikis. Programme websites can also include an interactive 'meet and greet' area where students can introduce themselves and/or discuss shared interests and concerns.

Online educational counselling
In the online environment, learners can 'fall through the cracks' if assistance is not readily available. The work of an educational counsellor in an online learning environment has three aspects. Firstly, they should be involved in developing online resources that help learners to identify and address barriers to reaching their educational goals. Secondly, they should interact with learners when required. Finally, they should work with other institutional staff to ensure that processes and procedures support and enhance learning.

Supporting online learners with special needs
Increasing numbers of learners with special needs are recognising the benefits, including increased and enhanced access, of online learning. But online learning also presents many challenges for these students, particularly those with physical, sensory or learning disabilities. For example, using a keyboard may not be possible, they may be unable to participate in audio conferences, the web pages may not be accessible, and the dominance of text-based communications may also disadvantage or exclude learners with particular learning disabilities or reading comprehension problems.

Athabasca University has established a dedicated policy for learners with special needs, outlining the services these learners are entitled to. An exploratory study (Moisey, 2004) found that learners who received disability-specific services tended to have greater success. Athabasca University provides a range of disability-specific services, including external support which provides for the use of external personnel such as academic strategists, interpreters, note-takers, study aides and support workers.

They also provide assistive technologies services. This involves assessing learner needs for special equipment or software to assist their learning. This often includes using adaptive software such as programmes for text-to-speech conversion and word prediction, screen readers, voice input, optical character recognition, and screen enlargers. These services also provide procurement of the requisite equipment, training and liaison with funding sources.

E-learning in higher education: the need for a new pedagogy

Author: Morrison, D.

Reference number: 79

Background
Increasingly, valid critiques have pointed to the lack of empirical evidence that technology-enhanced learning initiatives actually improve learning outcomes, enhance teaching practice, and are cost-effective for the institution (Clark, 1994; Twigg, 2001; Zemsky and Massy, 2004). One of the conclusions that can be drawn from these critiques is that technology alone is insufficient to solve the problems of an inefficient, even archaic, approach to pedagogy employed by the vast majority of higher education institutions.

A critical success measure for any institution employing e-learning is the quality of the outcomes (Weigel, 2002). The main argument put forward here is that current strategies used to address performance gaps, such as technology-focused faculty development, will fail to realise

the desired outcomes of an institution shifting to e-learning. This is because current strategies tend to focus on appropriate supporting methods and techniques but do not include a deep and critical discussion about the fundamental purposes of designing and employing e-learning; and often there is limited focus on the desired outcomes of the shift to technology-supported teaching and learning.

To take full advantage of e-learning's potential, higher education institutions have to radically reorganise their infrastructures and organisational models. They must also face the challenge of developing a more appropriate pedagogical foundation to construct a revitalised education system that is necessary to meet the demands of current and future users and developers. This is because current approaches to teaching and learning do not fit well with the information and communications technology (ICT) tools that are being used (May and Short, 2003).

Some argue ICT is inherently changing the system from within. For example, Dziuban, Hartman and Moskal (2004) cite a report from the National Research Council Panel on the Impact of Information Technology on the Future of the Research University. This report speculated that 'information technology will alter the university's usual constraints of space and time, transforming how institutions of higher education are organised and financed, as well as altering their intellectual activities' (p. 8).

E-learning outcomes
Costa and Garmston (1998) developed a model of five interdependent learning outcomes:

- Activities – where success is determined by whether or not learners complete all activities.
- Content – where the pedagogical focus is on what concepts students will learn, what understandings they will develop, and how that knowledge will be recognised and assessed.
- Processes – where the focus shifts from activities and content to cognitive processes. These outcomes are critical because too deeply understand any content, learners must know and practice the processes by which that content came into being (Paul and Elder, 1991; Tishman and Perkins, 1997; Costa and Garmston, 1998).
- Dispositions – the previous three outcomes contribute to a set of learner behaviours (or dispositions) that make significant contributions to lifelong learning and other long-term outcomes. As these outcomes are achieved collaboratively, they are more likely to be reinforced, transferred and revisited across the institution.
- Mind States – these are efficacy, flexibility, craftsmanship, consciousness and interdependence. At this level, outcomes are drawn not only from the mind states themselves, but also from the ways they interact with the institution's expressed values, culture and mission.

A systems approach to e-learning in higher education
The activities associated with an institution's efforts to make the transition to e-learning are situated within their larger contexts. These include political will, budgets, human resources and skills, the extent of entrenched ideals, and resistance to change. These contexts will hinder or advance progress towards a transformed institution that is ready for e-learning.

Institutional changes are further complicated by the lack of influence on them from course or even programme-level initiatives. Only when departments and the wider university undertake a re-engineering of teaching and learning will the transition to an innovative e-learning institution prove to be successful.

New outcomes to help institutions transition to e-learning
To help ensure the transition to e-learning results in an improved institution, it is critical that the current higher education outcomes are revamped to reflect those outlined above. E-learning's proponents must inform the university community about the need for higher-level outcomes. These higher-level outcomes are important from an institutional perspective because they demonstrate the value-add of higher education. But in order for this to occur, the institution and faculty must make development opportunities available so teachers' pedagogy can shift from transmittal to transformative.

These higher-level outcomes are also more likely to be supported where institutions encourage and facilitate interdisciplinary activities and sharing. The institution also needs to make clear that any new technologies need to be used wisely. This means using them to support higher-level outcomes, not merely as a high-tech overlay or add-on to outdated or ineffective pedagogies.

Building capacity for institutional change
Currently there is no consensus as to what really effective online education within the context of tertiary institutions should look like. Some have argued that a dominant model will emerge (Zemsky and Massy, 2004). But it is important not to search for an ideal model. What is required is a dynamic, evolving institution that adapts and reconfigures appropriate working models for e-learning. However, this does require openness to new ideas, especially in a pedagogical context (King, 1993).

These pedagogical shifts are more likely to be achieved where the focus is on building capacity for transforming institutional norms for teaching and learning from within. For example, the faculty adoption of e-learning should draw on the traditional strengths of the academy as well as supporting collaborative individualism. This involves building connections and interdependency between people, organisations and ideas (Smyre, 2000).

Institutions must have a forward-thinking orientation, drawing on current research and literature to inform decisions about the adoption and implementation of e-learning. These activities must incorporate evaluation mechanisms if institutions of higher education are to make the best use of e-learning.

The Benchmarking and Pathfinder programme and its role in institutional transformation

Author: Morrison, D.

Reference number: 80

Introduction
The purpose of this article is to provide sufficient background information for a reflection on those parts of the Benchmarking and Pathfinder (B&P) programme that may eventually contribute to institutional transformation.

Background
The B&P programme was a major initiative funded by the Higher Education Funding Council for England (HEFCE) from 2005 to 2008. By completion, 77 higher education institutions had taken part in the benchmarking component of the initiative and 37 of those had also taken part in the Pathfinder element. It was led by the Higher Education Academy (HEA) in conjunction with the Joint Information Services Committee (JISC). The strategic driver for the programme was HEFCE's 2005 e-learning strategy, which had signalled the need for higher education institutions to identify their relative positioning with regard to e-learning developments.

Five factors were critical to the design of the programme. Firstly, there were the experiences and lessons learned from the failed e-University venture. Secondly, institutional autonomy and independence meant a one-size-fits-all approach was not appropriate. Thirdly, there was a lack of benchmarking methodologies for higher education institutions that would align with the expectations of participants.

Fourthly, there was the fact that e-learning would be interpreted in various ways by the participants, and finally, the challenges associated with trying to differentiate the e-learning component within the overall teaching and learning processes used by institutions, and in particular student use and benefit. These factors meant that institutions were given ownership and control within the common operating framework. HEA acted in a broker and guide capacity, rather than in a directive role.

The Pathfinder programme offered grants of up to £170,000 to successful institutions, but only if this was preceded by analysis and reflection of e-learning provision, processes and practice through benchmarking. Benchmarking was undertaken without direct financial support. However, advisors were appointed to support and guide the exercise.

Transformation interventions, transformation messages
Pathfinder was originally run on traditional lines for a development programme where institutions or centres would be selected to develop reference models for the rest of the sector. But as it proceeded, it became clear that the initial focus had to be on becoming 'Pathfinders' in their own institutions.

This was followed by the development of nascent and inclusive communities which operated in synergy with extant sector resources and initiatives. This added considerably to the transformative potential of the programme as demonstrated by the fact that several of these communities have expanded their membership and activities to become genuinely higher education sector-wide.

Transformation is primarily a social process, which can be facilitated by a number of benign interventions that are more effective if they are perceived as being authentic. Authentic interventions arising from the B&P programme included:
- the provision of benchmarking advisors recruited from higher education institutions
- sharing of experiences
- peer-support groups of participating institutions
- a team of influential critical friends from the sector with a proven track record in the development of e-learning policy, who negotiated with senior managers and participated in governance groups as well as assisting the project teams
- the development of network projects which led to the aforementioned communities
- provision of an Evaluation and Dissemination Support team, who helped institutions evaluate their own progress and negotiated with them over the extraction of lessons of relevance to the broader higher education sector
- the facilitation of synergies with other national and international 'e' initiatives
- further development of other benchmarking methodologies including New Zealand's e-Maturity Model and the one used by the Observatory of Borderless Higher Education/Association of Commonwealth Universities.

Transformation initiatives benefit from being inclusive. For example, having low barriers to entry could benefit those who lack the skills and resources to participate in programmes with higher obstacles to participation and they may have the greatest need and obtain the most benefit. Transformation in multi-faceted and socially complex organisations like universities takes more time than centrally funded initiatives and change management theories often allow.

One rather uncomfortable reality is that transformation involves a series of processes rather than an event; as such it can seldom be aligned with political and financial timescales. But one of the many challenges faced by those responsible for leading transformation initiatives is the inevitable demand from political stakeholders for evidence that positive results are rapidly accruing from the interventions over which neither they nor the lead agencies have direct control.

The consequences of this are institutions focusing on limited, easily achievable deliverables as evidence of impact rather than the longer-term outcomes that are the 'real' evidence for transformation. For example, institutions who prescribe that a set amount of their provision is available through e-learning are unlikely to achieve meaningful gains for students' learning. Transformation requires thinking beyond the project, and countering short-term pressures could be achieved by normalising the expectation of institutions that there would be short-, medium-, and long-term reviews at the end of the programme.

Even relatively modest amounts of funding can have significant impacts when targeted appropriately and when the recipients have genuine ownership of the problem area. External

drivers more generally can influence, initiate and inform transformation. But such influences are only possible where they are perceived to be relevant and important to the work of the institution and align with their internal goals.

For example, the external drive of the B&P programme made actions possible inside institutions that would otherwise have been difficult to achieve. Benchmarking advisors and the critical friends raised the profile of the initiative within institutions and thereby assisted internal 'champions'.

What transformation models or theories apply?
Much of the current activity and investment appear to be based on an assumption that the introduction of technologies alongside new or re-aligned processes is sufficient for transformation (JISC, 2008). But introducing technology carries risks for organisations. For example, institutions can adjust their processes to suit the technology rather than making it fit their desired outcomes. In short, organisations end up serving the 'machine' (Cornford and Pollock, 2005).

This outcome and view are reinforced by those who view education as being amenable to industrial-type processes with an over-focus on delivery rather than the entire teaching and learning experience (Morrison, 2005b). In a similar vein, business process re-engineering could achieve 'the fundamental reconsideration and radical redesign of organizational processes, in order to achieve drastic improvement in cost, service and speed' (Hammer and Champy, 2001). It could also be positioned within enterprise transformation theory.

Alternatively it could be aligned within learning transformation theory where differing assumptions and expectations including your own are assessed for relevance before making an interpretation (Mezirow et al., 2000). But it could also be a cultural change model.
In contrast to the other models and theories outlined here, it stresses the timescales and stakeholder engagement required for cultural change and puts technology in a contributory rather than a dominant role (Davies, Hall, Oppenheim, and Scammell, 1997).

They recommend that for cultural change to occur there must be 'more training and awareness activities that aim explicitly at the middle management (budget-holding) levels in academia. Library managers, and heads of academic departments, need to be involved personally if they are to move their staff into new ways of working, both formal and informal, and hence effect cultural change'.

The role of technology in transformation
For university executives and politicians, transformation may equal cost savings. But this is risky because it largely ignores students. A less risky assumption might be that younger students expect from higher education institutions not only a high-quality ICT infrastructure but also sufficient interactions with their teachers.

In any case, transformation is highly unpredictable because a steady state cannot be assumed. Instead of assuming that technologies are transformational, it may be more useful to take an historical perspective. Edgerton (2006) argues that there is a tendency to confuse sustainable technologies with invention, innovation and novelty. But these newer technologies can be superseded by developments in established technologies and serious unforeseen problems with the newer ones can arise over the longer term. Edgerton also points out that greater effort is expended on maintenance than innovation over the lifetime of an invention.

Other initiatives
The HEA has developed an initiative referred to as the Enhancement Academy (EA). As well as building on the B&P programme it also incorporates some of the lessons derived from HEA's Change Academy initiative. EA is an institution-focused transformation initiative, which aims to enhance aspects of teaching and learning at a local level. It is utilising the Pathfinders and critical friends as key support for developing and implementing this initiative.

In a 2009 report for JISC, Demos (a UK political think tank), argue that technology is increasingly central to how institutions provide learning and facilitate research. It has allowed learning and research to occur outside institutional boundaries. But capitalising on these opportunities will take strategic leadership from institutions, new connections with the growing world of informal learning, and a commitment to openness and collaboration.

Institutional perspectives: the challenges of e-learning diffusion

Author: Nichols, M.

Reference number: 83

Introduction

There is great variability in organisations in terms of e-learning diffusion (Jebeile and Reeve, 2003; Rogers, 2003; Lisewski, 2004; Wilson and Stacey, 2004; Mahoney and Wozniak, 2005; OECD, 2005; Salmon, 2005; Sharpe, Benfield, and Francis, 2006). While some institutions have achieved impressive results through e-learning and have programme-wide adoption, others have languished with isolated and alienated e-learning functions and tend to rely on coercion or individual interest for its implementation.

This paper reports on the findings from an exploratory study of institutional change and e-learning. It highlights factors that assist e-learning diffusion and identifies others that appear to have little, if any, influence. The emphasis of this study was on strategic or higher-level managerial concerns within the institutions rather than operational activities. This meant, for example, the discussion focuses on whether policies are in place, but not on their actual content.

E-learning diffusion in higher education institutions

Diffusion is defined here as a process of communication, with adoption of innovation as the goal (Rogers, 2003). The ultimate aim of e-learning diffusion is to achieve its implementation in a suitable and sustainable way within a given institutional context.

The literature presents a fragmented picture of e-learning diffusion. According to Lynch (2002), e-learning diffusion cannot be successfully achieved without faculty buy-in. This is supported by the fact that most of the major barriers to its adoption are staff related, such as: time-commitment and workload issues (including the academic priorities for research), self-efficacy, and lack of effective staff development. Others identified include poor leadership and drawn-out implementation (Berge and Muilenburg, 2003; Cho and Berge, 2003; Hegarty and Penman, 2005).

To mitigate these barriers, a gentle and affirming change strategy is recommended so that the anxiety and uncertainty faculty tend to associate with change are minimised (Collins, 2000; Cho and Berge, 2003). Other human factors, particularly interpersonal or social activity, are central to effective diffusion. But while these human factors are critical, social processes take place within a system that must also be conducive to diffusion (Rogers, 2003). For example, faculty buy-in requires not only professional development and clear communications, but also changes to the context within which they operate (Jones and O'Shea, 2004).

Diffusion must be a carefully managed top-down and bottom-up exercise (Lisewski, 2004; Sharpe et al., 2006). This exercise requires coordination and a holistic approach because institutions themselves are systematically holistic (Senge, 1990; Elton, 1999). While it is important that managers, faculty and administrators each play a role in effectively coordinating, ultimately the responsibility for aligning the institutional elements of education rests with management (Buckley, 2002; Jochems, Van Merrienboer, and Koper, 2004; Van der Klink and Jochems, 2004; Burke, 2005; Salmon, 2005).

Impressive results in student retention, learning effectiveness and efficiency have been associated with systematic change at the managerial levels that is aligned with e-learning diffusion (Twigg, 2003). Innovation is the starting point for diffusion but this is not to be confused with transformation. Transformation through e-learning only occurs through long-term

commitment and institutional leadership (Garrison and Anderson, 2003). Sharpe et al. (2006) merged these two concepts by coining the term 'sustainable embedding' to describe the transformative change resulting from effective e-learning diffusion.

Sustainable embedding was defined here as an e-learning implementation characterised by activity that is proactive (it permits forward-thinking and further planning to take place), scalable (e-learning can be rapidly deployed across new programmes or else new approaches can be readily adopted), and self-perpetuating (in that e-learning has become an established part of operations).

Methodology
Data was collected from interviews with e-learning representatives from 14 institutions which were conducted face-to-face for the New Zealand institutions and by Skype or telephone for the international ones. These representatives were either e-learning managers or the primary institutional contact for e-learning.

The institutions in the study comprised eight universities, two polytechnics and four other organisations from both New Zealand and overseas. Four were specialist distance education providers, three combined traditional delivery and distance education (mixed-mode), and the others were on-campus, many of which were planning to become more mixed-mode.

They ranged in size from over 20,000 full-time equivalent students to fewer than 1,000. Most had between 1,000 and 20,000. They were defined here as medium-sized institutions. The international institutions were either self-selected or invited directly. The New Zealand ones were selected as a convenience sample from across the North Island.

Transcripts were agreed with the participants and were then analysed for common themes. They were then coded as criteria for comparison. Institutions were categorised according to coded items based on the participants' qualitative responses.

Findings
Institutional context, made up of factors such as internal culture and institutional structure and systems, was all important. Power structures were particularly critical. Two institutions making use of the same specific diffusion strategies might get entirely different results because of the commitment or otherwise of these centres of power. Institutions experiencing rapid diffusion typically had e-learning represented at their top-managerial level, or had made e-learning professional development mandatory. Existing policies and systems were also significant.

Some institutions treated e-learning as an external activity, while for others it was part of their business as usual. Other common factors (in addition to the ones outlined above) identified for successful e-learning diffusion were:

- strategic 'ownership' and acceptance of e-learning – high-level ownership permits coordinated decisions related to technology and policy, and ensures that appropriate resources are brought to bear for the purposes of change
- an institution's 'readiness' for e-learning – institutions with cultures characterised by open communication and a focus on innovative teaching were more likely to quickly and effectively diffuse e-learning
- alignment of policy and systems with e-learning activity
- different dynamics of change for large and medium, and smaller institutions – smaller institutions could adopt e-learning more rapidly and without the level of bureaucracy required by larger ones. Larger institutions were more likely to succeed where they empowered their staff. In contrast, smaller institutions were more able to centralise course production services and impose particular e-learning approaches.

Those institutions with sustainable embedding had engaged a critical mass of academics in e-learning activity, and had successfully systematised it within the institution with accompanying policies.

However, there were also a number of themes that did appear to substantively influence e-learning diffusion:

- A perception that e-learning was expensive – the associated costs were accepted or activity shifted to less expensive areas.
- Team course development – institutions did not necessarily require course design teams for successful e-learning diffusion.
- Adopting additional quality assurance criteria – many of the more successful institutions leveraged, without additions, existing quality assurance criteria for their e-learning activities.
- Having a dedicated e-learning department – some successful institutions did not have a dedicated e-learning department; others used existing ones to manage e-learning such as their information technology department.

The major barriers identified in this study are outlined below. Where they are not addressed, e-learning will remain a peripheral function that will only involve a small group of faculty.

- A lack of strategic ownership.
- A lack of support from senior management.
- An institutional culture not yet ready for innovation (as evidenced by poor initial Virtual Learning Environment adoption by faculty).
- Misconceptions about what e-learning is.
- An awkward fit for e-learning activity within existing institutional systems, combined with an inability or unwillingness to change those systems.
- Poor or ineffectual professional development.

Discussion

Salmon (2005) suggests two main ways for e-learning to be institutionalised: large-scale centralisation, and incremental staff-based change. Larger institutions are more likely to be successful in e-learning diffusion using a centralised approach, while for smaller ones it is by using incremental staff-based change. However, care must be taken that revised policies designed to assist e-learning diffusion do not stifle further staff-based change, and in particular local innovations.

Momentum is a critical factor. This separates those who have achieved sustainable e-learning from those who have not. This momentum is a function of:

- strategic ownership and representation at that level demonstrated by senior management assistance
- the level of diffusion resulting from the initial Virtual Learning Environment implementation
- reducing ignorance about e-learning
- having e-learning-compatible policies and systems
- the availability of effective professional development.

Further innovation and development are dependent on the continuing momentum based on consistent commitment and investment in e-learning, and the institution's openness to adapt to new possibilities. E-learning can be undertaken within any institution. But it is more likely to lead to net institutional gain if e-learning is already sustainable. If e-learning is not yet sustainable, innovations are difficult to capitalise on.

Once an institution has sustainable embedding of e-learning, it is able to focus on further innovation rather than on change management and lobbying activities. The challenge to institutions for which e-learning is a peripheral function is to identify the factors that are hindering their momentum so that corrective action can be taken.

Further research

More research is needed on the sustainability of e-learning as pedagogical and technological partnerships continue to develop and further evolve, because 'sustainable embedding' may be a shifting achievement. Further research into the longevity as well as the nature of e-learning sustainability would assist those involved with managing e-learning change. This could involve a larger-scale survey based on the key findings from this study. Finally, establishing firm

criteria for determining sustainability would also be a useful contribution to further work on institutional change and e-learning.

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

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Reference number: 84

Introduction
This article focuses on one institution's transformation through participation in the Re-engineering Assessment Practices (REAP) project. The article addresses the following questions:
- 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 context?
- What lessons have being learned and what advice should be given to other higher education institutions or to national agencies that fund projects to improve teaching and learning across a whole institution?

The e-learning transformation programme
In 2004 the Scottish Funding Council (SFC) launched its e-learning transformation programme. Bids were invited from across the Scottish tertiary sector for projects that would promote transformation change in teaching and learning facilitated by ICT.

SFC defined transformation as follows: '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.' So these projects were expected to demonstrate enhancements in teaching and learning as well as the strategic embedding of changes across the whole institution.

Barriers to transformational change
Drawing on their own experiences and Lindquist (1978), the authors identified the following barriers to transformational change:
- 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.

However, the main obstacle is the strong local cultures prevalent in higher education institutions. An institution-wide initiative at least implies a uniform approach, even though most successful educational development projects typically work with, rather than against, the diversity associated with these strong local cultures.

Higher education institutions have few organisational structures in place that enable them to learn from, and build on, their own successes in locally developed projects. A typical characteristic of these institutions is that innovative practices are rarely shared, or even known about, across departmental boundaries.

It is easy to recruit early adopters to participate in these projects; it is much more difficult get the majority of academic staff to participate particularly if the project is not perceived as successful. One reason for this is that most projects are not systematically evaluated and therefore provide limited good evidence of benefit.

Overview of the REAP project
REAP was a collaboration between three Scottish universities. The project was intended to redesign assessment and feedback practices across the three institutions, with the explicit aim of developing in students the ability to monitor, manage and regulate their own learning. The focus of this article was on the lead institution (the University of Strathclyde).

At Strathclyde, REAP involved the planned and supported redesign of assessment and feedback practices in large first-year courses and one third-year course. Student numbers in these courses ranged from 190 to 560. These courses were from nine different departments representing disciplines across five faculties.

The REAP redesigns involved changes such as shifting assessments and feedback from academic staff to students and providing more opportunities for learners to self-assess their own learning. All the redesigns were systematically evaluated in relation to staff time (input), changes in teaching and learning methods (process), student and staff perceptions, and exam results (output measures).

Of the 10 redesigned modules, six showed measurable gains in student attainment, including increased exam pass marks of between 6 percent and 16 percent and fewer students failing. None of the redesigned courses increased teachers' workload, and some reduced it. Student and staff satisfaction was high.

REAP had influence institution-wide as evidenced by a new university policy for assessment and feedback. While arising from REAP, this policy did involve extensive consultation across the institution. Even after funding ceased, increasing numbers of courses are incorporating REAP's design features. This is being supported by staff development and moves to align course validation and approval processes with the underpinning educational ideas embedded in their assessment policy.

Many other UK universities have adopted or adapted the REAP principles and embedded them in strategy documents. Numerous UK projects have secured research funding based on plans to implement REAP's principles. Institutions in Europe, the US and Australia have also used REAP's principles to steer their development activities.

The REAP approach to transformational organisational change
REAP has been successful in a number of different contexts at Strathclyde. Part of this success can be attributed to a conceptual foundation that brought together a theoretical analysis of assessment and feedback at a number of levels and published empirical findings of effective practice. Commitment was gained from key stakeholders through a series of summary statements based on their analysis. The conceptual framework also guided and supported a range of institution-wide implementation activities.

Conceptual framework
This consisted of three components: a problem domain, articulation of a clear educational aspiration, and the formulation of a set of practice-oriented educational principles. These concepts were developed and refined as resources in many different forms including research papers, presentations, and publicity and conference materials.

Assessment and feedback were identified as the problem domain as neither staff nor students were satisfied with the current arrangements in this context. It was also based on an assumption that many other teaching and learning issues in higher education can be linked to blockages in assessment and feedback.

Their educational aspiration was intended to provide an overall rationale for development activities, and for some stakeholders it gave a sense of value and coherence to the project. REAP's aspiration was used, as it linked to extant desires within Strathclyde, and the project tried to link this to the academic strategy. The aspiration was to help develop in students the ability to monitor, evaluate and regulate their own learning processes, which were referred to generically as self-regulation.

The pedagogical basis of REAP was defined in 11 principles. All of these were practically-oriented and supported by substantial research about how their application improves student learning. These principles were split into seven relating to feedback and four for assessment respectively as follows:

1. Help clarify what good performance is (goals, criteria and 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.
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.

The resources based on these concepts were critical in obtaining buy-in from key stakeholders and were tailored for the different audiences. They were particularly useful in fostering conversations about practice. Four activities underpinned developments intended to achieve REAP's goal of institution-wide change:

- A tight-loose approach to course redesign was supported within each principle.
- Local project funding was tightly linked to the application of the principles.
- An evidence base was developed to enhance credibility of the project messages to a wider group of stakeholders.
- Internal and external dissemination were deliberately used to multiply commitment across the institution.

A tight-loose approach
In terms of the 'loose' side of this approach, the underlying principles were promoted as guidance for teams to apply to their own disciplinary contexts rather than a template or prescribed set of rules. For example, not all of the principles had to be applied in each course redesign and each of them did not have to be applied to the same extent. The 'tight' component was that the course redesigns were encouraged to adhere to the pedagogy behind each principle. Examples of implementing each of the principles in different disciplines were provided.

Approaches were also tailored depending on participant requirements. For example, some staff might be more interested in the underlying theory and general application of the principles, while others were much more focused on incorporating these into their specific courses. In short, while the principles enabled course teams to address their own needs, their application across all the redesigns enabled the REAP team to maintain coherence across all courses that were revised and with the strategic level.

Linking funding to application of principles
Each participating course team was given a grant. But as the project progressed, it became clear that this funding was not necessary and was being used primarily to legitimise their involvement. As a result the second round of funding was reduced and was more closely aligned with the use of the resources. It was paid in two instalments.

Teams only received the first instalment where the REAP team was convinced not only that the course team's needs would be met but that the course also embodied the project's principles and could be successfully implemented. The REAP team would provide sufficient support to the course team so they could develop the plan. The second instalment was paid on receipt of a final report, which had to include an evaluation of the project outcomes.

This approach meant that the REAP team could 'purchase' the requisite deliverables. Requiring a robust plan reduced the likelihood of failure at the implementation stage. By requesting adherence to the principles, awareness was raised 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 large-scale UK e-learning projects to produce substantive data showing that course redesign using technology can improve student learning without increasing costs. An independent team working collaboratively with course teams developed suitable evaluation plans which they then implemented. Data used or collected included questionnaires, focus group interviews with staff and students, and an analysis of course documentation.

Data directly related to the change process was also collected by comparing every course redesign against what it replaced using the 11 principles. This allowed changes to institution-wide educational processes to be measured.

This data was used by the evaluation team to produce reports for the relevant departments. This is in contrast to many educational development projects where typically staff themselves carry out the evaluation using an action research methodology. This evidence base was used to recruit new course teams and added to the credibility of the project. It also raised its profile among senior staff.

Multiplying institutional commitment through dissemination

REAP's dissemination strategy was intended to address the goal of fostering change at both a local and institutional level. Internally this was done through relatively informal presentations and events. Externally a large part was done through lodging outputs on the website. It also involved numerous presentations at conferences and other external events. This strategy helped obtain stronger buy-in from senior managers, who reported hearing positive feedback about REAP when they attended external events.

Addressing the barriers

The main difficulty in achieving coordinated change across a university is the fundamental division of higher education into disciplines. REAP addressed this through a common set of principles to support course redesign and by working with disciplinary teams to assist them in their application to their own specific context. Numerous entry points were provided to encourage widespread participation and this also allowed more personalised engagement by staff with the project.

The normally weak linkages between local innovations and institution-wide strategies were overcome by basing the project on a single set of educational ideas and by tying each separate course redesign to that set. Funding was targeted to institution-wide implementations. Ensuring that evidence was provided from every course redesign made embedding of the changes more likely. It also increased the likelihood that new course teams would become involved and that senior management buy-in would persist after the project funding was secured.

Conclusion

Based on their experiences with the REAP project, the authors recommended the following to increase the likelihood of success for institution-wide transformational projects:

1. Focus the project on a widely recognised problem area.
2. Ensure 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-prescribe 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 enhance the credibility of the project messages and to support innovation diffusion.

7. Multiply institutional commitment through coordinated internal and external dissemination.

A different perspective on blended learning: asserting the efficacy of online learning at Capella University

Authors: Offerman, M., and Tassava, C.

Reference number: 85

Background

Capella University's (Capella) primary delivery mechanism is online. They note that the literature on blended learning tends to devalue fully online delivery and that this is best used as a supplement to traditional delivery. This argues that online learning is best for delivering information and concepts, freeing up face-to-face classroom time for more substantive discussions.

Capella takes the opposite view and poses the question: 'When is face-to-face interaction necessary in addition to online learning?' In effect, Capella sees traditional delivery as a supplement to online learning not vice versa, as is the case in much of the literature. Delivering to a nationwide audience means that face-to-face or even synchronous online learning potentially limits students' participation. For Capella, traditional delivery serves social rather than pedagogical goals and is only available for their graduate students.

Research literature perspectives

A more robust corpus of knowledge relating to the theory and practice of blended learning is emerging. This will be supported by the simultaneous development of technologies that facilitate both online and face-to-face learning.

But their review of the literature (limited to published, peer reviewed articles from both the tertiary education and workplace/business sectors) indicates that blended learning is largely regarded as a methodology to transmit information rather than as a means to achieve meaningful change in basic pedagogy. The picture of blended learning that emerges from this literature is of a technique that organisations use to disseminate new information.

Blended learning is largely seen as computer-learner interaction. Traditional delivery (the more important component) provides content not available electronically or digitally and engages the learner in discussion about the information. This assumption is credible if the organisation and their staff believe that discussion can only occur in a face-to-face environment.

Capella argues, in contrast, that effective discussion can occur in an online context and that these interactions result in the effective acquisition by learners of the complex concepts and skills appropriate to higher education (Allen and Seaman, 2004). Online discussion also tends to be more appropriate for adult learners and less faculty-centric.

Blended learning at Capella University

Capella's main objective is to address specific needs of adult learners, who typically require a high-quality learning experience but also a highly flexible and convenient means to acquire new knowledge. This has led many to choose online learning particularly because it allows a better balance between their study and external commitments.

Their provision is entirely degree level and above and, while they commenced with paper-based delivery for most of their existence, they have provided distance education through blended learning. Most of the traditional delivery is to meet university residency requirements. But the majority of learning occurs online. This is underpinned by staff leading threaded discussions that are predicated on thoughtful and dynamic peer-peer interactions. Courses generally comprised 15 to 20 learners, which tends to support this approach.

This approach is in contrast to the literature, which even in a distance education context tends to relegate the online component to an inferior and supportive role. For example, Osguthorpe and Graham (2003) support traditional delivery by saying that it 'bring[s] learners together in an environment where they can question, experiment and, enjoy the energy and enthusiasm of group learning. In contrast, 'purely distance delivery systems limit [teacher-learner] social contact, while blended environments enhance the possibilities' (p. 231).

But in Capella's view, a well-designed online course can confer these benefits on its learners. This design includes faculty members working closely with instructional designers who ensure that the course adheres to Capella's core pedagogical principles. Part of the design is a commitment to value the knowledge and experience of their adult learners. This is achieved by requiring them to share ideas and accomplishments with their peers. This also helps create a highly interactive learning environment.

Before the course is launched it is presented to department and faculty leadership for approval. This leadership then assigns a qualified instructor and formally opens the course for enrolment. Instructors are expected to adhere to the prescribed course schedule and resources. Concerns have been raised that this will lead to an overly theoretical approach to learning and that knowledge obtained from nonverbal cues is absent. But other research suggests that effective written communication by email allows participants more time to formulate their thoughts compared with face-to-face and thereby more richly share ideas, questions and answers (McKenzie, 2004).

Capella acknowledges that this emphasis on effective written communication may disadvantage some learner groups including those for whom English is a second language. But they also argue that it allows more forceful expression of underlying ideas and eliminates many nonverbal complications, which may be why in their view it attracts more women than men and disproportionally high numbers of racial/ethnic minority groups.

However, ultimately it comes down to learner choice and is not about whether one mode is better than another or is a supplement to it. This is important as many organisations are basing their decisions on a view that online learning only provides limited benefits, primarily additional flexibility including the potential freeing up of classroom space. Learner acquisition of relevant skills is far more dependent on the quality of instructor or mentor than the delivery mode.

Capella therefore places a strong emphasis on staff development to ensure they are well trained, comfortable and skilled with online teaching. All online instructors are continuously reviewed by their faculty chairs, who offer coaching and assistance in further developing their online teaching skills. This also helps reduces learner isolation, which is a serious issue and concern in online, distance education.

But Capella also provides traditional delivery options for those learners who prefer it. This is also provided for all its doctoral and most of its masters learners in the form of week-long residencies. These residencies consist of not only classes but importantly formation of cohorts that work together during the week, group and individual advising, and intensive support. The most important outcomes of these residencies are the development of new relationships that lead to student support networks, intense faculty advising and committee selection, and the creation of informal affinity groups, especially for minority students.

These informal interactions allow powerful peer-peer, learner-faculty and learner-staff interactions. These interactions allow faculty and staff to learn more about their students, and learners to feel more connected to the institution. In addition, residencies offer a convenient 'one-stop shop' for advanced doctoral students to seek out mentors and committee members.

Capella's delivery model does not mean the demise of faculty-centric educational approaches. Nonetheless this model is challenging for organisations dominated by traditional delivery approaches. But the current organisational approach to blended learning makes it challenging to separate out its benefits from those provided by traditional delivery. Organisations therefore

may not take advantage of the pedagogical opportunities presented by the online component of blended learning.

They suggest selecting the delivery mode to meet organisational outcomes and objectives rather than adopting a deficit approach to the respective delivery modes, which sees one as superior to and more effective than the other. If organisations eliminate this deficit approach and focus on outcomes and objectives, it is likely that more will choose a fully online approach alongside those that prefer traditional delivery or blended learning models.

Blended learning goes totally virtual by design: the case of a for-profit, online university

Author: Pease, P. S.

Reference number: 87

Background
Over the last decade there has been an acceptance and associated growth of for-profit universities in the US higher education sector. This has been mirrored by growing private sector involvement in higher education in Australia, Canada and the UK as a result of diminished government funding and increasing demand to serve the needs of an expanding learner population.

Online versions of this model have transformed higher education into a viable business model. The large growth of for-profit institutions has occurred simultaneously with the revolution in e-learning that they have pioneered. The tension between profitability and education delivery has resulted in increased instructional efficiency in instructional models. These models range from traditional delivery to totally online. For many, e-learning is a means of increasing their reach to students globally. These models differ substantially from traditional ones.

Main factors in the growth of for-profit universities
Four main reasons are cited:
1. Perceived value of American education globally.
2. Online delivery being accepted as part of the mainstream.
3. Changes in the global workforce needs for training and education.
4. Economic and social pressure on the traditional higher education system for serving adult learners.

Online learning has become part of the mainstream higher education sector largely due to the development and adoption of the supporting technology and tools. Prior to this the development of online content and delivery was relatively time-consuming and expensive. This meant online delivery was confined largely to the most innovative faculty and students, who had clear preferences for this particular mode. But Learning Management Systems in particular have made it possible for universities to provide online learning alongside traditional delivery so now electronic delivery of content has become commonplace.

Companies with global workforces face challenges in employee training. But online learning delivered asynchronously can provide a solution for training these widely dispersed workforces. Furthermore, most employees cannot afford long absences to pursue educational or training opportunities. For those wishing to up-skill for their current position or to change careers, online learning provides an opportunity as it more easily allows an effective balance between study, work and other external commitments.

The large numbers of non-traditional students in the higher education sector allow for-profits to find a niche. They have largely served non-traditional working adults wishing to pursue higher educational opportunities. This is compounded by traditional institutions often not being able to cater for these learners because of government reductions in expenditure. But it is argued here

that in any case there is insufficient capacity to meet demand, which makes room for the for-profit institutions.

Blended learning models for the for-profit universities
These typically combine traditional and online delivery. These universities have committed their resources to ensure online delivery is as customer focused as site based. This has required implementing a model of design that would provide quality control of the content and instructional experience. A typology of the different delivery models is provided in table form below.

Type	Face-to-face	Face-to-face with online	Totally online – asynchronous	Totally online – synchronous	Enrolment growth	Online design model	Faculty
Virtual only (e.g. Jones International University)	No	No	Yes	Sometimes	Moderate	Optimises for the internet	Mostly part-time
Resource-rich model (e.g. Universities of Phoenix, Kaplan, and Capella)	Yes	Yes	Yes	Sometimes	Significant	Modifies for the internet	Balance of full- and part-time
Low-cost hybrid model (e.g. Career Education and Corinthian)	Yes	Yes	Yes	Infrequent	Significant	Replicates face-to-face	Balance of full- and part-time

Typically the virtual only model requires dedicated instructional design staff. In the resource-rich model, institutions can measure the effectiveness of their differing delivery modes. With more extensive resources these institutions can evaluate the most successful mode from a business perspective. They can use this evaluation to determine the future focus of their resources. The final model is generally institutions where online delivery is not their core business. They are containing costs by replicating traditional delivery content rather than optimising it for online delivery.

A blended approach has suited the for-profit institutions as it allows them a physical presence in the catchment area from which they are trying to attract students. It also meets some adult learners' preferences. However, the demand for a virtual online delivery model is replacing the blended delivery model.

Jones International University – a case study of a virtual only model
Jones International University (JIU) commenced online delivery in 1995 and received equivalent accreditation to traditional delivery institutions in 1999. It has six degree areas and about 20 programmes. But to receive federal government aid to support their students they had to apply for a waiver, which took over one year for approval.

Their mission has been to deliver education globally using e-learning. Their market research indicated that a virtual, asynchronous model would best fulfil this mission and meet the needs of its target learner audience (adults). While synchronous and video-based models were considered they were seen as being too complex and costly.

Since commencement it has become much easier and cheaper to develop and deliver content using this virtual delivery approach. They have also taken this expertise in-house rather than

outsourcing it. These factors have meant that the average cost of their courses has decreased from US$75,000 to US$25,000. This model is underpinned by a set of core elements which are described below.

They have a multi-tiered faculty structure. They have a board for each programme and its chair provides the necessary administrative oversight for it. A JIU content expert works primarily with an instructional design team and academic board chair to develop the course. However, they are guided by a JIU course development template to ensure consistency and quality of key components such as assessments and learning outcomes. A teaching faculty is responsible for implementing the course and facilitating and assessing student learning.

They use a range of supporting technologies including Flash, video and audio streaming, asynchronous web-based forum and whiteboard for communications, print or electronically delivered textbooks and infrequently a CD-ROM. The development of their online course web pages is based on human usability testing. They also use their own Learning Management System which allows the instructional design staff to review and manage the entire directory of courses and easily develop multiple sections of the course at any given time.

All courses have a maximum enrolment of 25 learners at any one time, although their flexible structure means that they generally have more students enrolled in particular courses through a traditional academic year. Students are expected to attend a formal online orientation.
An important aspect of the model is the role of formal evaluation of course content and all aspects of the instructional experience. At the end of each course, students and faculty are asked to respond to a formal questionnaire.

The extensive data collected is analysed by the specific course 'term' and factored into the university's longitudinal analyses. Feedback is used to improve the content, technology, support services and teaching faculty. In addition, JIU scans the environment for new tools to increase the effectiveness of student interaction and learning.

Support is available to students online through a password-protected area on the JIU website. This includes technical support, library, student services, grades and electronic advising. The academic advisors and enrolment counsellors are also available by email and telephone.

Faculty members have access to equivalent resources. They are certified through an online programme before their course starts. Ongoing professional development and interaction with other faculty are provided through monthly electronic meetings.

This model leads to increased and enhanced peer-peer interaction as learners are generally more accessible and open in these online learning environments. An informal group of students is responsible for forming the formal JIU Student Association.

While course development costs have decreased, the costs associated with hiring appropriate content experts have increased. Therefore JIU now faces significant costs to maintain, update and revise a huge inventory of course content. This is a challenge that all institutions delivering solely online with well-defined instructional design strategies will have to manage and plan for in order to preserve the integrity of the existing course product.

Quality assurance
Quality assurance is important for virtual delivery institutions. But it is an elusive concept for most organisations. There are few core values that are common across higher education. There is a need for a quality assurance model that could be used to measure, evaluate and discriminate among a variety of educational experiences. However, even where institutions, including JIU, have quality assurance models these can be subject to change depending on the evolution of their mission, pressures for student enrolment and cost containment, or changes in board or management leadership that influence the core organisational values.

Role of for-profits in distance education
Many commentators believe that for-profits have an advantage in distance education over their traditional counterparts, who often have a substantial commitment and legacy in supporting

their physical assets and infrastructure. But if traditional institutions use online delivery and are supported by visionary leadership they may be able to expand their distance education presence.

Developing standards for best practices in prospective and new student introduction to e-learning

Authors: Pickar, G., and Marshall, S.

Reference number: 89

Introduction
Student retention is one of the greatest weaknesses in e-learning (Carr, 2000; O'Brien, 2002). Several studies show that the failed retention rate for these students ranges from 20 to 50 percent (Herbert, 2006). E-learning course administrators believe that the failed retention rate for these courses is 10 to 20 percent higher than their traditional delivery counterparts (Frankola, 2001; Diaz, 2002; Moody, 2004).

First experiences are critical in determining student retention in e-learning courses. Students who have poor initial experiences often become frustrated and dissatisfied, and are consequently more likely to drop out. But students who engage early and frequently with their peers, staff and content in an effective and cohesive manner supported by clear expectations of both the learner and institution are well positioned to succeed (Tinto, 1975; Angelino, Williams, and Natvig, 2007).

This is particularly important given the rapid increase in e-learning (Bell, Bush, Nicholson, O'Brien, and Tran, 2002; Allen and Seaman, 2007). There have also been rapid increases in students using e-learning to study outside their home countries. This provides further challenges for institutions, who need to acknowledge the cultural expectations and backgrounds of these students both in the teaching environment and in preparation for study (Goold, Craig, and Coldwell, 2007; Hannon and D'Netto, 2007).

Establishing a methodology for institutional, staff and student introduction to e-learning will address several organisational, societal and individual consequences arising from nonexistent or inadequate practices in this context. They include the institutional cost to recruit and replace students, failed or poor student experiences, and loss of potential workers in the field of study.

Other consequences for learners include disruption to their attainment of academic goals and objectives. Effective practices in this area will enable the student and institution to set respective expectations for academic success, provide the learner with a clear path to achieve their learning objectives, and enable the institution to assess its success in delivering a quality and personalised educational experience.

Best-practice set
The IMS Global Learning Consortium[14] has structured these best practices into three key areas: communication of student and institutional expectations prior to a learner's first e-learning course, preparation by students for their e-learning courses, and induction of learners into e-learning courses. A set of questions to help guide institutions in implementing these best-practice areas is provided below.

Expectations	Preparation	Induction
Assessment and communication of expectations		
How does the institution identify the rationale for the expectations it will make of staff and students to engage in e-learning?	What are the formal procedures for communicating with students prior to study commencing? How do these procedures use the	How is the rationale for expectations on staff and students reflected in the systems and procedures in place for all courses during the induction

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[14] This consortium consists of vendors and agencies as well as institutions from countries in Asia including Japan, the US, the UK and Europe (including Spain).

What actions does the institution take to ensure the rationale is reflected in systems and processes? What actions does the institution undertake to ensure it has a clear picture of the students' expectations?	information on student expectations?	period?
Recruitment and advisement		
How are the formal expectations of the institution communicated to students? How do the marketing materials accurately reflect challenges and requirements facing a successful distance learner?	In what way are students given the opportunity to confirm that they meet institutional expectations? What opportunities and support are given to students to explore alternative study options?	How does the institution confirm with the student that they are meeting its expectations and that the course of study is meeting the learner's expectations?
Learning design and organisation		
How are the assumptions and design decisions inherent in course design conveyed to staff and students involved in the course?	In what ways do the course design and structure prepare students for successful achievement of the course learning objectives?	What aspects of the course design ensure that any potential issues are raised early and there is a mechanism for addressing them effectively?
Functional technology		
How does the institution determine the minimum expectations and characteristics of the specific technologies students must have access to for their studies?	What means does the institution provide for students to confirm that the technologies they have will be suitable for the requirements placed on them during study? How does the institution ensure that additional hardware and software are available for students to acquire if necessary, prior to commencing study?	How does the institution ensure that necessary requirements have been met by the students? What process will the institution use to address a failure by students to meet the necessary requirements for access to specific technologies? How does the institution provide any additional information or support needed to integrate student technology into their systems, such as passwords?
Student technology literacy		
How does the institution determine and communicate the minimum expectations and necessary technical skills students must have for their studies?	How does the institution provide a means for students to confirm they meet the minimum expectations and have the necessary technical skills needed for their studies? What means does the institution for students to develop the necessary technical skills needed for their studies prior to commencement?	How does the institution validate the technical skills students possess when they begin their studies? What is the process the institution will use to address a failure by students to meet the minimum expectations or possess the necessary skills?
Learning community		
How does the institution identify the characteristics of the learning communities it expects to establish within courses? How are the benefits and	How does the institution ensure its systems can support the characteristics of the learning communities it expects to establish?	What activities are provided to ensure students are welcomed into a learning community and encouraged to participate positively? What mechanisms are in place to

characteristics of effective learning communities communicated to students and staff?	How does the institution ensure staff are committed to establishing the type of learning community expected for courses? How does the institution provide staff and students with the opportunity to practise any skills needed to be effective participants in the learning community? What aspects of course learning designs reflect the support of learning communities?	ensure that any issues with the functioning of the community are identified quickly and addressed effectively?
Faculty training		
How does the institution identify the key competencies it expects staff to have in the use of technology? How are staff informed of the expectations the institution has for their technical and pedagogical skills?	How does the institution provide a mechanism for staff to confirm they have the requisite skills and competencies needed to use core technologies? What mechanisms are provided to enable staff to develop skills in the use of core technologies? How does the institution validate the technical skills of staff before they begin teaching?	What are the mechanisms for identifying problems caused by a lack of staff competencies? What is the process the institution will use to address a failure by staff to meet the minimum expectations of skill in the use of core technologies?
Online student support services		
How does the institution identify the likely support needs of students? How does the institution identify which technologies will be used to provide support online? How does the institution communicate to students what support they can expect?	What mechanisms are in place to ensure course designs make appropriate reference to and use of available support services? What mechanisms are in place to confirm that students can effectively access and use the online support systems?	How does the institution ensure that students are shown how to access the support services and encouraged to use them? How does the institution identify any issues with the access to and effectiveness of the support services?

Evaluation strategies for open and distributed learning environments

Authors: Reeves, T. C., and Hedberg, J. G.

Reference number: 92

Introduction

Too often evaluation is not undertaken in educational contexts. This may be because existing models appear to suggest that evaluation can be postponed until the end of the process. Even when evaluations are undertaken they are typically conducted in an ill-conceived manner. For example, quasi-experimental comparisons of e-learning with traditional delivery continue to dominate the published and conference-related literature.

Most meta-analyses of e-learning provide little guidance for designers or practitioners (Dillon and Gabbard, 1998; Fabos and Young, 1999; Bernard, Abrami, Lou, Borokhovski, Wade, Wozney, Wallet, Fiset, and Huang, 2004).This r a set of practical strategies for evaluating e-learning environments. Evaluation is defined here solely as activities focused on estimating the outcomes and worth of products, programmes and projects.

Why evaluate?

A pragmatic approach should be adopted based on the assumption that undertaking an evaluation provides improved information to inform decision makers and lead to better decisions being made. But improved information is unlikely to be sufficient because in an e-learning context many bad choices have been made when pertinent information was available. These poor outcomes relate to factors such as course management systems, pedagogical design, and graphical user interface (Reeves, 2003).

Evaluation functions

These can be categorised in a pyramid representation with review, needs assessment, and formative evaluation at its base, effectiveness evaluation in the next layer, followed by impact evaluation, and finally maintenance evaluation at the top. This representation signals that the largest investments in time, money and resources should go into the 'base' of the pyramid, especially formative evaluation.

This is particularly important as these three functions are often excluded from evaluations, which tend to focus almost exclusively on effectiveness and impact. The other three functions have less time, resources and monies allocated because their return on investment is lower than their baseline counterparts.

The function of review is most important at the conceptual stage of an e-learning environment. Two of its key activities are studying the relevant published literature and examining similar learning environments to find out what is already known about the planned e-learning environment. Needs assessment is intended to identify the critical needs that the proposed learning environment will address. In this context a need is defined as any significant gap between desired and current levels of performance.

Most needs stem from discrepancies (differences between what people can do and what they normally do) or deficiencies (the lack of requisite knowledge, skills and attitudes). The primary activities carried out during the Needs Assessment phase are task, job and learner analysis (Rossett, 1987).

Formative evaluation is a strategy intended to provide the required information to guide decisions about creating, de-bugging and enhancing an e-learning environment. Formative evaluation should drive the instructional design and development process. Two of its major activities are expert review and usability testing (Flagg, 1990; Rubin, 1994; George and Cowan, 1999).

The function of Effectiveness Evaluation as a strategy is to determine whether an e-learning environment accomplishes its objectives within the immediate or short-term context of its implementation. It is essential to evaluate the implementation of a programme with the same rigour as outcomes are evaluated. Some of its critical activities include field tests, observations, and interviews with different stakeholders, and performance assessment (Horton, 2001; Reeves and Hedberg, 2003).

The purpose of Impact Evaluation is to determine whether the knowledge, skills and attitudes (broadly referred to as 'outcomes') learned in the context of an e-learning environment transfer to the intended context of use, for example, the workplace or further education. Inevitably, practical impact evaluations, including return-on-investment studies, entail considerable degrees of inference from results to decisions.

For this category some of the key activities include document analysis, interviews, observations and experimental methods. However, experimental methods are often expensive, are impractical in some contexts, and yield results that are inevitably subject to multiple interpretations.

The objective of Maintenance Evaluation as a strategy is to examine the continuing viability of an e-learning environment over time. While this is arguably the most infrequently applied evaluation function, its importance is growing as the size and scope of e-learning enterprises

rapidly expand. Some of its main activities are document analysis, interviews, observations, and automated data collection.

In this context, the role of critical incidents is becoming one of the most common indicators of a need to change. These functions should inform the major development functions (i.e. conceptualisation, design, development, implementation, institutionalisation and re-conceptualisation).

The following key steps are required for the planning, implementation and reporting of any evaluation:
1. Identify the decisions that the evaluation should inform.
2. Specify the questions that must be answered to provide the information needed to inform the identified decisions.
3. Select reliable, valid and feasible evaluation methods.
4. Implement the evaluation methods in a rigorous and professional manner.
5. Report the findings in an accurate and timely manner so that decisions can be informed as intended.

Transformation through technology-enhanced learning in Australian higher education

Authors: Reushle, S., McDonald, J., and Postle, G.

Reference number: 94

Background
Change driven by the introduction of e-learning is not evenly spread across Australia's higher education sector. Typically this change is concentrated in pockets of innovation rather than leading to widespread transformation. This article explores how higher education in Australia has changed to accommodate new influences and pressures, and documents government policies and initiatives, which provide the context for the implementation of e-learning. Finally, the authors consider the concept of transformation of higher education through e-learning and reflect on the evidence of transformation in one Australian university.

Since the 1970s, there has been a massive increase in student diversity and enrolments in Australia's higher education sector. This larger and more diverse student group has arisen partly because of the growing legitimacy of flexible pathways for university entry. In addition the expansion of teaching strategies available, particularly through flexible delivery initiatives and the increasing trend towards 'user pays', has led to significant changes in the culture of higher education. E-learning has been embraced as one means to leverage the efficiency of higher education.

To address the challenges associated with meeting the educational needs of this diverse student body some institutions have adopted teaching and learning models based on distance education. This is partly because they tend to be well placed to adopt and adapt innovative applications of technology. Institutions that had established distance education provision and delivery were better placed to successfully implement these innovative approaches and ensure that the influences of such variables as 'the type of subject matter, the specific objectives of the course…and not the least, the student target audience' (Taylor, 1996, p. 2) were acknowledged.

Technology as a 'disruptive influence'
Globally the traditionally conservative higher education environment faces a number of significant challenges. These include the increasing privatisation of tertiary education and reallocation of government funding to other parts of the sector (Mauch and Sabloff, 1995). This has forced universities to supplement their income through commercial activities. At the same time, universities are expected to be more accountable, efficient and effective, while providing greater and more equitable access.

Lifelong learning has meant a proliferation of provision aimed at meeting current workplace requirements as well as the number of students studying part-time. Students are now demanding greater flexibility in the ways they can access provision and services.

Society also has at its disposal a growing range of increasingly sophisticated ICTs that can be utilised for educational purposes and this has an impact on traditional distance education models and roles of teachers and learners. The growing reliance on technology and flexible modes of learning is also impacting on the nature of the curriculum, the way that courses are offered, and the range of students who can access them. Laurillard (2006) argues that institutions should allow e-learning to be a disruptive force. The agenda in Australia for university renewal via e-learning is mirrored globally.

Technology as 'transformative'
The contemporary adult education literature strongly promotes the transition from transmissive to transformative approaches (Cranton, 2003; King, 2003). Transformative learning means adult students need to be reflective, critical thinkers who are open to other perspectives and new ideas. Dialogue with peers is crucial (Reushle, 2005).

While this is not a new approach to teaching and learning, the attempted transition to it is a recently relative phenomenon in the higher education sector and has met with some opposition. It has been suggested that these ideas have being obstructed in higher education because the institutions have undergone little change in the last 80 years (Raschke, 2003). Institutional resistance to e-learning-led transformation also stems from a belief that knowledge is merely 'the transfer of information from one database or brain to another' (Talbot, 1999, as cited in Raschke, 2003, p. 110).

But is it is not simply cultural resistance to change. Traditional delivery provides a cost-effective means to achieve mass participation from increasingly diverse learners. However, technological advances and changing societal, economic and political expectations are strongly influencing and encouraging different teaching approaches (Cranton, 1996).

The literature supports the view that e-learning can promote and support transformation in teaching and learning. For example, Bonk (1999) observes that 'online learning offers a chance for students to enter into dialogues about authentic problems, collaborate with peers, negotiate meaning, become apprenticed into their field of study, enter a community of experts and peers and generally be assisted in the learning process' (p. 410).

Australian higher education policies, projects, initiatives and trends
A New Zealand Ministry of Education funded report identified three different policy stages in relation to e-learning: firstly, laying the groundwork to make it possible; secondly, integration into the education system; and thirdly, a transformative role which changes how learning is viewed and the nature and operation of the tertiary system and individual institutions (Brown, Anderson, and Murray, 2007).

Australia has adopted the first two stages with the provision of infrastructure (stage one) and a range of projects to expand early adopter initiatives (stage two). In more specific terms this process can be seen in the development of Education Network Australia (stage one) and its successor, education.au limited (stage two). Education.au is owned by the federal and state ministers of Education and Training and develops and manages online educational services and products agreed to by stakeholders. The Committees for Advancement of University Teaching and University Teaching and Staff Development have also funded many e-learning projects.

However, infrastructure and content are insufficient. Transformation of teaching and learning practice will not change without a dedicated focus on these practices and concentrated support for teaching staff. This recognition led to the establishment of the Carrick Institute, which is now the Australian Learning and Teaching Council (ALTC).

ALTC received approximately $27 million (Australian) annually to support a range of teaching and learning programmes. This includes competitive grants ranging from $60,000 (Australian)

to $220,000 (Australian) for innovative priority projects of one to two years' duration. Some of the latest projects funded (2006-2008) were e-learning related.

These projects support collaboration nationally and internationally with the UK, New Zealand, the US and Canada. From a transformative perspective these projects are critical as they have given faculty and institutional leaders' legitimacy to take time to think and act strategically about future directions, needs and priorities for their provision (Dow, 2008).

There is also a specialist peak body for e-learning, the Australasian Council on Open, Distance and E-Learning (ACODE). ACODE is for universities only and seeks to enhance and influence relevant policies at international, national and institutional levels. To support this, it works on a range of activities including strategic planning, communication strategies, policy development, and benchmarking (using New Zealand's e-Maturity Model).

E-learning is also supported by the Australasian Society for Computers in Learning in Tertiary Education (ascilite), an international network of teachers engaged with cutting-edge e-learning to enhance teaching and learning in higher education. Their activities include publications, programmes for campus representatives, community mentoring, and an annual conference.

Despite a massive increase in investment in tertiary education driven by recommendations from the 2008 Bradley review; there is no specific allocation for e-learning initiatives. Rather, the focus is on technology to support economic developments. This may be because the government and ALTC assume that e-learning is now 'business as usual'. But the authors argue that the transformation of Australian higher education through e-learning is still a work in progress.

E-learning – an example of an Australian regional university
Brown, Anderson and Murray (2007) noted that there was a disconnection between e-learning and distance education in that the research and experience gained in distance education were not informing e-learning policy or practice. But this is not the case with the University of Southern Queensland (USQ). USQ has offered e-learning courses nationally and internationally since the late 1990s.

They have moved through a number of e-learning phases during this time: hybrid, multi-modal, blended learning, and flexi-mode. To bridge the gap between IT and teachers, they created a specialist position of Principal Advisor, Teaching and Learning within their IT department. They have created their own digital resources which they hope can be used by students to access academic support, and an opportunity to be assessed and gain credible qualifications, which would not compete with existing provision and processes but rather be used as a mechanism to cope with student demand (Taylor, 2007).

USQ has also created an Open Access College to reach a broader student population through e-learning. And they have established a Centre for Research in Transformative Pedagogies, which promotes and support teaching- and learning-related research across multiple disciplinary areas and through a number of delivery contexts including traditional delivery, e-learning, and workplace and community settings. This encourages the formation of inter-disciplinary research teams and the application of varied perspectives.

Their latest e-learning initiative is the establishment of the Australian Digital Futures Institute (ADFI), which focuses on two areas: e-research and e-learning. Their strategic focus is to identify, test and promote the application of new and emerging technologies with a view to transforming learning and teaching practice.

Conclusion
The view that e-learning is now 'business as usual' in higher education needs to be challenged. For example, do current management and administrative structures and processes acknowledge post-industrial collaborative learning ideals or are they supporting industrial-era management techniques – that of the lockstep, independent learner constrained by administrative timelines and institutional processes? Are post-industrial assumptions about learning out of sync with the managerial and administrative models still applied vigorously in most higher education teaching and learning contexts?

The authors argue that much of the application of e-learning in Australian higher education is strategic, but perhaps not transformative. In order to achieve the post-industrial ideals of transforming higher education through e-learning, there needs to be engagement in critical dialogue and challenges to the traditional mindsets about teaching and learning (and the management models that enshrine them).

Global perspectives on blended learning: insight from WebCT and our customers in higher education

Authors: Ross, B., and Gage, K.

Reference number: 95

Background
WebCT is one of the major providers of Learning Management Systems (LMS) particularly in the university sector. It was originally developed to make it easier for instructors to incorporate online components in their teaching. Blended learning now has a broad range of meanings. To try and differentiate different possibilities and aspects of this wide continuum, terms such as Web-enhanced, technology enhanced, and hybrid have been coined.

But in WebCT's experience, TEOs have adopted one (or more) of three different approaches:
- Web-supplemented or technology-enhanced – this adds supplementary components to a traditional delivery course but does not change the amount of time spent on face-to-face learner-teacher interaction. These supplements can be administrative and/or instructional.
- Hybrid or reduced traditional delivery – these courses reduce the amount of face-to-face learner-teacher interaction and replace it with online learning activities. This can range from online labs to online course work replacing traditional delivery equivalents.
- Blended programmes or degrees – this is where a student chooses a range of different course/delivery options to complete their programme or qualification: some are blended, some use traditional delivery, and some are fully online.

Of these approaches, the hybrid or reduced traditional delivery option is arguably the most innovative, the most difficult to achieve but with the greatest long-term benefits. These courses do not fit easily into existing TEO administrative structures and require faculty to rethink their pedagogical approaches. But despite this they potentially offer the best way to improve students' learning outcomes.

Increased access to tertiary education
Blended learning and e-learning in general have gained in popularity in higher education because they help to address many of the key challenges the sector faces. One of these is the need to expand access to the sector because of population growth and the proportion expected to or wishing to participate in higher education, workforce retraining, and demand and opportunities for specialised programmes.

But there may not be sufficient physical infrastructure to support these increased numbers. Therefore blended learning has become a strategic means of reaching learners who otherwise would not have access to tertiary education if traditional delivery was the only option available. Virtual infrastructure can often be built at lower cost than its physical equivalent. Blended learning also means this expansion does not necessarily need to occur through distance education.

Learners' expectations
Students entering higher education expect technology to be part of their learning experience. This is partly because it was an integral part of their secondary education. This means TEOs face student demands to provide not only a high-quality learning environment but one that is available '24/7'. Blended learning has become the primary mechanism to achieve this goal.

A comprehensive European-wide survey found that 62 percent of first-year university students used ICT to support their studies at least two to three times per week (Survey of European Universities Skills in ICT of Students and Staff, 2003). The National Survey of Student Engagement in North America found 72 percent of university and college undergraduates spent more than five hours per week. But only 39 percent spent this time doing academic work (National Survey of Student Engagement, 2003).

Importantly, in an e-learning context, students want consistency in their learning experiences. TEOs have tended to provide this using a standardised approach through a single e-learning system and integrating this with other on-campus technologies. With an institution-wide blended learning strategy, colleges and universities have been able to provide students, faculty and staff with a seamless experience in which technology is transparent.

Using blended learning to improve quality
There are three main ways blended learning can improve quality and educational outcomes, particularly learner retention and completion. Firstly, by making the learning experience more personalised instructors can provide relevant and just-in-time support and improve student engagement. Blended learning can also more easily cater for a range of learning styles.

Blended learning can reduce students' study time so they graduate more quickly. For example, it allows institutions to provide more scheduling options. These include reducing the time learners spend on campus, which relieves potential timetable clashes and allows them to take courses they may have previously been excluded from.

Blended learning allows greater tracking of student progress through data relating to their activity and behaviour in the e-learning environment. This lets instructors more accurately establish which students are falling behind and this can help prevent at-risk students from dropping out.

By aggregating learning activity, institutions have the opportunity to assess the learning quality across the curriculum. A critical mass of online learning activity allows institutions to analyse outcomes and learning activity patterns to better determine what leads to student success and use this to improve the overall quality of their educational provision.

Institutional strategies for blended learning
At leading colleges and universities a majority of provision is blended and nearly all students have at least one course with a technology-supported component. But many institutions have outgrown their current approach to e-learning. For most of them, linear expansion of blended learning will be insufficient to meet current and projected needs. In response, a growing trend at TEOs globally is to transition from a number of different learning systems towards an institution-wide approach.

WebCT has identified three critical components in successfully deploying blended learning at an institution-wide level. Firstly, institution-wide strategy and participation are necessary. It is important to have commitment from the senior leadership team to using blended learning to achieve the university's strategic goals. But this is insufficient; greater cross-functional participation is also necessary. In this context, balancing the autonomy and collaboration between diverse academic and administrative stakeholders is critical.

Institutions need to establish a mission-critical service level. In a model where it is expected that all students and teaching staff will be served by e-learning technologies, the standards for reliability, system availability and user support become critical. Institutions must seriously evaluate what level of service they need to provide and design their technology solutions and processes to meet these higher standards.

Institutions need to proactively measure learning effectiveness. Using student activity data, institutions can improve educational quality by creating processes that are designed to ensure a regular cycle of measurement, analysis and change.

Institutional case studies – Deakin University

Deakin University is in Australia and has become known for the distinctiveness of its courses and its large offerings in distance education. It also has considerable experience in e-learning and has used this to improve outcomes in both its distance and on-campus provision. Deakin's students wanted consistency; for example, they had a desire to see one institution-wide e-learning system that they could use to access all their courses.

In selecting their LMS to support this they consulted more than 1,200 students and 400 staff. Gaining this support from the wider institution was a critical component in formulating and implementing an enterprise approach to e-learning. This central position of e-learning in their strategic and operational plans was supported by substantial organisational changes.

These changes included establishing Learning Services, a central academic support unit. One of its key objectives is 'ensuring that the online learning environment is a seamless mix of all services and resources required by students for a successful education' (McKnight, 2003, p. 13).

City University, London

City University's main objective in implementing e-learning was to develop flexible online degree programmes that would allow students who would not normally be able to participate the opportunity to do so. The implementation of their LMS was managed by a specialist e-learning unit that is part of their Library Information Services. This was done to ensure collaboration among different departments and systems.

Multi-institutional approaches

E-learning also provides an opportunity for multiple institutions to share the same system while still operating autonomously and retaining local control. The benefits of this approach for each institution include:

- being able to expand access and educational opportunities for learners – for example, this approach allows learners from different schools, parts of the country or even different countries to access flexible, high-quality learning opportunities
- eliminating redundancies and optimising existing investments by sharing hardware, IT, training, and human resources
- reducing the duplication of programmes and courses
- improving student retention and outcomes.

Multi-institutional case study – University System of Georgia

The University System of Georgia signed a comprehensive state-wide licence to make the WebCT Vista LMS available to all 34 of its institutions. The goals of this state-wide e-learning strategy and implementation included:

- expanding access to all students regardless of location
- building a resource network for staff to share content, courses, curricula and best practice
- building a model to track and monitor student performance across the system to provide personalised learning experiences and improve academic programmes.

This led to the development of the eCore programme, which delivers certain required courses online, making it possible for students to undertake the first two years of a degree programme from anywhere and at any time. The success of this initiative is being evaluated by analysing student activity data from their discussion postings and correlating this with quality measurements and learner outcomes. Work is also underway to deconstruct the eCore courses and reassemble them into digital learning objects.

Matching technology, organisation and pedagogy in e-learning: looking for the appropriate balance leading to sustainability and effectiveness

Authors: Sangrà, A., Guàrdia, L., and Fernández-Michels, P.

Reference number: 97

Background

In reaction to external trends and developments many universities consider information and communications technology (ICT) a driver of institutional change. For example, Bricall (2000) believes that ICT is going to be 'one of the main factors for change in university (in the short term)'. Bates (2000), Hanna (2000) and Sangrà (2003) believe ICT is important for universities because it:

- facilitates and increases access to education and training to a wider range of learners
- improves universities' economic expectations
- is universities' response to the 'technological imperative'
- improves the quality of education.

Universities are responding to these drivers by developing virtual campuses and other e-learning solutions that are adapted to the requirements of their social contexts.

The role of strategic planning and flexibility

Virtual campuses and e-learning generally require traditional universities to make changes which normally involve a comprehensive strategic planning process. This process includes redefining roles, creating new functions and departments, reorganising administrative processes and routines, and restructuring educational design and production processes.

This is more likely to be achieved where technology, organisation and pedagogy are viewed as a triangle of factors that are closely interrelated in a symbiotic way. In particular, they are interrelated in their contribution to a clearly defined, quality teaching and learning environment. However the balance between these three elements varies hugely between different institutions and it can be subject to necessary adjustments as requirements change over time.

Therefore flexibility and adaptability are key success factors in e-learning provision. Collis and Moonen (2001) focus on how technology and organisational factors in an e-learning context are related to change in the learning process. In contrast, Khan (2007) sees flexibility as being underpinned by facilitating authentic and relevant learning activities and assessments within real-life contexts. Flexibility from a learner perspective also involves giving them access to expert advice in terms of guidance and coaching, collaborative work and the adoption of different roles and perspectives.

Key findings from international research projects, case studies and surveys – technology

Based on various European Union, OECD and UN projects, case studies and surveys the key findings that determine the success of e-learning initiatives were summarised under the components of the aforementioned triangle: technology, organisation and pedagogy. There are three main options when developing a Virtual Learning Environment (VLE): build 'from scratch', use commercial solutions or adopt open source and publicly licensed software.

But regardless of the option selected, institutions are increasingly choosing technologies to support existing pedagogical principles and guidelines. However, implementing an institution-wide e-learning system is difficult to achieve. Most institutional use of e-learning systems relates to administrative services (i.e. admission, registration, and fee payment (OECD, 2005, pp. 14-15).

To meet all the pedagogical and organisational requirements would favour the adoption of a system built 'from scratch' 'without restriction on costs and staffing, and uninhibited by resistance to change from previous practices' (Davis, 2004, p. 98). But this ideal solution

generally fails when it is confronted with the constraints of limited resources that do not allow the technology to evolve to meet changing requirements.

Selecting an in-house development, or commercial or open source offerings is therefore based on complex considerations involving the pedagogical approach, content types and the technology needed to deliver them, the available financial and human resources, legal and political constraints, and the compatibility with existing systems. But over and above these individual factors is the need to address e-learning from a strategic perspective because of its considerable impact on institutions (Mason, 2006).

There are many costs and complexities associated with an in-house solution, but these challenges are more than offset by a number of strategic advantages, including:
- complete control over all platform functionality, including advanced customisation
- perfect alignment with the institution's current technical and pedagogical needs
- possibilities of further development and adaptation to new requirements
- possibilities to commercialise the platform, including selling design and maintenance services to other institutions
- potential integration with the institution's other systems including student management and administration.

But this solution is only recommended when an institution has a very clear vision about what it actually wants to offer and how it is going to achieve an acceptable return on investment. It should not be done as part of an experiment with little expectation of success.

In contrast, purchasing a commercial Learning Management System (LMS) means that it is ready for institutions to use immediately, but licensing costs can be considerable depending on the numbers of learners who will use it. These are offset somewhat by the provision of technical support, which is particularly valuable for institutions that do not have an advanced technical department or expertise to assist learners.

Another disadvantage is the lack of interoperability with existing systems. Of the institutions surveyed, only one stated that they had no interoperability issues. These problems are particularly acute when trying to align the LMS with institutional administrative systems. Upgrading may not necessarily resolve these issues and is likely to require a considerable shift in support and resource management. There is also the problem that future versions may be more (or less) suitable.

Open source solutions are increasingly being used by institutions. Providing these under public licence agreements has economic advantages and allows the possibility for greater customisation to meet institutional requirements. Open source solutions are also more likely to be interoperable with the institution's other systems. According to Weller (2006), open source solutions are likely to dominate in the future because of:
- the development of open standards that take away the only comparative advantage of commercial solutions
- the convergence of systems in terms of functionality that leaves minimal differences between the solutions that can be easily ignored
- the increasing reliability of open source solutions such as Moodle.[15]

But Weller also states that open source is likely to be more successful in an organisation where e-learning is relatively mature and ready to transition to more personalised systems and learning environments.

Key findings – organisations
E-learning, as a total or partial distance education model, needs to have a supporting organisational infrastructure that guarantees the achievement of the educational aims. An understanding of how the entire system of course development and delivery occurs is a critical aspect of ensuring effectiveness and quality (Davis, 2004, pp. 97-98).

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[15] A widely used Learning Management System in New Zealand particularly in the polytechnic sector.

The nature and extent of staff competencies have been highlighted as crucial for a successful e-learning organisation. Therefore staff training and development become a critical requirement (Paulsen, 2007, p. 88) and the authors recommend the creation of a dedicated and specialist technical and pedagogical support unit to achieve this.

The administrative organisation of virtual campuses is substantively different from their traditional counterparts. Organisations that adhere to systems and processes that have supported their traditional delivery in an e-learning environment encounter a number of problems, including the different profile and needs of e-learning compared with traditional delivery learners.

But the main challenge traditional institutions face is the need for automation. While universities should do their best to maintain, monitor and analyse their management processes, ultimately their success or otherwise will be determined by the learners. Administrative systems cannot be considered independently from learning in a Virtual Learning Environment (VLE). Processes that save learners' time are viewed as playing a crucial role.

Mainstreaming e-learning within organisations is being hampered by the lack of an overall framework within which this would occur. While there are numerous small-scale initiatives, they are often not supported by a general vision and a broad plan about what the institution really wants from its ICT use. This means that 'even successful practices and interesting experiences have limited impact and visibility' (OECD, 2005, p. 19).

Bates (2000) comes to similar conclusions. This suggests that a 'bottom-up' strategy should be based on a general framework, connecting localised initiatives within the wider strategy that reflects the intentions and potential of the whole institution in an e-learning context. Many larger institutions have been successful in providing e-learning through supporting small-scale implementations within a structure that provides technical and pedagogical support combined with guidelines reflecting the organisation's general e-learning policy.

Institutions tend to favour centralised, top-down strategies when they are involved only in distance education or where their aim is to develop an e-learning infrastructure that is self-sufficient and not subordinated to its on-campus programmes or as a supplement to traditional delivery. Transitioning to e-learning is easier for distance education institutions because they do not need to make entirely new changes to their existing administrative, organisational and pedagogical frameworks. They are also less likely to have to overcome old conceptions or resistance from staff who have their prominent positions threatened.

There is no one-size-fits-all model. But four are recommended for institutions to consider. The first of these is a totally decentralised model where small-scale initiatives are loosely supervised or guided by relevant faculty. The other model is largely bottom-up but where the localised initiatives are supported by an institutional strategic plan. This would more easily allow these small-scale projects to be scaled up into institutional or even sector-based implementation initiatives.

Large providers tend to go for the dual-mode model, which integrates e-learning within their teaching and most importantly administrative systems and processes. In this model a bottom-up strategy is not appropriate as the objective is to transform the organisation in a holistic way so that e-learning becomes a substantial component. Finally, the virtual university model tends to be specialist distance education institutions shifting from conventional delivery technologies towards ICT-supported ones. This model has also been used to create universities from scratch.

Course design should be done systematically, based on an instructional design model. This model must provide patterns and guidelines that enable the creation of rich environments to support online study (Duffy, 2004). Success in online education is more likely if it is underpinned by asynchronous communication. This is seen as being more flexible than synchronous communication (Paulsen, 2007, pp. 64-75). An overemphasis on content is unlikely to deliver good learning outcomes (Hanna, 2000; Sangrà et al., 2007). Design should also be separated from tutoring and administration.

Increased workloads for teaching staff are problematic but may be the result of an inadequate teacher role and/or the replication of organisational elements that belong to traditional delivery contexts. New pedagogies will be required and these can be broadly categorised as a shift from teacher-centred to learner-centred environments.

This would also see the emergence of new roles, including teachers becoming guides and facilitators rather than simply transmitting subject matter knowledge and expertise. For learners it would mean being more self-directed and online courses should take advantage of and support these new roles (Collis and Moonen, 2001; Peters, 2004).

Costs
Despite earlier promises that e-learning would decrease costs, there is no evidence in this study to support this if the main objective is to develop high-quality e-learning delivery. However, costs are decreasing in the corporate sector through the use of technology-enhanced training. But for universities, e-learning usually leads to cost increases, because of the retention of traditional delivery and the integration of e-learning into it. In contrast, in the corporate sector e-learning tends to replace traditional delivery.

There are also differences in their purpose, with companies working for profit while universities are concerned with the sustainability of their programmes. But there have been costly failures in both sectors because of a lack of a sustainable pedagogical approach (Ruth, 2006). Institutional start-up ventures may have been developed because it seems to be easier for virtual universities to start 'from scratch', as they can find cost savings more easily by avoiding unnecessary implementations (Mason, 2006; Keegan et al., 2007).

Bates (1995) developed an ACTIONS model. ACTIONS is the acronym for the seven main criteria that Bates proposed for selecting a learning technology: access, cost, teaching and learning implications, interaction, organisational issues, novelty and speed. This model is still valid if institutions implementing online learning want to try and ensure the investment is justified.

The impact of learner experience on transforming institutional practices

Author: Sharpe, R.

Reference number: 98

Introduction
There are three identified trends in learner experience research: a more holistic approach which examines the impact on study of students' pervasive use of technology; attempts to conceptualise the observed reactions in learners' experience; and a more strategic use of this research.

Both policy makers and managers are examining the evidence from this research to help inform decisions about how best to support learners at an institutional and sector level (Melville, 2009). This article explains the role of this research in this decision making by focusing on case studies from institutions in the Evaluation of Learners' Experiences of E-learning special interest group (ELESIG).

Aims of learner experience research
There has been a great deal of research on students' opinions of e-learning (Sharpe et al., 2006). However, there are limits to the recommendations that can be derived from this. For example, students may be reluctant to criticise a valued service, and findings will also be limited by the number and range of questions asked. More open approaches are useful in uncovering different perspectives and investigating technological innovations with few existing expectations (Creanor, Trinder, Gowan, and Howells, 2006).

Learner experience research has been valuable in identifying unexpected barriers to technology use. This research is becoming increasingly targeted (e.g. specific learner groups) and has adopted innovative data collection techniques such as 'talking walls' in a focus group context (Seale, Wald, and Draffan, 2008; Currant and Keenan, 2009; E4L, 2009; LeAD, 2009; STROLL, 2009; Support and Synthesis project, 2009; Thema, 2009; Towle and Draffan, 2009). This research is of value because it is able to make clear recommendations about what support students require at a time when they are particularly vulnerable, and this could assist retention rates (Anagnostopoulou, Parmar, and Priego-Hernandez, 2009).

Trends in learner experience research
Higher education institutions continue to invest significantly in the promotion and resourcing of their e-learning provision. Evaluations of the success of this provision must include the impact on the learner experience. But provision is not limited to institutions; students are increasingly using their personal technologies to support their e-learning (JISC, 2007; Melville, 2009).

Learner experience research examines this use of personal technologies and could inform institutional evaluations, which need to consider how these might easily integrate with institutionally provided infrastructure. It might also be used to gain an understanding of students who do not have access to personal technologies. Another benefit to institutions in this research is that it incorporates the learner perspective into their decision making.

The role of ELESIG
ELESIG was formed from participants who undertook learner experience research as part of their involvement in the Higher Education Academy's Pathfinder projects. It is intended to build capacity for undertaking this research. It is also intended to have a transformative impact by, for example, developing and evaluating the impact of strategies and embedding the learner perspective into quality management processes.

Examples of the transformative effects of learner experience research
Three institutional case studies are provided. The University of Bradford developed an annual regime of student surveys from pre course commencement to the end of their first year to monitor their experiences of transitions and provide appropriate support. Oxford Brookes University is using this research to develop their e-learning strategies. Finally, the University of Glamorgan has commenced a large-scale programme to seek student feedback on a number of aspects of university provision.

University of Bradford
The university has created a new unit (Learner Development) to implement their learner support services which are informed by institutional and national learner experience research. The survey consists of three questionnaires (delivered pre course commencement and week three of the first semester and week six of the second). The first questionnaire focuses on students' expectations and their preparedness for university study as well as their comfort in using social media, and includes a self-report on their skills. In response to the findings, an online space, including a community area, was created to support students in this transition period.

The first semester questionnaire allows priority issues and concerns to be identified and resolved in a timely manner. For example, some students lack confidence in their ability to be successful at university and feel isolated. In response, an online self-assessment tool was developed that enables students to share and discuss their experiences and provides a framework for how they will progress in their academic development throughout the year. They have also introduced a new induction framework to better support students that includes a face-to-face discussion of ground rules.

Oxford Brookes University
Their latest e-learning strategy represents a major shift to a more personalised model. This is based on their learner experience research, which shows how pervasive technology use is among their students. But it also shows that, while their ability to use these technologies

matures during their studies, the process is uneven, at times haphazard, and may lead to an increase in the digital divide (JISC, 2009).

Based on this, they are developing their own model of information literacy (based on an established model) to support all their students to acquire appropriate levels of digital literacy and capability (SCONUL, 1999).

Digital literacy will be both institution-wide and discipline-specific. At the discipline level they are requiring programme teams to audit current practice and identify gaps and aspirations. These are supported through their Course Design Intensive (CDI) workshop format, which has a particular focus on curriculum redesign and development activities. While the CDI format encourages radical rethinking of programme rationales in expanded teams, it is flexible enough to accommodate a wide range of contexts (Benfield, 2008).

At an institutional level, university-wide consultations have been held aiming to develop a more detailed taxonomy of digital literacies. Existing governance structures have been used but they have also created a special interest group to support this process.

University of Glamorgan
The university has commissioned a comprehensive research project, supported by three separate teams, to investigate the undergraduate, postgraduate and international student experience respectively. Nearly 2,300 senior secondary and tertiary students were involved. Each team reported on the expectations of their specific cohort and developed potential recommendations to address these.

The final set of recommendations was synthesised into six themes: physical space on campus; access and transportation; facilities; teaching, learning and assessment; e-learning; and general technology support. Each of these themes has a dedicated task group made up of key stakeholders, including students, to help interpret the findings and address the recommendations. The chairs of these task groups report to a steering group, led by the Pro Vice-Chancellor Learning and Student Support, which in turn reports to their Academic Board.

They have developed a scheme to directly involve students in their decision making in conjunction with their Students' Union. This has also led to direct relationships being formed between institutional senior management and students. Policy changes arising from these initiatives include the development of an 'assessment for learning' policy. One of the impacts of this policy has been a significant increase in online formative and summative assessment. They have also developed a policy to support appropriate student use of social software and this also assists staff in distinguishing formal and informal interactions with students using these media.

Blended is still best: review of literature and commentary on optimal learning environments

Author: Skelton, D.

Reference number: 100

Introduction
Skelton's review evaluates and discusses the literature related to learning environments, with an emphasis on the challenges and opportunities of e-learning alongside traditional delivery. It examines how this mixed-mode environment could be discussed and measured in relation to information systems learning environments. The literature included combines e-learning articles, blended learning and general learning environment work.

It can be used as background to contemporary blended learning environments. The tertiary sector as defined here covers both undergraduate and postgraduate learning environments. Some recommendations are made for information systems learning environments, while evaluations of both current and future blended learning environments are discussed based on the literature.

Motivations for blended and online learning environments

As e-learning matures, increasing numbers of institutions, many of whom have limited experience in this type of provision and distance education, are offering it. Even full-time, campus-based students are enrolling in e-learning courses (Picciano, 2006). While the internet has replaced some traditional delivery, e-learning courses lacking teacher involvement are unsuccessful (Stacey and Rice, 2002). In some cases a course is provided fully online and institutions may offer their programmes mainly in e-learning or distance mode (Udas and Brown, 2005).

These developments mean that the physical campus should also adapt and change (Stacey and Gerbic, 2008), including reconfiguring physical learning spaces to align better with flexible and e-learning delivery. But regardless of delivery mode, student motivation and interactions with teachers are important.

Collins and Berge (1995) see the online teacher playing four important roles. Their pedagogical role revolves around educational facilitation. Their social role involves creating a 'friendly' environment, which is required in e-learning. The managerial components include setting the agenda, aims, guidelines, and decision-making norms. Finally, their technical role covers their skill in effective utilising the course's supporting technologies.

There are many drivers for e-learning, including not only technological but also qualification 'creep', globalisation and mass higher education, and increasing managerialism. Some provision does not lend itself easily to e-learning (Skelton, 2008). E-learning also attracts a variety of students, with a range of motivations, an important one of which is being able to study without physically attending classes (Chang and Fisher, 2003, p. 3).

Theoretical debates in the fields of learning environments, e-learning and blended delivery

Most educational institutions are grappling with how to fit e-learning within their financial, marketing, educational quality, and competition areas. The Government has raised concerns about the financial nature, educational quality, and authenticity of popular e-learning courses such as free community computing and training provided through CD-ROMs (English, 2006). This highlights a strongly held political and public view that tertiary provision will have at least some traditional delivery component. This perception of what constitutes a valid 'classroom' also impacts on what is deemed appropriate for blended learning environments.

E-learning is heavily reliant on constructivist learning approaches. But this does not mean students can be left entirely to their own devices. Teachers still need to provide scaffolding, coaching and modelling to keep learners on task (Khine, 2003). Blended learning environments underpinned by constructivist pedagogies mean the argument for appropriate student support is stronger.

Is comparing traditional delivery with e-learning valid? For example, are these measurements occurring within more traditional frameworks? If e-learning or distance education was equivalent to traditional delivery, would this constitute full success? Traditional delivery itself has a number of potential deficiencies including lack of interaction with students, poorly prepared course material, and 'bureaucratic' isolation (McDonald, 2002). Extensive arguments both for and against e-learning will impact on the accreditation of an institution's programmes. McDonald argues, for example, that a fully online course requires special accreditation.

Learning Management Systems

While these can be used to provide evidence to agencies to support funding, Learning Management Systems should not be overly relied on. This is because they can be used to support passive learning environments that lack teacher-student interactions. Other environments may be more appropriate, particularly as teachers' roles such as course design, teaching and assessment can now be 'unbundled' and the technologies can be used to create a virtual, intellectual space (Department of Education, Science and Training, 2002; de Freitas and Oliver, 2005; Grandzol and Grandzol, 2006).

Blended delivery issues

There are more demands on teachers in blended learning environments, driven in part by the increased expectations from students around response times to their queries (Downes, 2006). There are also increased demands on the wider institution from these learning environments, particularly around updating and maintenance (Ellis and Phelps, 2000). The variety of delivery modes within blended learning (Picciano, 2006) means assessing teacher workload is more difficult than with traditional delivery.

Blended learning appears to be less controversial than its fully e-learning counterpart and less likely to be resisted by academic staff (Young, 2002; Bonk, Kim, and Zeng, 2006). This is because many staff believe that face-to-face interactions are the simplest and least expensive method of establishing relationships with students (Fungaroli-Sargent, 2000). Blended learning may also be more popular because fully e-learning courses have not been as successful as initially predicted. More institutions are adopting a blended approach, but this typically occurs without great publicity.

Students appear to enjoy traditional delivery more when it is less frequent, as is the case in blended learning. This suggests that it is not necessarily the standard by which all provision should be judged. There should be flexibility about the particular mix of e-learning and traditional delivery, and this is best achieved by allowing academic staff full control over their particular courses (Young, 2002).

The influence of pedagogy and the modern media

Institutions are also adopting blended approaches because of pedagogical reasons (Picciano, 2006). Often this is not to increase flexibility, but rather to create the best mix of traditional delivery and e-learning within their learning environments. Incorporating e-learning does not negate the importance of face-to-face interactions (Quek and Wong, 2003). An association between teaching philosophy and the use of e-learning environments may be useful when constructing goals for future blended learning contexts (Mumtaz, 2000).

Teachers may also need to re-examine their traditional timetable and contact hours, classroom practices, and student interaction to accommodate the new blended learning environment. Students increasingly use technology for entertainment purposes. To meet student expectations for a more entertainment-driven approach to learning, teachers can use a range of technologies to give students the sense of immersion in a modern, responsive learning environment (Joyce, 2006).

Historic and technology issues

Institutions have successfully integrated technology into their operations (Anadam, 1998). There are also limitations and issues associated with traditional delivery; for example, they are not scalable, and lack flexibility in their start and completion dates. Technology can theoretically extend the teacher-led model in both time and space (Bersin, 2004).

Flexible delivery as an alternative concept

Alternative studies evaluating non-traditional courses have focused on 'flexible delivery'. An ideal flexible delivery environment seeks the right balance between face-to-face communications, interaction via other media, and individual work so that each learning experience is maximised (Quinton, 2006).

Pascoe (2007) argues that high levels of employment (up until 2008) and decreasing enrolments have provided incentives for institutions to implement more flexible learning options, particularly targeting students who wish to undertake professional development without attending on-campus classes.

While shifts to e-learning are often driven by management, who think there are cost savings to be obtained, there is typically resistance from academic staff, who are comfortable and familiar with traditional delivery methods. In addition, staff IT skills may be insufficient (Pascoe, 2007). These issues need to be taken into account when shifting to e-learning.

In addition, cost savings may not materialise because of the longer time required to develop good quality e-learning resources and the increased teacher workloads (Navarrette and Guthrie, 2008). For some institutions the introduction of e-learning results in comparatively higher course costs and no guarantee of a return on investment (Wheeler, 2006).

The effect of emerging technologies on e-learning
There are some technical infrastructural problems with leading-edge e-learning features. Because of security restrictions, institutions may not be able to provide appropriate internet or IT access to support these features. While this may impact on campus-based students, it is less likely to be an issue for learners studying at home (Rickards, 2003). The growth in mobile devices also provides opportunities for students and institutions. For example, students could use their mobile device as the 'workstation' and the institution could supply the IT infrastructure (Huang and Tan, 2003).

Blended examples from e-business
Other industries' experiences suggest that a physical infrastructure is popular even where online delivery has been successful. This supports the view that fully e-learning provision is viable for a few big businesses such as Amazon, and a few large online globally positioned universities. But for most businesses and organisations, e-business is being integrated into their overall channels and environments and this is also likely to be the case for tertiary institutions (Jelassi and Enders, 2005).

Guiding principles for identifying and promoting best practice in virtual campuses

Authors: Stansfield, M., and Connolly, T.

Reference number: 101

Background
Within the European Union since about 2004 there has been a significant increase in the growth of virtual campus projects and initiatives funded by the Education Audiovisual and Culture Executive Agency (EACEA). EACEA defined a virtual campus as one that encompassed cooperation among multiple higher education institutions in relation to the design and development of joint curricula that are based on online and traditional delivery. This excludes single institution online campuses/environments (EACEA, 2006).

European and global e-learning and virtual initiatives have encountered a number of problems and weaknesses that have led to their ultimate failure. These include the UK's e-University, which had an expenditure of £50 million, and a joint UK-US initiative, the Alliance for Lifelong Learning, which had an outlay of US$27 million.

EACEA had identified a lack of interoperability and contact with similar projects as common features in the failure of these ventures. The project aimed to provide a deeper understanding of the key issues and critical success factors underpinning the implementation of virtual campuses. This would include publishing examples of best practice and case studies. The project was also tasked with producing a published practical framework to help guide the process of creating best practice in virtual campuses.

Methodology
The data that supported the project was obtained from desk-top research and face-to-face sessions with expert stakeholders. Online questionnaires targeted at e-learning/virtual campus experts including researchers, tutors and developers were also used.

Key success factors and barriers
These are summarised under four broad categories: meeting learner needs, exploring new markets, controlling costs, and maximising revenue. More detail on these and the major barriers to success are outlined in the table below.

	Key success factors	Key barriers to success
1.	Strong leadership and clear vision	Lack of leadership and direction
2.	Detailed understanding of market scope and potential	Overestimation of market demand and potential revenue
3.	Transparent business model	Failure to control costs
4.	Adopting a user-centred design approach to development in meeting learner needs	Failure to understand learner and stakeholder needs
5.	Maximising resource potential by reuse of e-learning materials	Failure to develop virtual campus and e-learning materials cost-effectively
6.	Clear and effective strategy for dissemination, promotion and commercialisation	Failure to plan beyond initial external start-up funding
7.	Engaging directly with key stakeholders in meeting real needs	Failure to develop future market opportunities

Technology

The study produced a set of guiding principles for organisations under the headings technology, learners, finance, organisational, and sustainability. These are summarised below.

1. Selecting appropriate technology platforms and software is based on detailed investigation across the virtual campus partnership and takes into account their knowledge of previous attempts as well as independent reviews of them. Any suppliers need to be reputable and recognised in their field (Wright, 2006).
2. Technology should conform to recognised standards (Wright, n. d.).
3. Maintenance agreements are in place and multilingual technical support is available on an as-required basis.
4. The infrastructure and server will handle the maximum/anticipated number of learners.
5. The platform has undergone rigorous testing to ensure it is reliable and appropriate security measures are in place.
6. The functionality and learner interface are compatible with the students' learning styles, profiles and needs as well as the aims and objectives of the courses.
7. Support is provided to learners with special needs and learning challenges (Wright, n. d.).
8. Sufficient learner documentation and instruction guides are available.
9. Adequate contingency plans are in place in the event of a system failure, which could be local, national or transnational.
10. Learners are advised of the technology requirements to use the virtual campus effectively.
11. A link to a frequently asked questions section within the virtual campus environments is provided for learners.
12. All systems should be interoperable, particularly the Content/Learning Management System with the administrative ones.
13. The adopted technology provides additional opportunities and enhanced learning opportunities that are both affordable and sustainable.

Learners

Other learner-related issues in addition to the ones highlighted above include:

1. Learners know what is expected of them including appropriate language and behaviour in their online interactions with staff and peers.
2. Staff providing both learning and technology support have the necessary skills and experience in dealing with learners from diverse backgrounds and cultures (Quality Assurance Agency for Higher Education (QAA), 2004).
3. To assist learners with special needs and learning challenges, descriptions of all non-text elements are available as a detailed text equivalent.
4. Learners have an opportunity to provide informal and formal feedback in relation to their virtual campus experiences via mechanisms including online surveys, face-to-face

learner-staff liaison meetings, local learner online support groups, and public and private discussion boards.

5. Procedures are in place to recognise prior learning, qualifications, and cultural backgrounds (QAA, 2004).

6. Learners are aware of the virtual campus privacy policy, which should include how their information will be stored, who has access to it and circumstances under which their submissions to online forums are made accessible and shared with others.

Financial issues

1. Appropriate methods have been adopted to evaluate costs in terms of both direct and indirect costs such as technology, staffing and administration.

2. Appropriate sources of internal and external funding and potential revenue streams have been identified and secured.

3. Formal agreement is secured in terms of how external funding and revenue will be divided among the virtual campus partners.

4. A clear, efficient and transparent financial system that has been agreed by all partners is in place (Bienzle, 2001).

5. The requisite financial documentation is clearly understood and implemented by the partners in the reporting and documenting of all financial issues (Bienzle, 2001).

6. Detailed financial risk management has been conducted before the development of the virtual campus and is conducted at regular intervals across all areas.

7. Contingency plans and procedures have been developed and agreed on by all virtual campus partners in relation to reporting and addressing any areas of potential financial mismanagement or malpractice across the partnership (QAA, 2004).

Organisational issues

1. Partners are well matched and provide complementary knowledge and skills.

2. The partnership is underpinned by a legally binding contract that clearly articulates the respective roles and responsibilities as well as issues relating to copyright, intellectual property rights, and ownership of materials.

3. Effective reporting procedures are in place.

4. Clear and detailed project plans are developed that outline areas of work, roles, responsibilities, deliverables (and milestones) and areas of evaluation among the partners.

5. Evaluation parameters, processes and procedures are agreed and developed.

6. Effective and appropriate conflict resolution principles and procedures are agreed and created with both partners and relevant third parties.

7. Detailed and effective market research is conducted to determine likely numbers of learners, most appropriate subject areas and the potential level of income (Keegan et al., 2007).

8. Strong partnerships are formed with both internal and external key stakeholders including academic and professional institutions, business/industry and government.

Sustainability

1. A dissemination strategy that targets key internal and external stakeholders and meets their needs is developed and implemented.

2. A marketing and commercialisation plan aimed at generating potential revenue and markets for the products, services, courses and expertise of the partnership is developed and implemented early on. This and point 1 above should be underpinned by the use of questionnaires and focus groups. These plans also need to address issues of copyright, patents, ownership, intellectual property rights, and confidentiality.

3. The potential for embracing best practices and innovation within e-learning is maximised by incorporating the virtual campus courses within the partner institution(s) on-campus courses and this will also contribute to wider organisational development and transformation.

Organisational maturity

More mature organisations are likely to be more successful in their development and implementation of virtual campus initiatives. The levels of organisational maturity and their defining characteristics are:

1. **Virtual campus planning and development** – at Level 1 organisations tend to rely heavily on external funding. They are in the development stages of their pedagogical and technological infrastructure as well as their sustainability plans.

2. **Virtual campus evaluation and refinement** – at Level 2 organisations are responding to user feedback and the results/findings of internal and external evaluations. They are refining their sustainability plans.

3. **Virtual campus integration** – at Level 3 organisations have both pedagogical and technological reusability and interoperability. They are implementing their sustainability plans and are also developing plans for excellence.

4. **Organisational transformation** – at Level 4 organisations have support and best practices embedded within the wider organisational context.

Minding the 'Ps' for implementing online education: purpose, pedagogy, and practicalities

Authors: Sutherland-Smith, W., and Saltmarsh, S.

Reference number: 102

Background

Export education is a multi-billion dollar industry internationally. For Australia the figure was over $15 billion, (Australian) (with almost half coming from the university sector (Department of Education, Employment and Workplace Relations, 2008). At the same time, domestic enrolments are also increasing, driven in part by knowledge economy policies (Kenway, Bullen, Fahey, and Robb, 2006).

New technologies are seen as enabling more flexible delivery modes for these increasing numbers of international and domestic students (Bell, Bush, Nicholson, O'Brien, and Tran, 2002; Bach, Haynes, and Lewis-Smith, 2006; Saltmarsh, Sutherland-Smith, and Kitto, 2008). Many in the sector view these developments as providing the underlying purpose for e-learning, and driving pragmatic expectations about its delivery and implementation.

For example, the Australian federal government has argued that ICT infrastructure improves 'the cost-effectiveness and quality of educational delivery' (Department of Education, Employment and Workplace Relations, 2006, p. 26). Despite a change in government in 2007, this commitment has continued and expanded with a dedicated Joint Ministerial statement for e-learning being issued that prioritises infrastructure and staff development).

Despite its widespread emergence, the ongoing implementation of e-learning continues to bring changes in teaching and learning practices, course structures, and policy agendas (Robins and Webster, 2002; Land and Bayne, 2004; Flew, 2005). E-learning has both economic and pedagogic potential but critics argue that insufficient attention has been paid to the problems, tensions and long-term implications of teaching and learning in e-learning environments.

In particular, they assert that e-learning does not take place independently of other factors, such as attitudes to change, valued expertise, reflective practice, and commitments to professional learning (Brabazon, 2002, 2007; Selwyn, 2007). Bigum and Rowan (2008) note that teacher

education consistently adopts a mindset that either integrates educational technologies into existing practice or, where these are viewed as a risk or threat, limits or even bans them altogether.

Some see the tensions between management and staff as constituting a major barrier to the successful implementation of e-learning. But this paper examines the convergence of disciplinary-specific orientations to e-learning and teaching practice with government and institutional policy drivers, which has remained largely unexamined (Mumtaz, 2000; Watson, 2001; Hermann, 2006; Maag, 2006). This paper will explore this gap in the literature by considering how tertiary managers, teacher educators, and educational designers understand policy drivers as shaping their orientations and practice.

Methodology
The study employed technographic methodology (Saltmarsh, Sutherland-Smith, and Kitto, 2008), which was informed by the work of Latour (1988, 1991) and Woolgar (2005). Data was collected from interviews with management, teaching staff, and educational designers at the five participating Australian universities. The questions focused on key aspects of policy decisions and their implementation with respect to e-learning, as well as the key factors seen by participants as impacting on the effectiveness of online curriculum practices.

This data was grouped into themes using Nvivo qualitative software. This was supplemented by additional observational notes pertaining to each participating institution, and, where available, examination of their relevant policies.

Key findings – part 1: Purpose: tensions between product and practice in e-learning delivery
A major theme emerging from the study was the disjunction between managerial views of the purpose and benefits of e-learning and the views of teaching staff. Staff were concerned about the tensions between economic and learning imperatives. In contrast, managers saw these issues as being indicative of outmoded practices that no longer served the purpose of meeting market demand for e-learning.

Managers were much more aware of the commercial pressures and imperatives and were concerned with creating products that could be offered both locally and globally. They also mentioned that other market drivers such as e-learning were indicative of their courses being flexible, efficient and relevant and that it could increase their reach and revenue.

Managers thought that these pressures meant that staff must accept the need for e-learning and adjust accordingly. Reluctance or refusal to adopt e-learning was viewed as a 'performance issue'. While support was provided, staff were expected to meet compliance requirements associated with the adoption of, and adequate performance in, e-learning environments (Bell et al., 2002). These compliance requirements focused on meeting 'market demands', not addressing pedagogical needs.

In contrast, staff placed much greater emphasis on the importance of learning relationships in the implementation of e-learning. Typically, they were concerned that particular pedagogical approaches may be compromised in e-learning contexts. They argued that crucial elements of teaching and learning are not contained within, and cannot be experienced through, pre-packaged content. Success in their view was contingent on the quality and engagement of teacher-student interactions (Saltmarsh and Sutherland-Smith, 2010).

Teachers who were positively inclined towards e-learning believed that student learning was best facilitated through multiple opportunities to explore options and share learning experiences with peers in the online space. Those staff who viewed e-learning unfavourably saw it as not being conducive to the high levels of learner interaction, student-centred learning, and authentic task discussion that they considered to be the most important components of pedagogy.

Key findings – part 2: Pedagogy: approaches to e-learning

Teachers saw their practice primarily being influenced by philosophical and pedagogical, rather than political, drivers. Their overriding focus was to ensure students had a quality learning experience supported by teaching approaches that reflected student-centred learning. While teachers were sceptical of political and economic motivations for e-learning, they were committed to exploring e-learning's potential for teaching.

The large majority of staff considered teaching online to be more demanding than its traditional delivery counterpart. Reasons cited for this included the perception of online learning spaces as impersonal, potentially isolating, and apparently disengaged from embodied interaction. They noted that these concerns applied to both staff and students. As a result, staff saw their role as bridging the perceived divide that exists in the space of technological mediation.

Staff emphasised collaborative pedagogical practices, learner experimentation, and co-production of knowledge, which bears scant resemblance to managerial concepts of e-learning as a pre-packaged product. This does not discount the support managers provide for staff to transition to e-learning; rather, it suggests a considerable disconnect between the dialogues of e-learning being used for institutional positioning within a market sector and its use to support pedagogical approaches centred on creativity, flexibility and experimentation understood as being critical for student engagement in e-learning.

But there are divergent staff views on e-learning. While some see it as benefiting their practice and students, others see it as a 'stripped back' version of teaching in which interactions with learners are much more challenging. This is partly because of the reduction in visual or linguistic signals within e-learning environments compared with traditional delivery. This view of traditional delivery as being the arbiter of quality is widely held and is supported by the literature, which often views success in e-learning as establishing equivalence with its face-to-face counterpart (Panko, 2005; Larreamendy-Joerns and Leinhardt, 2006, p. 572).

Key findings – part 3: Practicalities: time, cost and sustainability

Irrespective of the tensions and differences discussed above, participants agreed about a number of practicalities that most significantly contribute to the ongoing success and sustainability of e-learning within a particular institution. In particular, these pertained to the way resources were devoted to e-learning in the form of time and costs associated with workload allocation. Strategic planning and shared goals were also considered to be important for sustaining e-learning.

However, despite these shared concerns, staff felt that the institution did not value their personal and professional goals associated with pedagogy. A major point of contention for teachers and their support staff was that, while institutions promoted e-learning as being necessary for them to engage in, there were numerous instances in which online teaching had been treated as a second-class pedagogical practice. Most considered that there was insufficient support in the form of infrastructure and appropriate workload allocations for the time necessary to develop, teach and administer e-learning courses.

Where staff feel that the teaching load is too high and are reluctant to allocate additional time to course preparation, sustaining high-quality e-learning delivery is jeopardised (Larreamendy-Joerns and Leinhardt, 2006, p. 576). The support provided was generally viewed as temporary, with the prime purpose being to ease inexperienced or reluctant staff into new roles of teaching online rather than traditional delivery. It was less evident that longer-term strategies for supporting staff in ongoing ways were being developed.

Teachers overwhelmingly felt that while institutions were keen to derive profit from e-learning, they were less inclined to invest in technical training and support, or to employ the number of staff seen as appropriate to the task of effective online education. There was an identified lack of succession planning, which merits much greater consideration if e-learning is to continue to push innovative boundaries, as espoused in numerous institutional mission statements and teaching and learning policies.

Engaging in dialogue about these issues is crucial for institutions attempting to create sustainable e-learning that meets international demands for higher education to provide courses that are: 'value-adding, learner-centred, high quality, equitable, responsive, diverse, innovative, flexible, cost-effective, publicly accountable and socially responsible' (OECD, Thematic Review of Tertiary Education, 2007, p. 8). Pedagogy can be overwhelmed and undermined if it is treated as being subservient to economic considerations.

Attending effectively to practicalities such as the time required for programme development, the actual human resource and technical costs, and the need for strategic succession planning (i.e. plans to replace expert staff to work under similar terms and conditions if they leave) is crucial to producing and maintaining quality e-learning.

Conclusions

This paper suggests that at the policy level there is a need for alternatives to economically and politically driven motivations for e-learning. There is also a need for greater recognition at all stages of e-learning programme development, implementation and delivery about the extent to which staff identities and professional values act as barriers to, or facilitators of, innovative and professionally relevant e-learning courses.

Greater understanding of, and responsiveness to, the significance of teachers' pedagogic orientations, practices and values on the part of institutional management and policy makers would be an important step in understanding what works and what does not in e-learning. These understandings are also critical for stimulating much-needed discussion about new ways of approaching e-learning in a continually changing sector.

Institutions need to give far greater priority to the practicalities associated with human resources and technical support services and succession planning. This is necessary for the achievement of consistency, quality and sustainability in respect to e-learning. An important part of succession planning includes greater acknowledgement of the actual human resource cost of developing and delivering e-learning courses.

Without this acknowledgement, and a commitment to addressing its implications, teachers will continue to struggle with unrealistic and exploitative demands, and managers will struggle to generate enthusiasm and innovation among the academic and support staff for which they have responsibility.

Designing and evaluating e-learning in higher education: a review and recommendations

Authors: Tham, C. M., and Werner, J. M.

Reference number: 103

Background

Learning has evolved from traditional delivery to a fully e-learning experience (Phillips, 1998; Sutherland, 1999). Technology has changed the amount of information available and how it is presented in teaching and learning contexts, and this has reduced barriers to accessing learning caused by distance and location. Institutions need to keep pace in the provision of ideal learning environments to meet changing demands. Students no longer need to be physically present to learn at institutions.

This paper reviews the use of e-learning in higher education by discussing design and delivery issues. It also provides a framework to discuss critical institutional, technological and student issues that must be addressed for effective e-learning to occur. It then examines the issues pertaining to the evaluation of e-learning courses. Finally, it addresses important additional constraints that can limit e-learning's effectiveness.

Methods of delivery

It is crucial to determine whether interactive or non-interactive technologies should be used to deliver study in order to achieve desired learning objectives and outcomes (Arbaugh, 2000a, 2000b). Interactive technologies allow learners to gain wider and often more immediate interactions with peers and teachers. They can also provide a non-threatening environment for students where they can express themselves without fear and resistance, which allows them to share and learn without reservation.

Unlike traditional delivery, e-learning has the potential to exchange global experiences and shared knowledge among a diverse group. The effort, time and expense associated with e-learning should be given the utmost importance. The critical question in this context is: what is the appropriate level of information dissemination through this medium? Relevance, accuracy and adequacy are the main factors that should be considered in designing course material.

The main disadvantage for teachers in e-learning environments is the lack of an immediate response from students to confirm (or otherwise) their level of acceptance, understanding and retention. Teachers may adopt existing pedagogies which are unsuitable for e-learning, but this is understandable given the lack of guidance in this area, in part because it is still an immature field (James, 1997). Pedagogies that can be considered include approaches based around collaborative, cooperative and problem-based learning. Using these approaches would see the teacher play more of a guiding role and students adopting more responsibility for their learning.

According to Moore and Thompson (1997), distance learning is an effective delivery mode. In choosing the delivery mode teachers need to consider the qualitative, quantitative and technical nature of the material to be covered. Learner retention and understanding are critical, not the particular technologies employed to achieve this. Course objectives and learning outcomes should be the drivers, not technology.

Student profiles

With the increasing demand for e-learning, institutions must consider crucial elements that will ensure their credibility, reputation and survival (Phillips, 1998; Best of the On-line, 2001). Success in e-learning courses is achieved by bringing together at least three crucial factors, namely technology, the institution (including administration and teaching staff), and students. However, merging these factors is a major challenge for institutions.

Institutions

According to Bonk (2000), teaching staff undertake three different roles in e-learning: technology, pedagogy and social. The technology role not only requires teachers to understand the technologies, but also how they affect the adoption of different teaching strategies. In pedagogy, to raise students intellectual skills the right tools must be adopted, not simply the ones that are available. In their social role teachers need to establish a rapport with students, which, while challenging in an e-learning context, is critical to increase student learning and ensure that their motivation levels remain high.

Institutions should provide training to staff so they can carry out their educational roles properly. But motivation, behavioural changes and also the increased workload are real concerns that institutions are struggling to balance. E-learning is frequently resisted (Clinebell and Clinebell, 1995). Institutional management needs to address how they are going to prepare their staff to adapt to these changes.

Key questions in this context include: what can the institution do to ensure changes are within reasonable boundaries for teachers? With the increased workload that teachers may have, how will they maintain the standards and values they have set for themselves? While there are no definitive answers, it is important that each institution considers these issues in accordance with their own strategic plan before implementing e-learning programmes.

Institutions need to ensure that constraints do not become obstacles for e-learning, as ultimately their students will suffer. Another aspect that institutions need to concern themselves with is

whether or not there are adequate support infrastructures for staff. Many teachers face challenges in adopting e-learning because it is a novel approach for them.

While seminars, training workshops, and presentations are useful, they are not sufficient. Institutions must consider the amount of preparation time needed for each staff member involved in e-learning and include this as part of their training and induction programme. Allowing sufficient preparation time is an important component in reducing resistance to change. Institutions should be supportive of staff who conduct e-learning courses and give them the time and assistance needed so students benefit rather than suffering potentially adverse impacts.

Students

In an e-learning environment, students potentially have more time for study because of, for example, time saved from travelling to and from campus. But institutions should not use that as a basis for increasing their workload. Rather they should encourage the development of course syllabi that induce increasingly effective and efficient student participation.

Institutions need to consider what they can do to minimise student fears in dealing with technology. For example, how can teachers and managers assist students in the behaviour changes needed to move from traditional delivery to e-learning? Most importantly, how can institutions ensure that the standards and knowledge imparted to students do not suffer?

Institutions are the primary environmental factor in facilitating high levels of student learning. For example, student satisfaction with their e-learning courses is considerably higher when they feel they have received adequate training to use the requisite technologies (Schramm, Wagner, and Werner, 2001).

Institutions also need to consider that international students may value the interactions with their domestic peers in traditional delivery settings. Cultural interactions are part of the learning experience within institutions. This needs to be addressed when decisions are made about whether to offer provision by traditional delivery, fully online, or in a blended mode.

Technology

While it is unlikely that technology will ever be 'perfect', the effectiveness and efficiency of the technological infrastructure play an important role in creating the 'ideal' learning environment. Questions that must be addressed in this context include: what software should be adopted? How is organisational support for staff and students established for day-to-day operations? What is best to invest in as far as equipment and to what extent does the institution plan to support this learning environment?

An institutional structure to support staff and students in e-learning could consist of:
- a Committee/Advisory Board to oversee the strategic plans and provide the necessary funding to support e-learning
- a Management Board to ensure that the direction and requirements are within institutional boundaries
- a Network Administration section to address staff and infrastructural needs
- an Evaluation and Training section to provide staff development and ensure learning objectives are met. They should also investigate suitable technologies and share information about successful tools developed by other institutions. The dissemination of lessons learned from others becomes a benchmarking tool for evaluation
- a Help Desk for students who need assistance.

Every institution is unique and has its own strengths in delivering e-learning courses and this is reinforced by the fact that what works well in one institution may not work well in another. The main objective for institutions is to ensure that learning objectives are achieved in e-learning courses without sacrificing their standards and professionalism. In addressing the questions and issues raised here, institutions can make the e-learning environment seem less hostile to staff and students, and see the learning experience reach high levels.

Evaluating e-learning course effectiveness

The most critical component in this context for institutions is quality. This is paramount to maintain their reputation and credibility. Various benchmarking tools and methodologies are available to assist institutions in maintaining excellence in their e-learning provision. While institutions typically use questionnaires and surveys to assess whether learning objectives have been met, they must be designed and developed with consideration given to what will be extracted from the information provided.

Biased questionnaires can skew results. While written feedback is more suitable, it also takes more time and does not have quantifiable results that can be easily used for data analyses. Institutions should design their questionnaires according to course objectives, rather than relying on general ones for all courses. If the questions completed by students are more precise, they will yield higher-value information to support improvement.

Institutions often neglect to conduct follow-up surveys of students. These can help institutions determine the effectiveness of their e-learning courses. Although it is time-consuming and requires great effort, there are clear benefits in preparing students for future challenges in the workplace.

Evaluation outcomes

Institutions could send out questionnaires to students that ask them whether what they learned has prepared them well six months to a year after they graduate and are employed. This action will help institutions better align their available provision to meet organisational needs in general. Institutions could regularly review their course curriculum to ensure their offerings are meeting programme needs.

Institutions could work more closely with employers to establish the behavioural changes that the learners have undergone pre and post programme. This will be easier for institutions if they have the right model questionnaire and also a clear explanation of the objectives for the survey. E-learning results need to be analysed with caution. Data collection methods may be biased so the design of the model must be carefully developed.

Assessing and addressing learning constraints

Is learning the same in traditional delivery and e-learning environments (Arbaugh, 2000b)? Can the same standards be applied to all who participate, or should there be different guidance provided to different students? There are four potential constraints that must be addressed for e-learning to be effective: national culture, the 'door to information', ethics, and communication skills.

Programme design must maintain the standards of the institution, while simultaneously making use of the diverse student cohorts to exchange experiences, ideas and knowledge constructively. In regard to access, institutions need to ensure that course-related materials are easily available. The constraints that students may encounter in accessing the necessary tools also need to be considered. Another critical question in this context is: should students be given leeway in assessing the quality of their submitted assignments?

Not all courses are suitable for e-learning. While some courses will need to be taught by traditional methods, institutions may not consider this seriously during the e-learning course selection process. It is also important that students' communication skills do not deteriorate while participating in e-learning environments.

Capturing complexity through maturity modelling

Authors: Underwood, J., and Dillon, G.

Reference number: 104

Introduction
The main aim of this article is to take stock and examine why the theoretical and practical understanding of the impact of educational technology is impoverished and lacking in clarity despite the vast body of available empirical literature. To address this, the article presents a framework designed to allow capture of the complexity of any educational environment into which technical innovations need to be embedded.

Determining the effects of technology
Some commentators argue that there is no substantial evidence to support e-learning. They believe that e-learning is a drain on educational systems (Cuban, 2001; Cuban, Kirkpatrick, and Peck, 2001; Oppenheimer, 2003; Reynolds, Treharne, and Tripp, 2003). Despite consistently positive reports from staff, students and researchers regarding e-learning, the evidence supplied has not convinced the critics of its merits. For example, according to Lesgold (2000), these positive effects are largely derived from 'hothouse' environments with stronger than usual support for training and pedagogic practice.

But Lesgold also argues that the problem faced in e-learning is that while new technologies are inserted into education and offer new ways of teaching, old skills and content still need to be taught. It is possible that the wrong things are being measured. For example, despite the ubiquity of mobile devices in workplace contexts, there is no evidence of how these have improved efficiency at a macro-economic level. It may well be that the impact of technology on education is similarly impacting at an unmeasured level.

ICT effects are also difficult to assess because technology is not generally a direct cause of change but rather a facilitator or amplifier of various educational practices. The underpinning environment or infrastructure into which ICT is placed may or may not be adequate to allow its beneficial effects to emerge. Scaife and Rogers (1996) argue that young learners and staff have yet to develop the necessary skills to fully exploit the new learning experiences available through technology.

Designing a new approach
While there are valid reasons for the lack of hard evidence to support e-learning, this must be captured if e-learning is to be viewed as central to education in the future. A new approach to educational research is required to capture the rich interplay of variables when complex innovations are introduced. This model needs to identify how actions in particular contexts produce observable outcomes and recognise both the primary (directly causal) and secondary effects (facilitation and amplification) of the technology.

The approach taken is that of 'maturity modelling', which derives from organisational research that shows it is possible to score organisations to reflect the level of maturity at which they operate (Curtis, Hefley, and Miller, 1995). Maturity modelling allows a consideration of whether the designated institutions are adequately resourced and have the appropriate structures to deliver effective educational experiences using e-learning.

It also provides a way to move away from a sole reliance on performance data by capturing the complexity of establishing evidence of the effects of ICT in educational contexts as performance data rarely shows the dramatic effect ICT has on teaching and learning.

Building the maturity model
This model was initially constructed based on in-depth interviews with expert stakeholders. These expert stakeholders then assisted the authors to construct a final model that was field trialled to test its suitability. It has five dimensions: technological, curriculum, workforce, leadership and management, and communications and linkage. These derive in part from

identified key factors in effective e-learning and major areas of concern identified from the project funder.

For each dimension a set of six levels or stages was constructed with the clear assumption that any institution would evolve through the stages in order. The levels all have a scoring rubric that allows the evaluation team to record the progress of the institution on each feature. The score is also intended to provide a snapshot of the institution's progress on each of the key dimensions. These scores can be combined to create an overall model score for the institution. The supporting descriptive data allows simple cross-institutional and within-institutional comparisons to be made.

Advantages of the maturity model approach
One of the advantages of the maturity model approach is that it can be evidenced using a mix of quantitative and qualitative data sources including interviews, questionnaires and formal institutional documentation. The model also allows more sophisticated analytical techniques to be used such as explanatory factor analyses and regression model approaches. It also allows for much more meaningful and useful stakeholder input. It can also act as a guide by providing specific goals that institutions can aspire to and work towards.

From e-learning space to e-learning place

Authors: Wahlstedt, A., Pekkola, S., and Niemelä, M.

Reference number: 106

Introduction
There have been two distinct phases in the evolution of virtual learning environments. The first used a print-based correspondence model where institutions and staff managed the distribution of learning materials. The second phase, supported by technology, allows for interaction and learning to be provided simultaneously alongside the learning materials (Bower and Hardy, 2004). However, these interactions can also take place asynchronously.[16]

E-learning environments are often conceived as common information spaces, accessible through an interface constructed on a technological system (e.g. Peters, 1999a and 1999b). This focus on space explains some of the challenges associated with e-learning including:
- inappropriate pedagogies and non-engaging learning materials, and the lack of consistency between them
- the lack of tools to measure or evaluate the learning outcomes
- restricted or limited interactions and usability issues
- preparation time and substantive investment for institutions and organisations (Ardito, DeMarsico, Lanzilotti, Levialdi, Roselli, and Rossano, 2004).

Many learners have a static view of learning spaces (Wilson, 1996). But these static spaces are not adequate as learning is generally an interactive and dynamic process. Therefore the design of learning environments should focus on social places where learning takes place through social interaction rather than learning spaces (Mäkitalo, 2006).

This paper focuses on the need for e-learning environments to support the sense of place and the transition from space to place. It is argued here that current e-learning environments are more like buildings rather than schools and as a result participants only get a limited view and in a worst case scenario are alienated (O'Neill, 2005). They discuss the prerequisites, preconditions and methods necessary to develop e-learning environments designed for social interaction by adopting environmental and social characteristics to become more like places of learning, but still without physical restrictions.

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[16] For example, responses to students' online discussion posts can occur at delayed intervals, not necessarily straight away.

Space-place relationship

Spaces are converted to places by people, and their interpretations of them and interactions within them. Spaces can therefore be interpreted and perceived in different ways and this also means that the relationship between space and place is social, not techological (Harrison and Dourish, 1996). Places are created through the practice and appropriation of them by certain groups. Different technologies provide different comprehensions of the space, which contributes to dissimilar understandings of them.

From learning spaces to learning places by supporting social interaction

Social interaction is defined here as 'a form of formal or informal encounter between individuals, consisting of both verbal and nonverbal elements (such as) facial expressions, gestures and body movements' (Giddens, 2006). E-learning environments often attempt to capture this breadth of interactions by combining different media to support and stimulate communication, cooperation and learning.

However, despite the availability of different media, current e-learning environments are predominantly functional, with an almost exclusive focus on the support of cognitive learning processes (Krejns, 2004, p. 53). This absence of social interaction means people using these environments often feel isolated and remote and, consequently, are unable or unwilling to establish relationships with each other.

This results in a failure to achieve trust and a sense of community membership (e.g. Barab, MaKinster, and Scheckler, 2004). To overcome this sense of isolation, an e-learning environment, in addition to creating and managing courses, requires tools for assessment, communication, collaboration, and community building (Lewis, MacEntee, DeLaCruz, Englander, Jeffrey, and Takach et al., 2005).

Although there are media available in e-learning environments to support communication and participation activities, there are rarely tools that provide awareness of peers and their activities. Media should be designed so that learners can adapt to the situation and move seamlessly between them, simultaneously being aware of peers regardless of their tools and locations in the learning place (Pekkola, 2003). This would increase the participants' likelihood of relating to the place and sustaining involvement in online activities.

As people become more familiar with the e-learning environment, the focus shifts from a tool for learning to other functionalities that it may provide. These include tools for social interactions with peers. These interactions enable the creation of social norms and the development of social practices and conventions.

Example of how an e-learning environment does not support the sense of place

Shepherd (2003) identified four success factors for learning spaces: accessibility, support for different activities, being comfortable, and being sociable. The main difference between an e-learning and traditional delivery environment is in their comfort and social levels. In traditional delivery environments, there are greater chances of interaction than in their e-learning counterparts.

Current Learning Management System environments tend to be bounded and restricted, which limits their potential for social interactions. They may not be perceived as comfortable because of their 'look and feel'. The navigation around them may not meet learners' expectations. Nonetheless, these environments do provide some opportunities for social interactions because learners are aware of other participants' identities and roles.

But these roles are rigid and pre-determined by system administrators (not users). This may assist novice users but not teachers or advanced students. Fundamental changes cannot be made by participants and they cannot freely develop their own conventions, but are forced into a 'mould' defined by someone external to the community. However, these conventions are as important in an e-learning as in a face-to-face environment (Mark, 2002).

E-learning place characteristics
While there is no single remedy or approach to designing a learning place, it cannot be achieved if there is a sole focus on technologies. The table below provides some recommended approaches if an institution is to successfully create an e-learning place.

Characteristic	Description	Design example
Expectation or purpose	Participants expect that the place supports and enables learning, both mentally and in terms of technical tools.	All features and layout of a user interface appear and match with the users' expectations.
Bounded existence	The e-learning place is perceived as bounded, but local and individual. Participants recognise the place as one where information is shared and possibilities are supplied to concentrate on specific topics.	The e-learning is presented as bounded by, for example, frames, menus, links, panels, screens and different sites, as well as limiting the permitted activities.
Available access	The potential to have different kinds of accesses in e-learning places is required.	The login to the environment or some sections is always available for all or restricted periods of time by password protection.
Valuable content	The place contains valuable materials and information to support users' learning processes.	All the content or relevant hyperlinks that are required or might be needed for users' understanding are available.
Adaptive features	Learners become 'inhabitants' of the e-learning place, feeling comfortable and having support for their interpretations of it.	User interface, the appearance of the environment, and means for cooperation can be customised – at least to some extent.
Diversity of interaction mechanisms	The place offers different types of possibilities for private and public interactions within the user communities.	Different communication and collaboration tools are provided such as chat, voice-mail, and video-conferencing.
Social properties and community values	The place illustrates social properties and appropriate behaviour. The place supports obtaining community memberships.	Representations of how participants are involved in the interaction, their statuses, availability, and visibility to others are supported. Learning profiles as well as issues of security, trust and time can be managed personally.

Closing the gaps in institutional development of networked learning: how do policy and strategy inform practice to sustain innovation?

Authors: Weedon, E., Jorna, K., and Broumley, L.

Reference number: 107

Introduction and background
This paper aims to explore whether or not a recently developed model[17] (Martin, 2002) can provide a useful theoretical framework for exploring institutional implementation of networked learning and for examining the role of institutional strategies in this and similar developments. This model is a tool for institutions to examine the extent to which the incorporation of technology in various aspects of learning has led to transformation.

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[17] At the time of writing which was 2004. .

The transformation model
This was based on previous models developed as part of the MIT90s project at the Massachusetts Institute for Technology (Morton, 1991). One of these became the 'transformation model' because it described the transformation from traditional to ICT-led institutions.

The model consists of six stages and three phases. The stages are (from one to six respectively): individualised, localised, coordinated, transformative, embedded, and innovative. The first three stages comprise the evolutionary phase; the transformative stage represents the transitional phase; and the embedded and innovative stages make up the revolutionary phase (Derbyshire, 1999; Martin, 2002). While Martin's model did originally include students' IT literacy skills, this is not included here although it could be extended to include this as well as student support, interactions, and learning activities.

Methodology
While 20 institutional case studies split evenly between higher and further education organisations form the core data for the overall research, only four of these are used for this paper. They were one established, research-led university, and three post-1992 universities. Three were funded by the Higher Education Funding Council for England (HEFCE) and one was not. They had to have a virtual learning environment (VLE) to be considered for this study.

Since 1999 all institutions funded by HEFCE have been required to produce a teaching, learning and assessment strategy (Thorpe and Freewood, 2001). All the case study institutions had one (although one of them was being redeveloped) and two had dedicated networked learning strategies.

Each case study collected data from: interviews, questionnaires, and institutional documents. The investigative areas focused on were: overall institutional development, infrastructure and support services, staff, collaboration and communication, teaching and learning, quality monitoring and evaluation, access, and within institutional development drivers. Staff from the following areas were involved: senior management, technical, registry, quality assurance, academic, and support. They had to be participating in some form of networked learning activities.

Networked learning (as opposed to online or e-learning) was defined as 'learning in which [ICT] is used to promote connections: between one learner [and their peers]; between learners and [teachers]; between a learning community and its learning resources' (Goodyear, 2002).

The relationship between institutional development and institutional documentation using the transformation model
The model suggests that Stage 1 development depends on individual initiatives independent of institutional policy input. But the interview and questionnaire data indicates that this is not necessarily the case; rather whole institution initiatives and specific units drove this process for most of the institutions surveyed, to the extent that for one institution development commenced at Stage 3 of the model.

All of the institutions had specific units to support networked learning, and had a range of initiatives to support its development. All institutions noted that their infrastructure was adequate to support these initiatives and they had staff technical support and training available. However, not all were confident that their infrastructure could support future networked learning developments. Funding was provided for their staff support and hardware, but not all institutions funded all of these areas.

The data suggests that networked learning is regarded as core business by these institutions. However, there is no evidence to support that this or the adoption of institution-wide VLEs has led to widespread institutional transformation. There was variability in how networked learning was being applied. Some institutions left it up to staff to determine how much of their course used their VLE, but another institution prescribed that a minimum (albeit modest) portion of the

course had to use the VLE. These institutions referred to this process as 'organic' development. Notable successes tended to be localised and outside mainstream provision.

The relationship between strategy and the development of networked learning
The implementation of networked learning within these case study institutions has focused on infrastructure including the VLE. Most of their strategies lack specific actions as to how networked learning will be achieved and tend to make general statements such as that it should not replace traditional delivery. A strategy that identifies the need for technology to be incorporated into the learning process has clearly had an impact on institutional development.

But the extent to which networked learning is being implemented institution-wide is unclear. For example, there are differences between different schools and faculties representing different subject areas. There were also varying attitudes between the different local areas.

The transformational model and institutional development
The data does not support the process for institutional development outlined in the transformational model and the 'revolutionary' label may not even be appropriate. It is also clear that institutions will commence their development of networked learning at different stages. While for some this will be at Stage 1 (individualised), for others it may be Stage 2 (local) or even 3 (coordinated).

In relation to the final phase (revolutionary), the data suggests that at this stage it may be more accurate to refer to this as evolutionary where the institutions are making an increasing number of resources available online. But this is not occurring institution-wide, with variability at department, discipline and staff level as to how much is being made available.

It was noted that some staff were not engaged with networked learning and priority being given to research activities was also hindering its development in at least one of the institutions. While the role of strategy is essential for institutional commitment to networked learning, it does not necessarily lead to innovative development that makes use of technology's full potential.

Further research
As only four case study institutions were included here, further analysis is required and this needs to consider other studies such as Banks and Powell (2002) and Cornford and Pollock (2003). The transformational model outlined here may also need revision, particularly its later stages.

New Zealand examples of blended learning

Authors: Wright, N., Dewstow, R., Topping, M., and Tappenden, S.

Reference number: 110

Background
Blended learning has a lengthy history in New Zealand dating back to at least the 1980s. The central agencies' efforts to support e-learning include the establishment of a specialist portal and dedicated funding for research and resource development projects.

Institutional case study of blended learning – the University of Waikato
The University of Waikato categorises its e-learning courses as fully online (where a student can complete a qualification without on-campus attendance), mostly online, which means that the online course is supplemented by on-campus delivery, and somewhat online, which involves an e-learning component for on-campus students. Finally, courses that are supported online are traditional delivery courses supported by material provided online or through the relevant university systems. These courses are spread widely across the university.

Blended learning is defined by the university as a mix of online, traditional delivery and distance education. The mix is not prescribed and is left to each individual lecturer to determine. Therefore increasing staff knowledge of effective practice for successful online learning is an important aspect of the university's e-learning strategy.

Despite the fact that most teacher-student interactions occur asynchronously (i.e. they are delayed), both staff and learners wish to develop positive and constructive relationships. One strategy to develop this relationship is the posting of photos as well as commencing an online course with an introductory discussion. Orientation also includes an introduction to and use of the core functions of the main e-learning system used to support their course. Students can also access lectures via video-conferencing at the university's satellite campuses.

Lecturers new to e-learning are encouraged to start with courses in the 'somewhat online' category. This is often when they require the most technological and pedagogical support. Other support for the university's e-learning technologies includes:

- course documents in a range of formats available through their Learning Management System (LMS)
- asynchronous discussions to assist peer-peer and learner-teacher communications and as part of student coursework. Assessments may be made of the frequency and quality of learner contributions to these discussions
- other areas including online cafés for learners. Question and answer areas for learners are also available to query aspects of the course that do not form part of the online discussions. These areas also allow learners and staff to upload relevant resources that could benefit each other.

Technological and pedagogical support
The university set up a specialist unit (the Waikato Innovation Centre for e-Education) to support their e-learning strategy. They have programmers, designers and learning specialists who provide tools and professional development for lecturers. The learning specialists focus on pedagogy while the programmers and designers interpret staff needs in terms of the technology.

Professional development includes training courses, seminars, weekly sessions – where the centre's staff are available for less formal support and answering staff questions – and one-on-one consultancy. They also provide online support through resources provided in a dedicated area of their system. Finally support is available through email and the telephone.

This centre became a stand-alone company which provides tools not only to the university but also to external stakeholders including government agencies. They have also developed a dedicated and more collaborative LMS which makes video-conferences and clips available for streaming and discussion at a time and place of the user's choosing.

8 STAFF DEVELOPMENT

LolliPop for learning resources: information literacy staff training within further education

Author: Appleton, L.

Reference number: 4

Introduction
Information literacy is gaining in prominence and importance within tertiary education and wider society (Breivik and Gee, 2006; Pope and Walton, 2006). The focus of this paper is training library and learning resources staff in providing information literacy support to learners.

Information literacy in further education
While the importance of information literacy skills for library staff is acknowledged, there are not always sufficient resources provided to train staff. This is primarily due to logistical difficulties and institutions not prioritising these types of activities as they are not seen as core business. Flexibility is required to overcome these difficulties and the LolliPop programme was introduced to meet these requirements.

Case study – West Cheshire College

This institution is a large further education college whose core provision is vocational education and training for school leavers, employers, community, and adult learners. They have a Learning Resources department which provides centralised IT, library, e-learning, and digital media support. The library is responsible for the management and administration of the institutional Virtual Learning Environment (VLE).

To achieve their staff training objectives they use a college-wide study skills programme called 'Springboard'. Springboard comprises a series of discrete workshops covering essay writing, information, presentation, IT, numeracy and research skills, reflective practice, report writing, and bibliographic referencing.

The programme is coordinated by the Learning Resources department, which draws on staff from across the college to cater for different specialisations. The programme is customised for each area of the college, who draw on the workshops, content and training they require from the master set. Information literacy training was provided through the VLE as this was thought to be the most effective mechanism to achieve the twin objectives of increasing staff skills not only in information literacy but also in the use of the VLE (Joint, 2003; Morris, 2005).

The LolliPop programme was adopted for this training as it met the institutional requirements and needed minimal adaptation. Participation in the programme was mandatory for all Learning Resources staff. They received an orientation workshop covering the department's liaison strategy as well as introducing electronic resources and the LolliPop programme. In their own time and pace, staff completed the additional nine units of the programme, but this had to be completed within a two-month period.

Results

To ascertain whether the programme's objectives had been met, a questionnaire was supplied to staff, and 22 were completed. The results from this show that prior to the programme staff were not knowledgeable in relation to information literacy but on its completion the majority were. This also applied to VLE use, with most staff making either no or limited use prior to the programme but with a majority making regular use after completion.

This also applies to their knowledge of its functionality, with most not being familiar with this prior to the programme but almost 100 percent being familiar on completion. This may be because training was delivered in this environment and was supported by interactive content, blog and discussion tools.

Limitations and further research

It was acknowledged that this was a very specific context to demonstrate the efficacy of this particular programme and approach to staff development in VLE use and obtaining information literacy skills. This means that further research will need to be carried out in similar institutions if more definitive conclusions are to be drawn.

The Carpe Diem journey: designing for learning transformation

Authors: Armellini, A., Salmon, G., and Hawkridge, D.

Reference number: 5

Introduction

The University of Leicester (Leicester), which is the subject of this case study, attributes its success in e-learning, in part, to its adoption in 2005 of a strategic initiative, a pedagogical innovation strategy, which was intended to transform their distance and e-learning provision. In particular, this initiative has provided the ability to build up institutional capacity for effectively managing evidence-based change as well as transforming course design through low-cost, high-value-for-learning approaches. They positioned transformation at four different levels: individual, course team, departmental and institutional.

Benchmarking and the ADELIE project

Leicester participated in the initial benchmarking exercise undertaken by institutions supported by the Higher Education Academy (HEA) and the Joint Information Services Committee (JISC). Through this process they identified areas of weakness in instructional design, pedagogy, and learning materials and were able to rectify these. The other important result of this was their development of ADELIE (Advanced Design for E-Learning Institutional Embedding), a project funded by HEA, which over two years led to incremental change in e-learning design and related teacher practice at Leicester.

ADELIE included a key change process called Carpe Diem. This was a partnership approach between the project team, learning technologists, subject librarians, and academic subject teams (Armellini and Jones, 2008; Salmon, Jones, and Armellini, 2008). Workshops were used to enable these teams to understand, develop and implement effective e-learning designs, making use of existing institutional systems and infrastructure including their Learning Management System (LMS) and e-library. Carpe Diem also allowed teams to apply a 'design once, deliver many times approach' that benefited both staff and students.

At the end of the workshop its deliverables, resources and activities to be used in e-learning courses, are reviewed by an external student or staff member whose feedback is used to revise them. As well as having these deliverables located on their LMS they also have a 'storyboard' showing their purpose and location within the course design, and an action plan. These workshops are preceded by an initial meeting between the Carpe Diem facilitator and course team and this is followed up after the workshop with a meeting on how its deliverables will be embedded.

The Carpe Diem facilitator's main role is to ensure that the workshop deliverables meet the pedagogical challenges identified by the course team, drawing on appropriate input from all participants. Carpe Diem differs from traditional staff development approaches because it focuses on the learning design needs specific to an academic course team, and its outputs can be used immediately as well as informing the development of other course components. This intervention is also supported by librarians and learning technologists.

ADELIE also included three-week asynchronous online courses based on Salmon's (2004) five-stage model. These courses were designed to better support e-learning by improving participants' moderation skills within these environments. A range of teams from across the university benefited from these initiatives. They also developed a learning innovation strategic framework as summarised in the table below.

Development	Research
Present: 1. Established programmes/students + stable, mainstream, university-supported technologies	2. Established programmes + new technologies
Mission and market: New 3. Stable, mainstream, university-supported technologies + new missions, market and context	4. New approaches + new technologies

Using Leicester's approach in other institutions

Leicester developed the CHEETAH (Change by Embedding in E-Learning in Teaching Across HEI's) project. This project partnered Leicester with six other institutions[18] from the HEA/JISC benchmarking exercise and they tried the Carpe Diem approach to see if it would have similar success within other institutions. This approach was successful, for example, the project teams from each participating institution created activities in their LMS or equivalent. However, each institution would customise it to fit their particular institutional context and to meet their specific objectives.

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[18] These institutions were (in no particular order): the University of Bath, University College Falmouth, Leeds Metropolitan University, Newman University College, Oxford Brookes University and the University of Worcester.

Assessment
Along with four other institutions[19] and funded by the HEA, Leicester developed a project to investigate the similarities and differences in assessment practices across three disciplines using e-learning (Inter-Professional Education, Media Studies, and Psychology). Carpe Diem was used as the underlying approach, supported by post-workshop surveys and interviews. Its outputs included module handbooks and programme specifications.

New technologies
Funded by JISC, Leicester undertook the DUCKLING (Delivering University Curricula: Knowledge, Learning, and INnovation Gains) project. Its key objective was to use three emerging technologies (podcasting, e-book readers, and Second Life) in selected distance learning postgraduate programmes to develop advanced delivery, presentation and assessment processes to enhance the work-based learning experiences of students studying remotely.

These programmes faced similar challenges: the need to improve both the quantity and quality of staff-student interactions, and increasing personalisation, mobility and flexibility. Using a modified Carpe Diem approach, they assisted staff to integrate these technologies into their courses. Initial results show that the technologies are helping meet these objectives.

Open Educational Resources (OERs)
Leveraging a JISC/HEA project, Leicester developed a range of OERs across their institution. This was important because OERs have played a significant role in Carpe Diem since its inception, helping improve course design in addition to significantly reducing the amount of time, cost and effort spent on development and production.

Future developments
It is now recognised that there are complex links, communication pathways, and lines of influence from individuals to institutional capacity. As a result they are planning for an enhanced permeation process. This includes developing an extensive 'involvement' plan for the effective communication of their Learning Innovation Strategy across the institution to support their proposed new structure (a move to four large Colleges rather than smaller, more specialist Schools). They will also continue with the Carpe Diem approach.

Designing for professional development: how do we design effective professional development?

Authors: Barr, A., Neal, T., Moore, M., Delany, J., and Hunt K.

Reference number: 15

Background
This is one of a series of 'bulletins' developed by the authors but funded by the Ministry of Education. They draw on the Ministry's research up to 2008 and literature from projects funded by the Tertiary Education Commission, as well as some sector-based research. This bulletin focuses on the key findings from this research in relation to teacher professional development for e-learning.

Context
Successful development of e-learning capability depends on:
- well-coordinated pedagogical and technical support that is aligned with organisational structures and intentions
- appropriate resources
- good management, leadership, and staff engagement
- organisational knowledge of good practice.

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[19] In this case they were (in no particular order): DeMontfort University, the University of Derby, London South Bank University and the University of Northampton.

Teachers are unlikely to prioritise and engage in professional development if they regard e-learning as an unrelated or 'extra' activity rather than a core organisational activity. Lack of knowledge, high workload, and time constraints can be significant barriers that may keep teachers from participating in professional development. These constraints may also indicate a lack of managerial support.

But if the organisation has clear expectations about the role of e-learning, teachers are more likely to make informed decisions about engaging in professional development. Effective e-learning professional development therefore responds to organisational and teacher attitudes and beliefs as well as addressing structures and processes.

In practice organisations should:
- plan professional development to align with organisational strategies and be personally relevant to teachers
- communicate these strategies to teachers so they regard e-learning as core business
- acknowledge and design for the changes in time and workload that result from e-learning
- use both competency-based and capability-based approaches – competency-based training should focus on how to use the technology and associated tools; capability-based professional development encourages self-teaching, monitoring and evaluation
- limit the number of software applications used for e-learning in the organisation. It is recommended that institutions adopt a multi-functional, single-space Learning Management System.

Professional development implementation approaches
Both formal and informal approaches should be adopted. Many teachers believe that formal training takes too long, but enjoy informal professional development and believe it is effective. Teachers' professional development needs, capabilities and desires are multiple and diverse and change over time.

Teachers have varying levels of competence and confidence in an e-learning context. Any professional development programme that aims to expand the use of e-learning must accommodate this diversity of skills and attitudes. Effective professional development not only affects teacher adoption of e-learning, but also establishes and maintains supportive peer relationships.

Teachers who undertake professional development online can contextualise the e-learning pedagogies they experience, and better understand their learners. This form of professional development can be provided not only by their institution, but also by external providers, both national and international. Self-directed teachers have better outcomes than those who merely acquire competency-based skills.

When implementing professional development programmes institutions should:
- ensure they are individualised, relevant, situated and authentic
- design the programme so that it is flexible; that is, it can meet both short-term and long-term requirements and is able to change over time. This should include just-in-time training and long-term programmes that address pedagogical models
- allow teachers to undertake activities that clearly demonstrate the benefits of e-learning and provide a low-risk environment that facilitates exploration and problem solving
- expose teachers to new ideas and examples of good practice including applied research that demonstrates successful, pedagogically sound technologies
- encourage educators to work with peers in small groups and/or learning communities
- tailor approaches to take account of motivation, incentives, teacher values and the type of support required at particular times
- use central or multi-disciplinary teams to provide appropriate and timely training and knowledge
- after training, provide ongoing pedagogical and technical support

- provide ongoing opportunities for peer support including the development of communities of practice
- provide incentives for teachers who plan and implement e-learning.

Content – what should be in the programmes

E-learning is not merely the use of new tools and technologies; it is also a new way of teaching and learning. These new roles include greater responsibility for learners. Teachers need time and sound reasons to shift to-learning and they need to clearly understand their new roles. Too often e-learning professional development programmes focus on the tools. However, teachers want them to include reference to effective pedagogies in e-learning contexts.

Institutions should ensure their e-learning professional development programmes contain:
- a focus on e-pedagogies
- an opportunity to explore the relationships between different pedagogical approaches and the technologies they can use to achieve them
- demonstrations of how to support and motivate students in e-learning environments
- demonstrations of how to search for, store and display digital materials, and how to evaluate digital tools
- opportunities to show teachers how to personalise their teaching activities and practices
- opportunities for more expert teachers to share their knowledge and demonstrate good practice to their peers
- content that caters for the needs of teachers who are beginning to use e-learning as well as those with more experience.

Approaches and implications of eLearning adoption in relation to academic staff efficacy and working practice: final report

Authors: Hegarty, B., Penman, M., Brown C., Coburn, D., Gower, B., Kelly, O., Sherson, G., Suddaby, G., and Moore, M.

Reference number: 40

Background

This Ministry of Education-funded research project was conducted to provide a snapshot of staff development and self-efficacy in e-learning in New Zealand's tertiary sector. It was noted that other research studies had pointed out that timely and appropriate staff development, in a supportive and strategic institutional culture, was more likely to lead to an enhanced adoption of e-learning.

It was intended to establish if the staff development for e-learning provided at the participating institutions assisted them in developing their capability and confidence to utilise new technologies for teaching. The research questions the report aimed to address were the range of e-learning staff development models offered by New Zealand institutions, how these models prepared academic staff for e-learning and the relationship to self-efficacy, and why some models were more effective than others. Six institutions participated: four polytechnics, one college of education and one university.

Methodology

The research was carried out in four distinct stages:

Stage 1 – focus groups were conducted to assist in developing the report's questionnaire.
Stage 2 – this online questionnaire was implemented to survey self-efficacy of staff in e-learning as facilitated through staff development in both formal and informal contexts.
Stage 3 – individual interviews were conducted with selected staff.
Stage 4 – Individual and thematic case studies were developed to provide a snapshot of the (then) current situation with staff development for e-learning.

A literature review was used to inform both the questionnaire and the individual interviews. The quantitative data (i.e. self-rating scores) was analysed using descriptive statistics. The qualitative date (i.e. comments from the online questionnaire and interviews) was interpreted using thematic analyses.

Findings

Overall, participants scored highly in their self-efficacy for e-learning. The majority had some experience with e-learning; most had attended formal staff development workshops; and all had used a wide range of strategies for self-directed (i.e. informal) staff development. But despite this, there was limited evidence to support the notion that staff development led to learning gains.

The report's other main findings were:

- There was a predominance of competency-based workshops and support offered by all participating institutions. This support, including the provision of just-in-time, was delivered by a variety of mechanisms such as face-to-face, online, one-on-one, and mentoring. But face-to-face was the most common.
- Qualifications were also used in addition to showcasing and visiting expert seminars.
- Informal staff development was the most common practice. The most popular forms were reading offline and online research, discussions with peers and working with early adopters and/or peers.
- There was evidence of staff using metacognitive strategies such as the use of journals and manuals to support self-directed study.
- Existing formal staff development models at the participating institutions were insufficient to assist staff to fully develop their capability and potential for e-learning as they were primarily targeted at beginner level.
- The findings align with other research (e.g. Mitchell, Clayton, Gower, Barr, and Bright, 2005) in relation to factors impacting on staff who engage with e-learning, and some of the impediments which may affect its adoption such as adequate support.
- Time was an issue in regard to being able to access the staff development because teaching commitments meant they were unable to attend. Time was also an issue in regard to practising the skills they had learned, and developing e-learning courses.
- Staff also noted that e-learning meant they had higher workloads as a result of such things as increased demands from, and interactions with, students.
- Both pedagogical and technical support was required. Pedagogical support was needed prior to development work. But technical support was most useful when provided on a just-in-time basis.
- An institutional direction for e-learning was seen as useful by some participants.
- Central support was combined with local support at some institutions.
- Staff felt that a semi-formal support mechanism such as an online forum after formal staff development would add value.

Recommended staff development approaches

1. Adopt a multi-faceted approach to staff development using competency and capability-based methods.
2. Design staff development to meet each institution's specific needs, and situate it in the programmes and teaching methods required by staff, as opposed to staff having to take training focused on a Learning Management System and work to fit their teaching to it.
3. Use flexible delivery methods and a variety of strategies to promote experimentation and exploration; this would make staff development accessible to a broader selection of staff.
4. Use a project team approach to foster staff through metacognitive learning processes, with both training and scholarly activity used to cover both technical and pedagogical aspects. Within the project team would be a number of peers and the appropriate support personnel

including an expert peer as a mentor. Additionally, this approach would promote a community of practice and result in a 'snowball' effect on other staff.

5. Provide incentives including funding, time release, and promotion for staff who engage in project team, mentoring, and community of practice approaches to staff development for the planning and implementation of e-learning courses.

Limitations

The small number of institutions participating in the study and limited staff responses to its questionnaire mean that the data is not as robust as desired. This was compounded by the fact that the data analysis was limited because of time and budget constraints. This means that the report's findings are a reflective snapshot and cannot be used to generalise about either the participating institutions or the wider tertiary sector.

Future research

Suggestions for future research into staff development for e-learning included:

- investigating the implications of time and workload on engagement with staff development for e-learning
- using action research to explore the use of a capability-based approach to staff development
- using complexity theory to examine the relationship between informal staff development, metacognitive strategies, and the existing capability of tertiary teaching staff for e-learning
- investigating some of the problems and challenges highlighted by participants such as institutional support, the prioritisation of e-learning, technical support, support for the design and development of course materials, provision of adequate hardware and software, and appropriate pedagogies for e-learning.

Moving to blended delivery in a polytechnic: shifting the mindset of faculty and institutions

Author: Kelly, O.

Reference number: 55

Background

When the Manukau Institute of Technology introduced its Learning Management System to provide learners with greater flexibility of time, place and approach to learning, it chose to have its e-learning initiative located within its academic staff development section (Centre for Educational Development (CED)). This was in contrast to many other institutions, which tend to locate these initiatives in a separate unit or aligned with their Information Technology Services department (Epper and Bates, 2001).

The CED reports to the Academic section of the institution and includes a team that assists with curriculum design, assessment practices, research and programme review. It also houses the educational resources production unit and is responsible for delivering academic professional development across the institution. This professional development includes a mandatory qualification in tertiary teaching.

The deliberate integration of academic development with e-learning has meant that there is a one-stop shop for academics to go to for support and the use of e-learning is more regarded as business as usual in a teaching and learning context. This model also works well in a polytechnic environment. As it has proven cost-effective, this model may be applicable across the wider New Zealand tertiary sector but the focus of this article is on polytechnic approaches to e-learning.

Staff reactions to e-learning

Many teachers are comfortable in theory and practice with a more learner-centred approach. E-learning does not fundamentally change this underlying premise, nor does it entail removing

their control of the classroom or how they manage the learning process. But invariably teacher reactions to the introduction of e-learning are primarily negative.

These reactions range from outright refusal to those who prefer to ignore it. Even those who see some value often consider they have insufficient time to implement it. Some are more willing to adopt it, but only after it has been well established, and finally there is a small minority who willingly embrace it.

Successful transitions

To be successful, e-learning must be properly integrated into the existing learning context (Laurillard, 1993). This must be combined with appropriate institutional support, both personal and infrastructure, to allow for the successful transition of staff to e-learning. Professional development must be aimed at the teacher's appropriate stage, so that it scaffolds on and extends their skill base.

The eMatrix

They used this model to assist their academic development section to work with faculty to make decisions about the extent of e-learning that would suit their course delivery. They assessed key aspects such as access to materials and learner-lecturer and peer-peer interactions. From an infrastructure and support perspective they considered the degree of computer access required to meet learning outcomes, the extent of course redesign, the extent of faculty support and requisite training, and the departmental administrative support required.

The matrix has three broad levels, from largely traditional delivery at Level One to totally online delivery scenarios at Level Three. Level Two largely covers blended learning. The article focuses on Levels One and Two. At the departmental level the extent of e-learning had to be consistent across the entire programme and take into account the subject matter and level of the material, the target market, and the strategic opportunity of moving to a more flexible delivery model.

It also looked at what departmental resources were available in addition to the centrally available ones. This approach has meant that institutional policies and procedures in relation to e-learning have tended to evolve from departmental practice rather than from centrally directed directives.

Level One

This can be categorised as Web-Supported, where the course largely takes place through traditional delivery but supplemental and course-related information are available online. This includes course timetable, weekly announcements, copies of the assessments/assignments and associated exemplars and marking schedules, programme handbook, static course materials, and assignment submission and collection. They created a dedicated online space within their Learning Management System (LMS) to support this.

Institutional support

Faculty members receive sufficient training so that they can change this dedicated space by building and maintaining their own section of it. This training is provided through CED, at scheduled times and on demand, in the form of formal classes, informal group sessions and one-on-one sessions depending on the staff member's competence with technology.

Follow-up support is provided through telephone calls and individual mentoring. The early adopters now provide localised support and expertise for their less capable colleagues. This supports Rogers' (1995) diffusion of innovations theory. This work is considered business as usual by the institution so no additional incentives or recognition are given to staff.

Level two

Staff require more sophisticated skills and additional capability to progress to Level Two, because this is where e-learning begins to replace traditional delivery in some of the course. On Harmon and Jones' (2000) model, this represents both essential and communal web access. Given the degree of effort to transition to Level Two, faculty have to produce credible evidence

of how this will enhance learners' outcomes and provide examples of good practice and models that would enable professional judgements to be made on how best to use e-learning.

Examples of the sorts of things Level Two courses would have include formative and summative online assessments; resources intended to be accessed off campus and associated with other readings and relevant activities and discussions. There would also be extensive use of virtual interactions, small group tasks and quizzes and constructed learning objects to support and progress the learning process at appropriate points.

Institutional support
Staff are given extensive support so they can effectively redesign their course to meet expected outcomes. This includes providing a specialist designer who assists in such things as determining what can be provided through traditional delivery and what would be better suited to e-learning. They also need skills development in virtual monitoring of students and how to effectively develop online collaborative learning. While they may not need to know how particular software and technologies work, staff need to be able to determine when it is appropriate to use technology to support their teaching and learning.

As part of staff training, faculty have an opportunity to participate in both their normal teacher role and student roles. They have adopted an institution-wide approach as this has been shown to be effective (Wilson and Stacey, 2004). Faculty examine past examples and then participate in a series of discussions held over one to two weeks. These move rapidly through Salmon's (2000) stages to give faculty an idea of the challenges they will face in a virtual teaching and learning environment.

In addition, part of the mandatory teacher training qualification has a portion of its courses delivered in blended mode, so new lecturers are exposed to this delivery as part of their learning. They also provide informal professional development through an in-house publication and lunchtime 'show-and-tell' sessions.

Other key issues for institutions to consider when introducing e-learning
Considerable centralised resources need to be directed into supporting staff through what is essentially a change process. This case study institution has done this through a 'one-stop shop' – the CED. It is critical that staff are aware as early as possible that e-learning will involve more learner contact time than traditional delivery. In particular, interactions can occur outside 'standard' hours and more effort is necessary to provide feedback.

The institution should provide sufficient time for the retraining of teachers shifting to e-learning. This can be recouped later when they become expert enough to train and mentor their less capable colleagues. The institution should also establish an appropriate infrastructure that makes technology-supported teaching a normal extension of standard practice. Training needs to be organised centrally. For example, this institution employs a staff Information Technology trainer, who ensures all new staff have an appropriate induction when they begin work.

CED supports this by providing a template for blended delivery learner handbooks/learning guides that give students basic but important information such as how to log on and use the LMS and how to access the virtual library. Finally, the institute supports staff by providing a graduate qualification in applied e-learning specifically for tertiary teachers. This formally assessed 600-hour programme culminates in an applied project that is designed, implemented and evaluated.

Developing and sustaining positive change in faculty technology skills: lessons learned from an innovative faculty development initiative

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Reference number: 56

Introduction

University students not only live in a digital environment but technological skills are becoming more essential for success in the workplace. Therefore it is imperative that institutions offer professional development opportunities that allow faculty to provide interactive, technology-based learning to their students. The institution that is the subject of this article ran both centralised and localised staff development programmes for e-learning. But these were largely attended by the willing and the motivated. To achieve increased take-up it became apparent that a systematic plan and infrastructure were needed.

In 2002 the institution was given a dedicated grant to establish an e-learning professional development programme. The project's ultimate goal was to have more students involved in higher-quality e-learning courses. Twenty-three faculty members participated in the programme. Referred to herein as the Educational Technology Learning Initiative (ETLI) model, the project drew heavily on its literature review, of which the staff development components are summarised below. The evaluation and sustainability of the programme were also evaluated.

Literature review

Higher education institutions are expected by accrediting agencies to train faculty in acquiring new technology skills, competencies and strategies so that their students are better prepared for the future (Rogers, 2000). Educators need to inform their teaching strategies from the latest research on how people learn, effective technology use, and the skills required for today's society to achieve this aim of better preparing their students.

But despite scholarship being a major part of a faculty member's professional development, this is often not targeted towards teaching and leveraging this to improve their teaching skills and practices (Chang and Baldwin, 2008). Teachers may have to be self-motivated when it comes to learning about ways to improve their pedagogical skills. However, expecting faculty to be self-motivated may not be the best way to ensure these skills are in fact acquired.

According to Diaz, Garrett, Kinley, Moore, Schwartz, and Kohrman (2009), faculty needed additional assistance to incorporate e-learning into their practice as well as to measure the impact of different teaching approaches on student learning. EDUCAUSE (2009) pointed out that 'encouraging faculty adoption and innovation in teaching and learning with IT' was one of their top five challenges.

Effective faculty development is a necessity, not a luxury, as higher education attempts to deal with the 21st century (Meacham and Ludwig, 2001). Wei, Darling-Hammond, Andree, Richardson and Orphanos (2009) defined 'effective' or 'high-quality' professional development as that which improves teacher knowledge and practice and results in improved student learning. But in some cases faculty professional development programmes tend to be 'one-shot' training approaches, where despite attending a variety of workshop sessions educators were still unclear how this influenced their teaching.

Bringing experts in was also rarely effective (Meacham and Ludwig, 2001). Continued support and follow-up activities were also necessary. These one-off approaches are ineffective because they do not provide the sustained time and continuity necessary to transform teaching practice (Wei et al., 2009).

Wetherill, Burton, Calhoun and Thomas (2001) proposed a redefinition of professional development that emphasised the need for long-term personal and professional growth rather than an event or activity framework that is more typical of staff development. They believe that

professional development should be continuous and meet individual as well as organisational needs. But educators would also be expected to take responsibility by setting goals for their professional growth and continuously evaluating their professional competence.

A more holistic perspective incorporates faculty professional development within systemic change to education. According to Anderson (2003), there are six key elements to lasting educational change: a shared vision, support from all system levels, networking and interconnections, research-based teaching and learning principles to change teaching and learning, administrative support and shared decision making, and policy alignment to reflect new beliefs and practices.

Adult learning principles could also be applied to make faculty professional development more effective. Lawler and King (2000) cited six of these: climate of respect, active participation, building on the participants' experiences, collaboration, learning for action or application, and empowering participants.

Collaborative approaches have also been shown to be effective in faculty professional development and are increasingly being recommended (MacDonald, 2001; Wetherill et al., 2001; Darling-Hammond and Richardson, 2009). Wei et al. (2009) also supported a collaborative approach but added that for the professional development to be high quality it also needed to be sustained and content-focused.

The Indiana Professional Development Committee for Learning and Technology and Metiri Group (2001) suggested several strategies for professional development including:
- immersing teachers in an extended, intensive experience where they can learn content and develop necessary skills
- encouraging action research to track the impact of innovations
- allowing individualised learning where teachers can personalise their professional development activities to meet their own needs and interests
- mentoring from an expert colleague
- networking to share insights and experiences
- creating teacher trainers who serve as resources and provide support and training to their peers.

Brown, Benson and Uhde (2004) stressed the need for sufficient time to learn and opportunities to practise newly acquired skills in a risk-free environment where mistakes are permitted and ideas are shared. Just-in-time support and incentives that recognise participant effort are essential components for effective faculty development in e-learning (McKenzie, 1998; Rhodes and Goveia, 2002).

Describing DePauw University's model for successful technology initiatives, Trinkle (2005) emphasised the importance of aligning technology with educational objectives and best teaching practices. Making clear connections between pedagogy, content and technology is critical because, where this is achieved, educators are more willing to adopt e-learning (Otero, Peressini, Meymaris, Ford, Garvin, Harlow, Reidel, Waite, and Mears, 2005; Mishra and Koehler, 2006).

Diaz et al. (2009) found several common elements in successful professional development programmes, including focusing on student success, providing opportunities for faculty input, having more flexible programme provision, blending technology with pedagogy, and providing support at different levels of expertise. Barriers to e-learning adoption by faculty include access to technology, appropriate training, and time to redesign the curriculum (Amburgey, 2006).

Other important elements for sustaining the impact of e-learning professional development programmes include infrastructure, ongoing funding and allocation of resources, incentives, and a shared vision within the school of the importance and purpose of educational technology (Schrum, Skeele, and Grant, 2002; Lindemann, 2004; Otero et al., 2005; Lisowski L., Lisowski, J., and Nicolia, 2006).

But individual factors are also important. When adopting a new technology, teachers consider ease of use, value for improving teaching and learning in their particular classroom contexts, ability to choose the technologies to be used, and the amount of administrative support available (Stroud, 2009).

The ELTI model

Administrative awareness and support were important components of the model. Faculty were invited to respond to an RFP asking them to participate. In their response, faculty defined their participation objectives and their current level of technology usage and proficiency. For the 23 faculty selected, a laptop computer and a US$300 stipend were the incentives for participation. They attended an intensive five-day workshop, where the participants were allowed to choose the technology and the extent to which it would be used to support their teaching. But they were expected to incorporate it into their teaching and conduct an action research study to capture their experience.

The training was built around four areas: concept building, leading-edge technologies, collaboration and community building, and individual professional development. Participants were given time and assistance to incorporate their training into their selected course. Support was provided through collaboration, sharing and cooperation as well as a dedicated internet-based resource. One faculty participant from each college was identified as a mentor. They assisted the project directors and graduate students to train the trainers. The graduate students also provided the necessary technical support.

Methodology

Both qualitative and quantitative data was obtained and used to evaluate the model. This data included self-reflection and action research findings, pre and post-online surveys, and interviews. To evaluate the longer-term effects, participants provided anecdotal narratives describing their use of technology 18 months after the project. In addition, a five-year follow-up online survey and further interviews were conducted.

Key findings

The training accomplished its goals, with respondents reporting that it had not only provided knowledge building in technology, but also tied technology to best practices, and highlighted its connection to pedagogy. The training also meant participants were more likely to use a wider range of technologies to support their teaching, because of the additional support they received. The mentor-led workshops were seen as particularly useful.

The findings also support the literature with key benefits from the training including working in a 'safe' and 'trusted' community, receiving ongoing technical support, being provided with mentors, and workshops, and having the opportunity to practise and apply their newly acquired skills and capabilities (Anderson, 1993; Lawler and King, 2000; McDonald, 2001; Meacham and Ludwig, 2001; Brancato, 2003; Mishra and Koehler, 2006; Darling-Hammond and Richardson, 2009; Wei et al., 2009).

But faculty did raise concerns about their ability to adapt new and emerging technologies into their teaching. This illustrates the need for and importance of continuous professional development (Wetherill et al., 2001).

The follow-up data indicated that, while the LMS was still the main vehicle for e-learning, more extensive use was being made of its functionality. Courses were being aligned with external standards and the internet was being used for essential course content. In addition, the communities and mentor-led workshops were still in place and providing valuable knowledge. The ELTI was attributed as being critical in the ongoing use of technology by the majority of participants.

The diversity of technologies used was not as extensive as participants had anticipated although most expressed a desire to expand the types used. This lack of uptake of non-LMS technologies was most likely because participants felt they had insufficient knowledge, time and support to

implement them in their courses. The factor considered to be most important in their continuing use of technology was student success and technology's role in this through such things as increased and easier access to resources, and improved engagement.

Faculty also derived personal benefit from technology use. This included variation in teaching methods, improvements to student interactions as it was easier to contact them, and assistance with organisation and saving time. They felt that technology use made them more skilled and effective and they were keen to share their knowledge and expertise with their peers. However, some barriers were identified as a hindrance to the positive and ongoing impact of the ELTI.

These were the quality and lack of equipment and appropriate software and the time constraints in developing materials and participating in ongoing training. Faculty stressed the importance of incentives such as more time to increase their knowledge and skills and the provision of stipends and equipment including laptop computers. This supports the literature findings (Schrum, Skeele, and Grant, 2002; Lindemann, 2004; Otero et al., 2005).

Recommended components for e-learning staff development
Based on the study's literature review and key findings, the following components are recommended for inclusion in faculty e-learning professional development programmes:
- The technology tools addressed in the training must result in student success.
- The training must be based on adult learning principles.
- The technology tools and assistance provided must be 'customised' to fit a teacher's teaching style and course content.
- The establishment of a 'learning community' is essential for maintaining the skills learned during initial training.
- Faculty must be provided with appropriate technological and pedagogical support after the initial training.
- Incentives must be provided, including release time, equipment, and modest stipends and recognition of and reward for the time and effort required to develop e-learning courses.

Blended learning at the University of Phoenix

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Reference number: 65

Background
In 1989 the University of Phoenix (Phoenix) introduced online delivery to serve learners who were unable to participate in traditional delivery because of external commitments. Participation by learners is mandatory and all learning occurs asynchronously. However, there are plenty of opportunities for learner-teacher and peer-peer interactions. The course curriculum, learning objectives and outcomes are equivalent to its traditional delivery counterpart.

Strong enrolments in both delivery modes have revealed learner preferences. Traditional delivery tends to be for learners who prefer face-to-face socialisation and practice in oral presentation skills only available in a physical setting. In contrast, online delivery provides an asynchronous learning environment for learners who prefer time to reflect before contributing to a discussion and require more flexibility.

But there were learners who wanted the benefits of both delivery modes. Therefore in 2000 Phoenix introduced a blended delivery option. They provide two options. The first is where most of the delivery occurs online but the initial and concluding meetings are held on campus. This initial meeting helps address concerns and issues as well as effectively disseminating the learning objectives and outcomes for each week of the course.

The final meeting allows learners to demonstrate their oral and small-group presentation skills. It also allows the lecturer to compare and contrast the outcomes from the learners' presentations.

The second option is broadly similar in its structure and intended outcomes but is designed for remote students. The first meeting is purely orientation and is not an official part of the course. The course officially commences online after the face-to-face orientation session. In all cases Phoenix recommends that blended delivery is tailored to the needs of both the learner and the programme's architecture.

Enrolments in blended learning courses while experiencing significant growth still only constituted a small percentage (about 4 percent) of Phoenix's total learner population. But this has still meant substantive preparation for Phoenix. For example, each blended learning course requires a dedicated, full-time faculty member to coordinate its delivery and ensure staff have the relevant teaching certifications. This preparation is made more complex by unanticipated demand and an uneven distribution of blended delivery provision across their physical campuses.

Roles of faculty and technology in blended learning
Regardless of delivery mode, the coaching function of teaching staff is a consistent and essential component. Other critical roles include questioner, facilitator of collegial learning and moderator of discussions. But some view the role of teaching staff as being diminished in size and importance in an online learning environment. However, Phoenix has stressed the importance of teachers in this environment of peer-peer and learner-teacher relationships and interactions.

Their supporting technology is seen as both simple and sophisticated. The online component of blended delivery leverages their email system, and also uses a portal to make materials easily accessible and available through a web-based electronic campus. These materials include the course syllabus, library and course resources that incorporate recommended readings and simulations to support their course. This accessing and use of electronic materials is intended to mirror how most learners will interact with content in their professional lives.

Staff training
Blended learning is much less likely to be successful if staff are not prepared for the experience. Phoenix's student cohort tends to be mature, working students, whose needs are different in key respects from younger, traditionally-aged students. For example, mature students often bring significant and relevant prior learning to their university study and these experiences need to be recognised and effectively incorporated by teaching staff.

Blended learning can potentially be chaotic and disorganised. Avoiding this requires active facilitation and monitoring by teachers. To ensure they have these skills (and others that are necessary), Phoenix requires prospective faculty members to successfully complete a certification process. A dedicated course to support this process includes topics devoted to facilitating not only learning but also collaborative learning, course management, assessment of student learning, faculty standards, and policies and procedures.

At the time of writing, Phoenix had introduced certification specifically for blended learning. This includes more actual teaching in an online environment to simulate what will likely occur when teaching through blended delivery. It also expects them to take on student roles including the accessing of course materials and participation in learning team projects. When they teach their first course they are assigned a mentor and ongoing support is also provided, including faculty development workshops and peer reviews.

'24/7' technical support is also provided and technical support staff are trained to handle likely questions and issues. However, these are continually analysed to refine not only the technical support but also how the curriculum and learning materials are delivered. This service is critical to the success of blended delivery at Phoenix.

Faculty are expected to respond to learner enquiries within 24 hours. They are also expected to be actively engaged in online discussions for five out of seven days during the week the course is delivered online. This includes not only observing and monitoring but also active facilitation and offering additional questions to extend the learning. These interactions help develop

learners' critical thinking skills because they are expected to substantiate their arguments in logical and convincing ways.

Planned learner support included providing feedback automatically to electronically submitted assignments which Phoenix was in the process of making mandatory. Grades will be assigned to each course allowing for assessment of the specific outcomes and a comparison of the achievement between the three delivery modes. They can use this to improve their curriculum and provide more effective blended delivery.

Professional development for e-learning: a framework for the New Zealand tertiary education sector

Authors: Shephard, K., Stein, S., Harris, I., Mansvelt, J., O'Hara, D., Suddaby, G., Dark, S., Brown, C., Hegarty, B., McClelland, T., Holmes, A., Chirnside, D., and Gilbert, A.

Reference number: 99

Introduction
This research funded by the Ministry of Education combined two separate projects, from Otago and Massey universities. Several prior studies had noted the importance of staff development for e-learning to enable them to better support and encourage students using e-learning.

Methodology and research objectives
The Otago project consisted of a literature review and a phenomenographic study to explore variations in the conceptions held by teachers and their support staff in relation to e-learning and staff development for e-learning to better understand the likely application of the project's professional development framework. This framework was intended for use by tertiary education organisations (TEOs), their staff and associated units, agencies, professional development groups, and other relevant stakeholders.

The Massey project undertook semi-structured interviews with staff and managers and conducted an online survey. This project focused on the factors that influence the uptake and delivery of current institutionally provided professional development opportunities.

These methods were used by the Massey team to explore staff and institutional capabilities and to consider the implementation and embedding requirements for the adoption of, and continuous improvement in, e-learning. They identified priorities for e-learning professional development and strategies and/or materials that could be used by New Zealand TEOs to inform their current and future needs, priorities and practices associated with this.

Key findings
The Otago project found that there were three broad approaches to implementing professional development: by providing direction (leading the way), by persuasion (i.e. provision of incentives, reward and recognition) or by coercion (with obligations and penalties). Their phenomenographic study uncovered five ways that individuals conceptualise e-learning: as tools, equipment, hardware and software; as a means through which learning interaction is facilitated; simply as learning; as a means through which to reduce distance; or as a collaborative enterprise.

E-learning professional development was conceptualised as: training to use tools, technologies and equipment, opening up possibilities for using technologies for teaching and learning, as a collaborative exercise that can take many forms, or being about relevance and purpose. The top five ranked approaches for professional development for e-learning identified in Massey's online survey were all informal.

Specifically (in order) they were: sharing knowledge with colleagues; spontaneous learning arising from work or personal activities; learning through informal workplace discussions; regularly reading journals and books relevant to a profession; and acquiring knowledge through online sources. While there was a high awareness among respondents (71 percent) of

institutionally provided professional development opportunities, there was a much smaller uptake of them.

Massey's interviews revealed a wide range of needs, capabilities and self-efficacy[20] in a professional development context. They also demonstrated the importance and impact of institutionally specific factors related to policy and practice influencing uptake and continued engagement in e-learning and its associated professional development.

For example, infrastructural, policy and social connections were often poorly linked, causing both confusion and frustration for staff. Staff at times struggled to navigate across institutional structures, particularly where support was dispersed across different units. While managerial support was recognised as important by staff, it was not always forthcoming. Staff also wanted recognition, especially in workloads, and allowance for the time commitment required for building e-learning capability through professional development.

Professional development framework

This framework reflects the five underlying principles of the Interim Tertiary e-Learning Framework. The framework levels are:

- Identify the need for professional development for e-learning.
- Find appropriate incentives for professional development for e-learning.
- Provide appropriate opportunities for professional development for e-learning.
- Achieve engagement with e-learning.
- Evaluate the success of professional development for e-learning and then repeat the cycle at a higher level.

The framework is not intended to be hierarchical. It indicates an iterative sequence of analysis and activity. This always starts with an analysis of professional development needs and incentives and opportunities for development. This is continued through active engagement in learning or research and is followed by an evaluation of progress.

Discussion and application of the framework

There is a wide diversity of staff views and opinions and institutional contexts. Furthermore neither e-learning nor professional development is a static concept. They are subject to continuous innovation and change.

Consequently, it is not possible to identify a particular policy or strategy, a mode of implementation or prescriptive action which will be entirely appropriate for any given institution or its individual staff. Acknowledging and understanding staff perspectives and recognising the influence of these diverse institutional contexts are critical if the framework is to be usefully applied.

Mind the gap: staff empowerment through digital literacy

Authors: Westerman, S., and Barry, W.

Reference number: 108

Introduction

This chapter provides an account of the DEBUT (Digital Experience Building in University Teaching) staff development programme created and piloted by the UK's Canterbury Christ Church University (CCCU) as part of its participation in the Pathfinder programme. The aim of DEBUT was to evaluate whether a localised, contextualised approach to staff development, grounded in the concepts of literacy, could be successful in raising the overall confidence of a group of academic staff in using and exploiting digital tools.

This chapter provides an overview of the institutional factors that led to this new approach to staff development as many institutions are likely to have staff that lack the confidence to exploit

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[20] An individual's belief as to whether or not they can successfully complete a task(s).

digital technologies. So there is a need to reappraise how this confidence is developed and the institution's capacity to support e-learning.

Digital literacy
Digital literacy is a socially situated concept and cannot be viewed merely as a universal technical skill. Lave and Wenger's (1991) theories around communities of practice highlighted the different stages individuals go through before they become experts. A situated, contextualised approach to staff development had support from theories relating to communities of practice, 'affinity spaces' (Gee and Hayes, 2009), and situated cognition (Brown, Collins, and Duguid, 1989, cited in Ferman, 2002, p.147).

This approach started to gain acceptance during the 1990s and the early part of the 21st century (Brew and Boud, 1996, cited in Ferman, 2002, p. 155; Ferman, 2002, p. 150, citing Mott, 2000). At an institutional level in the UK it was first adopted in 2007. As Manika (2007) points out, the focus of this approach was to provide an opportunity to immerse participants in, and expose them to, a range of learning technologies rather than teach e-learning theory.

Why DEBUT?
At CCCU, e-learning is managed by a specialised, centralised unit: the Learning and Teaching Enhancement Unit (LTEU). But there were some identified weaknesses with this approach, namely that insufficient attention had been paid to developing a genuine user-centred staff development process. Because their virtual learning environment (VLE) was relatively easy to use, the LTEU could focus on pedagogic and strategic, rather than technical, support.

However, despite mandatory uptake of the VLE and its relative ease of use, the LTEU still had to provide technical training whenever a new tool was introduced, because most staff lacked confidence in applying digital tools to their teaching. This meant that the desired gains in staff capability were not being realised, as the digital environment was changing too rapidly and the staff development model was de-contextualised from the users' local context (Jacobsen, 2001). What was required was for staff to have the ability to exploit a range of tools not just the VLE.

It was also important that staff develop these skills, as their students, particularly in the areas of reflection and critical thinking, were not necessarily utilising the available digital tools effectively or appropriately. This finding is supported by a range of other Joint Information Services Committee (JISC) projects (CIBER, 2007; Ipsos MORI, 2007; JISC, 2007; Ipsos MORI, 2008; JISC, 2009). Their concerns gained further support from CCCU's participation in the Higher Education Academy e-learning benchmarking exercise.

This exercise found that there were only limited examples of e-learning strategies that fully exploited a range of technologies within CCCU. Staff were generally not aware of what technologies were available nor how many of their students were using them. They introduced DEBUT because they believed that students cannot gain the requisite skills if their teachers do not have them.

DEBUT objectives and methodology
DEBUT aimed not only to up-skill staff, but also to provide a pool of 'champions' who would support their colleagues, which would make CCCU's support for e-learning more sustainable. They obtained expressions of interest and selected nearly half of these to participate in the initial DEBUT cohort. Only 10 percent were using technologies outside the VLE, but all shared a common desire to better understand the 'digital world', make more effective use of its tools, and not be 'left behind'.

DEBUT provided both VLE and non-VLE tools including popular Web 2.0 tools like Flickr and newer institutional tools such as podcasting and desk-top video-conferencing. Each participant was asked to select at least six of these tools, which were derived from interviews undertaken to ascertain their needs and context. DEBUT provided a dedicated event at which each tool and its potential applications were demonstrated.

Staff development associated with these tools was supported by a wide range of approaches based on their nature and complexity. For example, some tools were introduced through workshops (both hands-on and demonstration only), others through one-to-one support, and some through a manual. This would help establish which approaches were most suitable as well as the most sustainable ones to resource. DEBUT also supported peer mentoring through workshops and dedicated events to help staff build these supportive relationships.

Their key evaluation tool was a digital literacy scale based on Martin's elements of e-literacy. The aim of using this tool was to provide a benchmark against which participants could position themselves on a digital literacy scale at the beginning and end of the project. Participant interviews were also conducted at project commencement, mid-point and end to gain their views of DEBUT and discuss their overall digital journey. Finally, for each tool, participants were asked to complete a questionnaire to evaluate the staff development approach provided, and to reflect on whether or not they saw themselves using the tool in the future.

Initial results
All but the most experienced participants had increases in their ability; and in some cases this progress was significant. This progress was not just restricted to the DEBUT tools but digital tools generally. The interview data supported this finding, with participants typically noting increased awareness, understanding and confidence. For participants, the opportunity to select their own tools, based on their context, was a key success factor in enabling them to immediately apply what they had learnt.

The main reason participants gave for selecting the tools was that they were immediately useful to their professional practice and built on prior knowledge. This demonstrates the benefits of contextualised staff development. These findings also support Beetham (2003, p. 4), who stated that ongoing staff development for e-learning is effective when 'participants set their own learning objectives, plan their own curriculum development (and) undertake evaluation and/or critical reflection of their own work'.

A key difference in the DEBUT participants was their shared desire to learn new ways of supporting learning using technology. A key factor in raising their digital literacy levels was their ability to explore a range of tools. Manika (2007, p. 159) at Napier University found that exposing participants to a range of educational technologies empowered each 'to identify the potential for technology in teaching and learning'.

The support provided within DEBUT was appreciated by participants who preferred group activities; with this being the most highly praised method of staff development. This group workshop involved interactive, practice-based activities, but the key was the one-on-one or small group follow-up session which reinforced learning and acted as a motivator. This follow-up session also allowed participants to 'play' with a tool and receive highly personalised support. This approach is more sustainable than one-to-one support.

Participants preferred face-to-face or telephone support over online communications. A further key success factor was where the staff development involved sharing of practice and peer support. This approach was preferred in a face-to-face, not online, context. It represents not only a more effective method of imparting digital literacy but is also a more manageable way for developers to support staff.

However, there were some barriers, the most notable of which was time. A lack of access to technologies or where this access is neither easy nor appropriate is also a barrier. DEBUT illustrates the need for responsive support from IT departments (or equivalents), and also highlighted increasing staff preference for mobile devices to allow anytime, anywhere working. Staff development approaches that involved manuals or self-directed activities were not popular. Collaborative approaches allowed more benefit to be derived because they reduced the isolation of self-directed activities.

Future development
The question for other institutions is how a DEBUT type of programme can be delivered in a manageable and sustainable way. A centralised approach via a dedicated unit is not sustainable long-term. A more effective approach is where experts work alongside the specialist unit to provide ongoing and tailored support to their peers.

Another approach that has proven effective at CCCU is where e-learning experts are based in the central unit but are aligned with a specific faculty. The close relationships that develop were a key determinant in the success of DEBUT. These well-established relationships and development of a pool of 'champions' has meant the development of digital literacy is not seen as a centrally driven process, but rather as an organic, continuous and collaborative effort.

New skills and ways of working: faculty development for e-learning

Author: Wilson, G.

Reference number: 109

Diffusion of innovation theory
Developed by Rogers (2003), this theory dominates much of the literature that focuses on faculty development in relation to e-learning. Rogers defined diffusion 'as the process by which an innovation is communicated through certain channels over time among the members of a social system'. He also emphasised that the diffusion process always involves some degree of 'uncertainty and perceived risk' (p. 35).

The theory positions individual adoption of innovation within five broad categories: innovators, early adopters, early majority, late majority, and laggards. In the context of faculty development in e-learning, the literature tends to focus on two groups of staff: the early adopters (innovators and early adopters) and the mainstream majority (early and late majority and laggards).

The innovator is the first to try new products and processes, while early adopters, who are confident with technology, make e-learning look straightforward and disguise the knowledge and skills that mainstream staff need in order to adopt it (Jacobsen, 2000). Institutions tend to rely on early adopters to pioneer new ways of teaching based on e-learning. But the majority favour evolutionary change and seek proven applications of the use of e-learning.

Achieving critical mass
Institutions must encourage embedding (Oliver and Dempster, 2003). This involves leveraging the work of early adopters to achieve a critical mass of staff competent in e-learning. In this context faculty development needs to focus on actual use of e-learning not merely dissemination of related good practice.

The literature on faculty development for e-learning suggests a broad range of strategies available to institutions to embed innovations associated with e-learning, including:
- working across the whole institution and within current management structures, developing policies and strategies to encourage and mandate the take-up of innovations
- sponsoring projects, both those that are localised and those that have a wider institutional focus. Project funding should be used to purchase staff release time
- supporting a collaborative approach at discipline, faculty and institutional levels
- seconding teachers to work on localised e-learning projects within a central faculty development area or providing centralised support for faculty working within departmental contexts
- recognising and rewarding staff that participate in faculty development
- disseminating institution-wide communications about the innovation, including organising special events such as showcases and forums
- emphasising the value-add of the innovation, including the real improvements to student learning. It should also be stressed that the innovation will not undermine the faculty's other professional priorities.

Specific strategies for faculty development

Building on the recommendations from the literature in respect of faculty concerns about the impact of e-learning, it is useful to start with their perceptions about teaching and learning in relation to their current practice before examining how e-learning can alter their perceptions and their role as a teacher. It is also important that the complexity of adopting e-learning approaches is acknowledged particularly in relation to workload issues. Using a staged approach to skills development focuses attention on the readiness levels of staff and counters the tendency to push faculty too quickly to adopt e-learning.

Faculty should be given opportunities to participate in e-learning as a student, as this allows them to experience first-hand how it is used without immediately having to change their current teaching approach. This experimentation-type approach can be supported with demonstrations of e-learning, and with the provision of exemplars as well as participation in hands-on e-learning activities.

Skills acquisition

Some institutions frame their faculty development for e-learning using an expertise model, based on research on the skills acquisition process of other professionals and contexts (Dreyfus and Dreyfus, 1986). This research revealed five levels of skills acquisition: novice, advanced beginner, competent, proficient, and expert.

Based on this approach, the following specific activities can be used for faculty development for e-learning:

- Use a range of technologies to support staff development.
- Focus on the pedagogy of the online environment and in particular the role of the teacher in supporting the student, with an emphasis on shifting to a more learner-centred approach by taking on a supportive, facilitative and collaborative role.
- Focus on different ways faculty can work in collaborative teams to design, develop and deliver e-learning courses.
- Focus on changes to faculty work practices necessitated by moving to e-learning, including increased workload from monitoring online discussions and responding to student emails and managing and maintaining online content.
- Ensure that faculty development activities are ready to address more advanced skills development and that they are up to date with changes in software and technologies.

The table below summarises current practices in relation to faculty development for e-learning that adopt a staged skills acquisition approach (Crock and Andrews, 1997; Haigh, 1998; Bennett, Priest, and Macpherson, 1999; Ellis and Phelps, 2000; Hadgraft, Prpic, and Ellis, 2001; Hartman and Truman-Davis, 2001; Collom, Dallas, Jong, and Obexer, 2002). It suggests a staged four-level approach to faculty skills development from Novice (Level 1) through to Expert (Level 4).

Level	Faculty at this level	Features of faculty development
Level 1 – Novice	Lack familiarity with teaching in an e-learning environment and experience with technology. Show varying degrees of interest in e-learning. Some may be reluctant to engage in it.	Step-by-step approach assisted by resources that are easy to access and use and that relate to their discipline area. Practice-focused including 'show-and-tell' activities in the form of short seminars and discussion sessions on institutional use of ICT. Sharing of expertise and ideas through guest speakers, exemplars and/or work of 'early adopters' and enthusiasts. The emphasis of this approach is on enhancing faculty interest and motivation to engage in e-learning.

Level 2 – Developmental	Technology use is required and some have had exposure to ICTs and flexible delivery models. They are 'learning the process'.	More reflection to encourage critical evaluation of e-learning and provide opportunities to discuss with others and share ideas. Resources are provided to encourage this reflection including case studies and problem-solving activities. It is expected these activities will be utilised for individual work and group collaboration and occurs through traditional delivery and online.
Level 3 – Proficient	Are using e-learning for more complex staff-student and peer-peer interactions. Desire to become more proficient in their use of innovations to support their teaching.	Faculty development at this stage includes project-based learning approaches that incorporate action learning, peer assessment, reflection and discussion. Projects can be discipline based or cross-institutional.
Level 4 – Expert	Have integrated e-learning into their teaching practice. Are seeking to extend their use beyond what others have achieved. Are rewarded by the institution for their efforts.	Faculty at this level are engaged in research and development focused activities relevant to the new technologies. Faculty are role models, mentors, motivators and resources for other faculty, providing advice, and participating in faculty development programmes.

Transition to higher levels, while planned for, is often difficult to control, or direct, in that faculty move at their own pace driven by immediate workplace imperatives for skills development and enhancement. As the need for technical expertise declines, there is a corresponding rise in the emphasis on the pedagogical processes associated with e-learning.

An alternative approach is outlined by Salmon (2004) based on research conducted in the UK's Open University. This takes novice teachers through a five-stage process that spans several weeks, supported by experienced facilitators at each stage. In Stage 1 faculty become 'learners' and are exposed to an e-learning environment and its potential benefits. In Step 2 they share experiences with other learners. In Step 3 they are introduced to the vast array of resources available through the internet.

In Step 4 they are expected to formulate views on particular issues and share these, and engage in debate with others. Finally in Step 5, both learners and facilitators engage in knowledge construction through challenging each other and participating in argument that encourages 'deeper reflection and learning'.

Use of accredited courses
The use of formal, accredited courses can encourage the take-up of ICTs and offer different ways of embedding the requisite skills in faculty. These programmes combine online and face-to-face learning opportunities. Evaluation processes recommend the following strategies be adopted (Clegg, Konrad, and Tan, 2000; Edwards, Webb, and Murphy, 2000; Littlejohn, 2002).
- Gaining institutional support by actively marketing the course to organisational leaders.
- Ensuring clearly defined and articulated entry requirements are established.
- Mandating completion of at least one unit, or an entire programme, for fulfilment of probationary requirements for new faculty.
- Designing the programme so that faculty have opportunities for dialogue and reflection as learners.

- Designing the programme so that it strikes a balance between theoretical and practical components.
- Adopting a project-based approach and marketing this to attract discipline-focused faculty teams with specific departmental and e-learning-based outcomes they wish to achieve, supported by appropriate technical skills on a just-in-time basis.

Peer learning

The literature highlights a strong belief that embedding the use of e-learning within the institution will only succeed when the proposed change(s) is appropriated by the discipline group concerned (Boud, 1999; Becher and Trowler, 2001). The practice of peer learning, where faculty are appointed to work alongside of and provide support to others who are adopting e-learning, is usually associated with discipline-based faculty development.

At its core, peer learning is building on good practices that already exist in the local context. It develops skills and knowledge based on experiential learning methods often referred to as 'learning by doing'. Despite variations between institutions as to how peer learning is implemented, it provides the following advantages as a faculty development strategy for e-learning:
- Opportunities to focus on e-learning in relation to specific disciplines and project teams.
- Opportunities to share expertise, encourage collaboration and learning from others, and mentor less experienced faculty in their transition to e-learning.
- Opportunities to disseminate knowledge and understanding of innovative practices to support e-learning.
- Opportunities for faculty to explore and rethink aspects of their teaching.

Project-based faculty development

Projects are an effective strategy in working with faculty to explore the potential of e-learning. Findings from a survey focused on national projects in the UK came up with the following suggestions:
- How project knowledge is used and disseminated can influence institutional thinking about e-learning.
- Projects are a method of skills consolidation. If the motivational levels of the project team are high, there is a strong likelihood of their project's outcomes becoming embedded within institutional practices.
- But embedding of project outcomes is dependent on robust communication channels between the centralised and local support for the project team as the project progresses, and on the retention of faculty after it is completed, so their skills and expertise can be shared with others.

Faculty development online

Many rationales are provided for putting faculty development for e-learning online. These include:
- the time and place constraints associated with face-to-face, centralised workshops or one-to-one consultations (Hewson and Hughes, 1998; Salter and Hansen, 2001)
- creating a 'centre of gravity' for innovation in teaching using e-learning (Donovan and Macklin, 1999)
- putting faculty in the position of online learner and facilitating their experience in exploring the theory and practice of online pedagogy (Devonshire and Philip, 2001; O'Reilly and Brown, 2001; Fitzgibbon and Jones, 2004; Hallas, 2005)
- creating learning communities among faculty to support peer mentoring and learning (Creanor and Littlejohn, 2000).

Case studies of online faculty development for e-learning

The University of Maryland has two online modules that provide support for teachers to create and use various media to meet specific learning goals. They also provide examples of successful practices in online delivery. The modules link to additional supporting resources.

The University of Washington provides three types of online resources: web tools to help faculty develop online resources; guides to provide information to faculty in the form of 'how to' instructions so they can make effective use of e-learning in their teaching; and learning spaces which provide information about the various types of available computing facilities for faculty.

Deakin University in Australia has a case studies section featuring the work of over 70 teachers who have planned for and implemented e-learning. Cases can be browsed by discipline, faculty and individual teacher. Alternative approaches to engagement with the cases are provided and links are available to connect users to projects undertaken by the university's online teaching and learning Fellows.

In a similar approach the UK's Higher Education Academy (the equivalent of Ako Aotearoa) provides case studies that focus on how different pedagogies are being used in e-learning to help faculty choose successful teaching strategies. Faculty can access the cases through each study's key messages, by pedagogy, or by academic subject area.

9   QUALITY OF E-LEARNING

ACODE benchmarks for e-learning in universities and guidelines for use

Author: Australasian Council on Open, Distance and E-Learning

Reference number: 10

Background
The benchmarks were developed as part of an ACODE-funded project by representatives from a number of Australian universities and one New Zealand institution[21] and were peer reviewed by a leading international e-learning benchmarking expert (Paul Bacsich). The purpose of developing them was to support continuous quality improvement in e-learning. The approach adopted reflects an institution-wide perspective and integrates the key issue of pedagogy with wider dimensions such as planning, staff development, and infrastructure provision.

Why use the benchmarks?
Their use can provide a basis for research for improving practice, resulting in a better understanding of operational systems and processes and contributing to accountability requirements. It can also be a learning tool for institutions and be used to counter beliefs about their uniqueness. Benefits of using them might include:
- identification of strengths and weaknesses – for planning and priority setting
- an improved understanding of strategic and operational requirements
- a framework for quality assurance purposes
- developing strategies for improvement in areas of need
- facilitating intra- and inter-institutional collaboration.

Using the benchmarks
While the approach is institution-wide it is intended that the benchmarks can be used at the faculty/departmental level as well. Each benchmark area is discrete, so it can be used alone or in conjunction with others. This means there is some duplication across the different areas.

It is expected that any exercise using these benchmarks would take place over a period of years. In any given year only two or three would be addressed and the selected areas would reflect institutional priorities for quality improvement. This is because it is not a trivial exercise and

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[21] The participating institutions were: Edith Cowan University, Flinders University, La Trobe University, Massey University, the universities of Melbourne, Queensland, Southern Queensland, and Tasmania, and the Royal Melbourne Institute of Technology

requires planning and resources if its outcomes are to be fully realised and the commitment of staff involved is to be assured.

In addition, it is recommended that a commitment should be secured for the exercise, which would commence with a discussion and require the allocation of the necessary resources. This discussion would also contribute to the setting of institutional priorities in this context. Institutional commitment could also be reflected in planning and performance management documents. Senior staff with an institutional perspective on, and experience in, the development of policy, strategy, and quality assurance should be involved.

It is important, particularly for peer review purposes, that self-assessment provide a rationale for a particular score/ranking and evidence supporting this is identified. At some stage (no later than peer review), partner institutions should be involved as they can provide valuable feedback and assist with identifying priorities and making improvements to weaker areas.

Benchmarks
They cover eight topic areas, which are (in no particular order):
- institution policy and governance for e-learning
- planning for, and quality improvement of, the integration of technologies for teaching and learning
- information technology infrastructure to support teaching and learning
- pedagogical application of information and communications technology
- professional/staff development for the effective use of technologies for teaching and learning
- staff support for the use of technologies for teaching and learning
- student training for the effective use of technologies for learning
- student support for the use of technologies for learning.

Each benchmark includes a Scoping and Good Practice Statement as well as a summary list of general performance indicators. The scoping statement describes what is considered in a particular benchmark, and sometimes what is out of scope. Institutions can customise the benchmarks by adding or replacing these general performance indicators with local performance indicators.

Each performance indicator comprises performance measures. Each measure is rated on a five-point scale (where five indicates good practice). There are five statements that represent progress towards good practice (as represented by an indicator), with some represented as a matrix. Local areas within institutions can complete a self-assessment of current practice using these indicators, noting that it is not necessary to aspire to best practice on all.

Maximising outcomes
Obtaining greater value from using the benchmarks is more likely to be achieved where there is clarity around the objectives and outcomes sought. It is also important to agree on the process and responsibilities. For example, will benchmarking participants also be responsible for implementation and dissemination of outcomes, or will these activities be divided? It is crucial that team members can:
- relate the exercise to the broader institutional objectives
- understand the specific services or processes being benchmarked
- document and analyse processes
- assess current performance against indicators
- liaise and communicate about the exercise
- ensure ownership of the process.

Common problems and barriers
- The group selected is not the most appropriate for that particular stage of the benchmarking exercise.
- The benchmarking exercise does not relate to other institution-level initiatives.
- There is a lack of sponsorship from senior management and a disengaged process owner.

- Measures are overemphasised.
- Too much is attempted.
- The findings are not accepted.
- It is assumed that a site visit is required.
- Time and resources are overlooked.

Theory of benchmarking for e-learning: a top-level literature review

Author: Bacsich, P.

Reference number: 11

Background

Typically in most countries e-learning development is seen as primarily an institutional issue. However, some jurisdictions have established national e-learning strategies. This raises the issue of how they relate to their national universities' quality agency. The UK's Quality Assurance Agency for Higher Education (QAA) has established a code of practice, part of which relates to e-learning. The Pick & Mix benchmarks clearly align with this. Some jurisdictions also have indicators within their strategies relating to the quantity or mode of e-learning.

This review describes the processes and outcomes of a brief study to establish the state of knowledge of benchmarking e-learning activity, with a particular focus on UK higher education institutions. It does this by posing the problem, describing the methodology used, and commenting on the main documents found and the agencies involved. Its purpose was to establish the basis for any individual higher education institution to commence an e-learning benchmarking exercise. For the purposes of this bibliography the methodology used to locate and select the literature will be summarised as well as the major conclusions and the resulting benchmark table. It will not outline the summaries of the individual pieces of literature.

Methodology

A desk-top search using Google was carried out. This mainly focused on the 'grey' literature because there is strong evidence that in an e-learning context most information can be located there.

Conclusions

There is very little relevant literature on e-learning benchmarking in university contexts. Even less was directly focused on IT. The extensive literature available on university benchmarking tended to focus on administrative processes. The only relevant work was applicable to the UK's Further Education sector so would need considerable reworking if it was to be useful for higher education institutions.

In contrast, there was a much larger amount of useful work in a US context, including reports prepared by the Western Cooperative for Educational Telecommunications, and the American Productivity and Quality Center (APQC) in collaboration with the State Higher Education Executive Officers.

But there are several useful recent surveys of benchmarking methodology, including one by the UK's Higher Education Academy[22] and the Australian government organisation responsible for higher education. These will have value when universities decide to set up benchmarking 'clubs', which would be based on existing clubs such as the English Universities Benchmarking Club but would need to have a much stronger focus on e-learning as well as competitive ranking and metrics.

This review and the associated conversations with key stakeholders suggest that the following will be part of any sector-wide approach to UK higher education benchmarking of e-learning:
- There will not be a uniform sector-wide approach with published non-anonymous numeric rankings.

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[22] The UK equivalent of Ako Aotearoa

- There will be an element of 'cultural relativism' in that institution A's view of institution B will not necessarily be the same as institution B's view of itself – and vice versa.
- Institutions will focus on the issues relevant to them. For example, there is no point in an institution worrying about lack of progress towards distance e-learning if this is not part of their mission.
- Institutions will tend to focus on benchmarking themselves against those that they perceive as being most relevant, such as those deemed to be competitors for learners, similar in nature (e.g. research-led, international, with a particular governance style), similar in size, collaborators in other projects, and role models.

Benchmarking e-learning in UK universities: lessons from and for the international context

Author: Bacsich, P.

Reference number: 13

Background

This paper outlines the history and features of the Pick & Mix benchmarking methodology that was widely used in an e-learning context in the UK. However, it draws on elements from other jurisdictions including New Zealand, Australia and the US. The UK's e-learning benchmarking exercise arose from a JISC initiative that was intended to support the Higher Education Funding Council for England's e-learning strategy.

Pick & Mix derives in part from a UK and US scheme. It uses various criteria to focus on institutional outputs and processes that support e-learning. To increase its relevance and flexibility, institutions could choose to adopt supplementary criteria in addition to the mandatory set.

Criteria

But most only adopted up to four additional ones. This is because the scoring was done by senior management and 24 was about the manageable number from their perspective. This also raises issues over the validity and credibility of benchmarking methodologies with much larger criteria numbers.

The adoption criterion is a good example of how it works in practice. This is split into the six levels that are common to all criteria as follows:
1. Innovators only.
2. Early adopters taking up e-learning.
3. Early majority taking up e-learning.
4. Late majority taking up e-learning.
5. All have taken up e-learning except some laggards.
6. The first wave of e-learning is embedded and universal, and the second wave is commencing.

Distribution of results

In contrast to other similar exercises, the results of this exercise were made widely available. This potentially allows a 'scholarship of benchmarking' to arise because the methodology and its underpinnings, evaluation and uses are easy to access, and users are motivated to improve the system.

Approaches

The main distinction in approaches is between firstly those that require a report, which experts then analyse, and secondly where participants co-create the final product. The first option is the standard approach for quality assurance purposes. Peer review is undertaken by the participating institutions assisted by expert benchmarking consultants.

Pick & Mix has deliberately not provided too many detailed questions because it was felt that this led to a mentality of 'ticking boxes' rather than engaging in deeper discussions. However, detailed analysis is carried out through mechanisms such as student and staff surveys.

Alignment with national quality assurance mandates
Typically in most countries e-learning development is seen as primarily an institutional issue. However, some jurisdictions have established national e-learning strategies. This raises the issue of how they relate to their national universities' quality agency. In the UK, the Quality Assurance Agency for Higher Education (QAA) has established a code of practice, part of which relates to e-learning. The Pick & Mix benchmarks clearly align with this. Some jurisdictions also have indicators within their strategies relating to the quantity or mode of e-learning.

In adopting these it is important to remove political and aspirational references. It can be a supplementary criterion but would not typically be part of the core set. However, given their different rationales, objectives and time frames, it is recommended that these national indicators inform rather than determine any e-learning benchmarking criteria.

If different countries' benchmarking criteria are adopted, it is important to adjust these to reflect the prevailing institutional cultures and terminologies. But despite these differences, it is likely that there is a core set of criteria, and in particular those that relate to the fundamentals of pedagogy, strategy and technology that can be used across jurisdictions. In the author's view, the most 'natural' set of countries that could adopt the Pick & Mix methodology with relative ease would be those with a:
- critical mass of existing e-learning implementations
- funding approach where monies follow the students rather than fixed grants to institutions
- combination of competition plus collaboration between institutions.

E-learning quality assurance: a perspective of business teacher educators and distance learning coordinators

Authors: Chapman, B. F., and Henderson, R. G.

Reference number: 24

Introduction
E-learning is a significant delivery mode in many institutions, with up to 96 percent of larger ones offering these types of courses (Allen and Seaman, 2006). They are also increasingly popular among learners because of the accessibility, flexibility and convenience they provide (Yeung, 2006). This means that providing quality in these courses is increasingly important. While there have been a number of studies on the effectiveness of e-learning in its own right and in comparison with traditional delivery, there are relatively few related to how quality is measured (Russell, 1999; Allen and Seaman, 2004; Henderson, 2005; Henderson and Chapman, 2007).

Research questions
For this particular study the questions related to quality assurance were:
1. To what extent are quality assurance benchmarks present in institutions that offer business education programmes?
2. To what extent are additional quality assurance benchmarks considered important by business teacher educators and distance learning coordinators?

Literature review
Accreditation is the main mechanism used by institutions for quality assurance. Standards developed by the relevant accrediting body are evaluated by a range of items, some of them directly tied to teaching and learning, such as faculty-to-student ratios and faculty credentials, and others relating to the wider institutional environment including physical facilities and library holdings (Bobby and Capone, 2000). During this evaluation process accredited

institutions undergo 'periodic self-studies, inspections, and evaluations to certify that standards of the accrediting body are met' (Wellman, 2000, p. B20).

While this may be effective for traditional delivery, there is an absence of an equivalent process for e-learning courses or programmes. This is compounded by the increasing importance of institutional accountability to external bodies (Parker, 2004). E-learning and data-driven accountability requirements have seen the emergence of the business model of quality assurance into the realm of academia.

In an e-learning context, quality assurance is an evaluation process that 'judges, measures, or assesses the quality of the development and delivery of online courses/learning environments focused on appropriate design and best practice, and is aimed at self-improvement ensuring quality instruction in a non-threatening way' (Quilter and Weber, 2004, p. 64). Quality assurance also assumes that e-learning course objectives are aligned with accreditation standards and that evaluation outcomes will be used for continuous improvement to ensure high-quality instruction.

It is important that educators place as much emphasis on evaluating the quality of their e-learning courses as they do on the more traditional areas in this context of student assessment and learning evaluation. This is because evaluations of this nature cover not only the quality of instruction but also 'the technology being used, including its functionality and user-friendliness' (Palloff and Pratt, 2007, p. 205).

Several organisations and accreditation agencies, including the Sloan Consortium, the Council for Higher Education Accreditation, and the Council of Regional Accrediting Commissions, have established standards, guidelines and benchmarks for quality e-learning education (Yeung, 2002; Wang, 2006). According to Wang, some of the key benchmarks common to these organisations and agencies are:
- learning outcome assessment
- curriculum and instructional development
- institutional commitment
- student support
- faculty support.

Understanding and addressing these key quality benchmarks will enhance the e-learning environment and promote quality teaching in it. These benchmarks are summarised below.

Learning outcome assessment
E-learning experiences must align with objectives. To achieve this, educators typically focus on two areas of learning outcome assessment: student assessment and course evaluation. Best practices in student assessment consist of multiple techniques such as hands-on and collaborative projects, e-portfolios, and reflective writings. They can also be supported by course management systems.

Course evaluations too often focus on the popularity of teaching staff and courses rather than learner achievement (Palloff and Pratt, 2007). To overcome this tendency a course evaluation should also focus on the 'quality of instruction, as well as the technology being used, including its functionality and user-friendliness' (Palloff and Pratt, 2007, p. 205).

Curriculum and instructional development
This should include determining the delivery mode and mechanism (e.g. the internet or a Learning Management System). Other factors that should be considered are course goals, policies and procedures, enrolment parameters, interaction, feedback, and evaluation (Henderson and Chapman, 2007).

Institutional commitment
This is critical if a quality e-learning environment is to be achieved. This commitment should be both budgetary, such as adequate infrastructure and technical support, and supporting policy. The course must meet regulatory and legal requirements such as copyright and access for

special needs learners (Wang, 2006). The institution must ensure that both staff and students have the necessary levels of support.

For students this support includes making campus services available online. This requires institutional commitment because it is expensive. Faculty support includes not only technical support and guidelines, but also faculty workload, compensation, intellectual property, and professional development opportunities (Cavanaugh, 2002; Wang, 2006; Gaytan, 2007).

Methodology
The study population consisted of 64 business teacher educators and 62 distance learning coordinators from US higher education institutions, and one from Canada that offered business education courses online. The educators were selected from a professional association database while the distance education coordinators were picked via institutional websites.

They used a survey developed as part of a research study by the Institute for Higher Education Policy, which was modified based on a small pilot study of participants. A Likert-type rating system was used to score responses. They had a 39 percent response rate. Chi square analysis was used to determine that this low response rate was sufficiently representative of the wider group. The data was analysed using specialist SPSS software.

Results
The respondents strongly agreed that the quality assurance benchmarks most present included: institutional support (i.e. a documented technology plan was in place), teaching/learning (where peer-peer and learner-teacher interactions are an essential characteristic and facilitated through a variety of online and offline mechanisms), course structure (where students have access to sufficient library resources including online), and faculty support (where technical assistance in course development is available and is encouraged to be used).

In e-learning-specific terms, the most important quality assurance benchmarks in addition to interaction and technical support were rich content, reliability, flexibility and informative. The respondents considered the least important e-learning quality assurance benchmarks were: popularity, fun, creativity and capacity.

Limitation
Because of the restricted selection process and low response rate, the results of this study cannot be generalised to all business teacher educators and distance learning coordinators in the US.

Quality in e-learning: use and dissemination of quality approaches in European e-learning

Authors: Ehlers, U-D., Goertz, L., Hildebrandt, B., and Pawlowski, J. M.

Reference number: 31

Background
This study was undertaken by the European Quality Observatory and was funded by the European Commission's e-learning initiative to support their action plan in this context. The European Quality Observatory is a research consortium which consists of specialist organisations from Germany, France, Belgium and Greece.

Quality has two different dimensions when applied to e-learning: first it can ensure that the quality of educational opportunities is improved and ensure that the transition to a knowledge society is more successful. This is referred to as quality through e-learning. The second perspective is about improving the quality of e-learning itself. This is defined as quality for e-learning.

This second area is the focus of this study. The study's primary aims were to gather the views of as many e-learning experts, decision makers and users as possible and to disseminate the findings to a wide set of audiences.

Methodology

Participants were sent a questionnaire as part of an online survey. The questionnaire topics were: e-learning in general, quality in e-learning in general, use/implementation of quality instruments in e-learning, experience with quality instruments and approaches, and issues of statistics/demography. They had a total of 1,743 responses and had a good coverage of both countries and e-learning users.

Results

The general view from respondents was that there is a need for more quality competence for e-learning in Europe but there is a lack of expertise in implementing quality strategies. The respondents viewed quality from a pedagogical, not a value for money or marketing, perspective.

All countries saw quality in e-learning as important. Support for this would primarily come from European or national level. Regional or local levels were seen as less significant in this context. The UK has made greater use of quality standards and approaches than newer European Union member states.

There was divergence in views on the quality of provision of programmes, products and services in Europe. The results show that there is not one single right way of delivering quality in all sectors. Rather, the study suggests that the particularities and traditions of each individual country need to be taken into account.

Two different types of quality 'gap' were identified. The first gap relates to experience of quality in e-learning. Few teachers and even fewer learners have experience in dealing with the quality of e-learning. This is in contrast to leaders and organisations, where a large majority have experience in dealing with the quality of e-learning.

The second gap relates to implementation. While significantly more decision makers than learners see the quality of e-learning as being very important, few institutions have applied this belief in practice. For example, only 16 percent of respondents stated that a quality strategy had been implemented in their institution. The most popular sources of support for quality in e-learning information were (in order): the internet, best-practice examples, and information brochures and books. Far less likely to be used were discussion forums and external consultants.

Twenty-five percent of respondents used external quality approaches (i.e. standards, quality strategies, or public checklists). These approaches include ISO 9000 and quasi-standards such as SCORM. But these external approaches are adopted primarily by the private sector and researchers; they are rarely used by universities. Institutional quality strategies are viewed as being abstract and tied to organisational goals rather than informing or influencing implementation.

These findings demonstrate the need for a generally recognised standard which leads to certification of e-learning provision (or providers). This standard would be based on core principles including participation, transparency, degree of familiarity and acceptance, openness, adaptability and scalability, integrated methodology, quality awareness, and measurability. But there is insufficient knowledge of quality in an e-learning context. New information strategies need to be devised to alleviate this lack of information among specific target groups.

The authors recommend that the following guidelines should shape the quality of e-learning:

- Learners must play a key role in determining the quality of e-learning services.
- Quality must play a central role in education policy.
- Quality must not be the preserve of large organisations.
- Support structures must be established to provide competent, service-oriented assistance for organisations' quality development.
- Open quality standards need to be developed and implemented.
- Quality development must be designed jointly by all those involved.
- Appropriate business models must be developed for services in the field of quality.

Evaluating the quality of e-learning at the degree level in the student experience of blended learning

Authors: Ginns, P., and Ellis, R. A.

Reference number: 35

Introduction

In the past 10 years, driven by the increasing ubiquity of the internet, universities have perceived a growing need to incorporate information and communications technology (ICT) into their provision (Bell, Bush, Nicholson, O'Brien, and Tran, 1999; Katz, 1999). But in many cases the benefits from these investments have not been forthcoming. One of the most recent failures was the UK's e-University venture, which commenced in 2000, and was decommissioned after attracting only 900 students despite £62 million in public funding.

Taking this into account, a core aim of the Higher Education Funding Council for England's (HEFCE's) e-learning strategy is to 'support the [Higher Education] sector as it moves towards embedding e-learning appropriately using technology to transform higher education into a more student-focused and flexible system' (HEFCE, 2005, p. 5). HEFCE defines e-learning as 'any learning that uses ICT to support students and improve the management of learning' (p. 5). The key concept underpinning this aim is the complementary, elaborating and enhancing role conceptualised for e-learning in the university student experience of learning.

The UK's approach illustrates how higher education institutions globally are developing an understanding of the necessary relationships between student learning and ICTs (Bell et al., 1999). According to Jochems, van Merriënboer and Koper (2004), there is a need for 'a variety of coherent measures at the pedagogical, organisational and technical levels for the successful implementation of e-learning in combination with more conventional methods' (p. 5). This combination of e-learning and traditional delivery means that evaluating the quality of blended learning in a coherent manner requires relating the online component to the whole of the student experience.

This paper aims to establish the effectiveness of a short e-learning scale as a supplement to the SCEQ. This could not only play an important role in assessing the quality of university e-learning but also be used as an example of examining the benefits and challenges of examining a part (i.e. e-learning) of the whole student learning experience in a relational way. This approach allows for an interpretation of the results that can practically assist those responsible for e-learning to inform their approach to its provision.

Student learning theory and the student course experience questionnaire

Student learning theory has had a substantial impact on how learning at post-secondary levels can be understood and improved (e.g. Entwistle and Ramsden, 1983; Prosser and Trigwell, 1999; Biggs, 2003; Ramsden, 2003). It focuses strongly on students' experiences of core aspects of their teaching and learning environment, as these are often intimately related to their approaches to learning and subsequent performance (Biggs, Kember, and Leung, 2001; Entwistle and McCune, 2004).

A course experience questionnaire was developed (Ramsden, 1991; Wilson, Lizzio, and Ramsden, 1997) and has been used by Australian universities as a teaching and performance indicator at degree level. But in student terms it is a 'lag indicator'. The University of Sydney modified it so that it can be used by currently enrolled students (Student Course Experience Questionnaire or SCEQ). This forms an important part of its quality assurance of teaching programmes, as well as providing an evidence base for the effectiveness of strategic project and curriculum change (e.g. Barrie, Ginns, and Prosser, 2005; Barrie and Ginns, 2007; Brew and Ginns, in press).

Methodology
The analysis used 3,602 student responses to the SCEQ and supporting e-learning scale. The e-learning scale was developed in consultation with relevant experts and drew on appropriate parts of the research literature (e.g. Laurillard, 2002; Lawless and Richardson, 2002; Goodyear, Jones, Asensio, Hodgson, and Steeples, 2005). Student-focused items reflected the degree of e-learning, quality of online resources, staff and learner interaction, integration of e-learning and traditional delivery, and active engagement. Specific wording of these items was peer reviewed by student representatives.

Analyses consisted of confirmatory factor analysis to examine the properties of the proposed e-learning scale and its relation to the core SCEQ scales, using LISREL 8.54 (Jöreskog and Sörbom, 2001). They calculated univariate and multivariate normality statistics using PRELIS 2.54. To overcome assumptions they used robust maximum likelihood estimation (Boomsma and Hoogland, 2001).

To establish confidence levels and the validity of the new scale the comparative and relative fit indexes were used. This was supported by criterion validity. The internal consistency of each scale was established by using Cronbach's (1951) estimate of the reliability coefficient. Finally, they calculated inter-rater agreement for the e-learning scale with each faculty. This analysis evaluates the degree to which multiple raters, using typical Likert scale-type formats, evaluate aspects of an organisation's culture or climate similarly (Chan, 1998).

Results
These indicate that the proposed scale captured a distinct aspect of the learner experience. They also supported the appropriateness of aggregating e-learning scale scores from degree to faculty level.

Limitations
But it would need testing in other institutional contexts to assess its wider suitability. Other criteria such as grade point average and/or approaches to study could be included. E-learning has yet to be fully integrated into all institutional teaching and learning so the theoretical construct of e-learning is likely to change.

There are also a number of inter-dependencies that may impact on student ratings. For example, information technology, which is one component of this scale, is dependent on 1) the university IT unit providing a robust and stable platform, 2) the university e-learning unit providing timely and sufficiently informed support to resolve student queries, and 3) the teacher meaningfully integrating e-learning activities into the curriculum that relates to student outcomes. If any of these areas is deficient, the student could legitimately give this item a poor rating.

While greater differentiation of items may assist in simplifying the data collection and interpretation, it would also throw up other challenges. It may be difficult for the student to establish which part of the university is responsible for a particular item. There is also the difficulty of having limited space for a systematic evaluation at the end of a course. Finally for this approach to be successful a university would need to have sufficient breadth and depth in its e-learning provision for individual faculty use to be picked up in whole-of-institution questionnaires.

Quality matters: strategies for ensuring sustainable quality in the implementation of ODL

Author: Hope, A.

Reference number: 44

Accrediting distance learning
The key principle underlying the revised code is that 'collaborative and flexible distributed learning environments should widen learning opportunities without prejudice either to the

academic standard of the award or the quality of what is offered to students' (QAA, 2004, p. 4). This emphasises outcomes rather than process, and output measures are viewed from the point of view of learners' requirements rather than from the institutional view of its quality assurance processes.

The UK Quality Assurance Agency for Higher Education (QAA) states that institutions need to ensure learner confidence that:

- any flexible and distributed learning (FDL) programme or element offered for study has had the reliability of its delivery system tested, and that contingency plans would come into operation in the event of the failure of the designed delivery modes
- the FDL programme or element of study delivery system is fit for purpose, and has an appropriate availability and life expectancy
- the delivery of any study materials by web-based or other distribution channels is secure and reliable, and there is a means of confirming its safe receipt
- study materials delivered by web-based or other distribution channels meet specified expectations of the institution in respect of the quality of teaching and learning support material
- the educational aims and intended learning outcomes of an FDL-delivered programme are reviewed periodically for their continuing validity and they need to reference relevant QAA documentation (QAA, 2004, p. 29).

Expert e-learning institutions concluded that what most contributes to their success is the establishment of, and reliance on, a continuous feedback loop through the collection, analysis and dissemination of data to monitor student learning outcomes and their satisfaction with all institutional experiences. For example, the University of Phoenix conducts end of course surveys among learners and staff to gauge the success of the individual class and its tutor. Renewal of tutor contracts depends on learner satisfaction.

Quality improvement, quality assurance, and benchmarking: comparing two frameworks for managing quality processes in open and distance learning

Author: Inglis, A.

Reference number: 45

Introduction
Quality has become a matter of major importance for institutions, particularly those involved in open and distance learning (ODL) (Higher Education Council, 1997; Twigg, 2000; Western Cooperative for Educational Telecommunications, 2003). Quality is important for universities for three main reasons: comparing themselves against their peers, protecting their critical market, and ensuring any offshore provision matches their onshore offerings.

This growing concern with quality has led institutions to look for ways of managing associated processes. This in turn has led to various attempts to develop frameworks for conceptualising and structuring these processes. For example, in Australia two frameworks have been developed for this purpose: the Quality Improvement Framework and the Benchmarking Framework.

This article attempts to compare these two frameworks to allow staff to make choices about which of them is most suitable. This comparison focuses on four areas: the scope of the frameworks; the type(s) of institution to which they are meant to be applied; their structure; and the ways they are intended to be used. Based on this comparison, the article then considers the implications of the similarities and differences between the frameworks for their use in managing quality processes in ODL.

Different quality processes

In the literature related to quality in higher education, three terms commonly appear: benchmarking, quality assurance, and quality improvement. Benchmarking involves comparing a set of products or services against the best that can be found within the relevant industry sector. O'Reagain and Keegan (2000) have broken this down into four steps: 1) understanding in detail organisational processes; 2) analysing the processes of others; 3) comparing performance between the host organisation and the others analysed; and 4) implementing the steps needed to close the performance gaps.

But in higher education, benchmarking often refers to processes that are more concerned with the other quality functions. In distance education, the Institute for Higher Education, having reviewed the literature on guidelines, produced a set of 24 benchmarks by which success in the online delivery of programmes could be judged (Phipps and Merisotis, 2000).

Quality assurance aims to ensure the quality of a product or service meets some predetermined standard. These standards are set by the producer or provider of the product or service, a government agency or an industry standards authority. It is not a prerequisite that this standard reflects best practice; rather the aim of quality assurance is to ensure a product or service is fit for the market.

Quality improvement is concerned with raising the quality of a product or service. It is also concerned with comparing the quality of what is about to be produced with the quality of what has been produced in the past. Quality improvement tends to focus on specific aspects of an organisational unit's performance rather on overall performance. This is because of constraints that dictate that efforts at improvement need to be targeted at areas of greatest need.

Quality in ODL

ODL has numerous different practices from those employed in traditional delivery. There are also differences between fully online ODL and its more traditional forms. These differences need to be acknowledged and taken into account when the processes for judging quality are designed. It is not appropriate to compare ODL delivered by the internet with paper-based versions and traditional delivery. But it is important to recognise the high degree of commonality between these different forms. Resources and design are likely to be similar, with the major differences being in the delivery mode and in student support.

Framework details

The Benchmarking and Quality Improvement frameworks were both the products of government-funded projects within similar time frames. But the origins of the projects were significantly different, which led to major variance when they were produced. The Benchmarking Framework was produced in consultation with senior executive staff in 33 Australian universities. Its main aims were to ascertain performance trends and initiate self-improvement; enable groups of universities to compare their performance; and enable universities to ascertain their competitive positions (McKinnon, Walker, and Davis, 2000).

In contrast, the Quality Improvement Framework did not involve sector consultation and was undertaken as part of a project to inform the National Board of Employment, Education and Training on the issues of quality, cost and access in resource-based learning by taking advantage of the new learning technologies. One of the project's goals was to develop a framework for considering issues of quality in resource-based learning, including those associated with equity of access.

In short, the benchmarking framework was intended for use in comparing institutions. In contrast, the quality improvement framework was primarily intended for use in managing quality processes within institutions.

Comparing the frameworks – scope

The scope of the frameworks is clearly different. The benchmarking one enables universities to make comparisons across the full range of institutional functions. On the other hand, the quality improvement one was specifically developed to contribute to the delivery of education and

training programmes that rely on the use of new learning technologies. This restricts it to certain institutional functions: teaching, programme delivery, and student support.

However, users need to note that there are significant areas of commonality and overlap. For example, the quality improvement framework also encompasses information technology infrastructure support and institutional leadership while the benchmarking one covers general and detailed processes and areas relating to teaching and learning.

Institution type

The benchmarking framework is designed for application to a much narrower range of institutions than its quality improvement counterpart. It is intended only for universities. In contrast, the quality improvement framework can be applied to any organisation that is delivering education and/or training programmes that rely on the new learning technologies. In theory this applies to the private sector as well as higher education institutions. Therefore the common institutional type for both frameworks is universities.

Structure

The ways the respective frameworks' components are conceptualised are different, which in turn has an important influence on the ways they are used and the purposes in doing so. The benchmarking framework comprises 67 benchmarks, with 25 being designated as a core subset, grouped into nine areas including governance, planning and management, external impact, finance and physical infrastructure, teaching and learning, student support, research, library and information services, internationalisation, and staff.

The benchmarking framework is difficult for initial users. This is partly due to its numbering structure not following a standard format (i.e. 1, 2, 3 etc) and their definitions containing several components. The purpose and use of the benchmarks are not always obvious.

The quality improvement framework is organised around 10 key principles which are meant to encompass the range of functions involved in supporting online delivery. These principles include sustained, committed leadership, improving access for all, understanding learner requirements and supporting their needs, creating confident and committed staff with new competencies, managing and maintaining the technical infrastructure, and providing effective and efficient administrative services. Each of these principles has an associated set of best-practice indicators.

Applying the frameworks

Using the benchmarking framework involves contextualising it to the situation to which it is being applied by selecting the set of benchmarks that will be used. It defines a number of elements that in sum provide the basis for a basic evaluative instrument by allocating scores against a particular benchmark.

The elements that comprise this score include: the area of institutional operations to which the benchmark applies, whether it is lagging, leading or learning, good practice, and the levels of performance. But only modest guidance is provided for its use, which is largely determined by the user. This appears to be a significant shortcoming as any significant variation in its application between institutions could greatly affect the validity of any comparisons that might be drawn.

The quality improvement framework must be contextualised in two ways: in relation to the functions for which the particular organisational unit is responsible, and in relation to current institutional priorities. Each organisational unit needs to identify the principles and best-practice indicators that are applicable to its role. This process tends to identify those principles and indicators that are the focus of attention for the immediate future. The implication is that the quality improvement framework will need to be re-contextualised at regular intervals.

Using the framework also involves the development of checklists and evidence guides which then act as the tools that are used in the field. The quality improvement framework is not an evaluative instrument but a conceptual structure for guiding quality processes.

Choosing between the frameworks
The main question institutions need to consider when determining which of these frameworks to use is: for what purposes is it being chosen? For example, the benchmarking framework allows general comparisons to be made, while its quality improvement counterpart allows these to be made at the operational level. For managing quality improvement processes the quality improvement framework would be the best option.

The benchmarking framework is not easily adaptable to operational unit needs. In contrast, the quality improvement framework is designed to be applicable at all institutional levels. Because its checklists and evidence guides are highly variable, it can easily be adapted to a wide range of institutional types and organisational structures.

It can also easily take into account the stage of development of an organisation. The more detailed explanation of the ways it can be used may be another factor favouring its use for those who have not had previous experience of introducing quality processes within educational institutions.

Risks and adverse impacts on introducing quality processes
One of the risks identified here is that the consequences of the intervention may be more problematic than the issues it was intended to address. There is also an associated cost to implement quality processes, particularly staff time. It may also focus attention on processes at the expense of others that are also important.

An issue of greater concern is that introducing and using quality frameworks may in certain circumstances hinder innovation. It also decreases the value of activities that are not part of the process. Finally as Garlick and Pryor (2004) point out, the top-down imposition of indicators on an institution is likely to lead to staff responding to the letter rather than to the intent of the process, which undermines the purpose of the activity.

Exploring the mechanisms for assuring quality of e-learning courses in UK higher education institutions

Authors: Jara, M. and Mellar, H.

Reference number: 46

Introduction
Since the 1980s, key changes have taken place in higher education institutions that have led to significant transformations in their policies and practices. For example, in the UK, higher education institutions must now cater to an increasingly diverse student body including ethnic minorities and learners with special needs (Ashwin, 2006). This needs to take place against a backdrop of reduced funding. To address this challenge, many institutions turned to e-learning (Weyers, 2000).

This process has presented a number of challenges for higher education institutions. One aspect significantly affected by these new delivery modes is the institutional processes set up to maintain and enhance the quality of their programmes of study, as governments called for more accountable institutions through the implementation of a set of quality assurance measures (Harvey and Knight, 1996).

Quality assurance in higher education
Quality assurance mechanisms derive from three separate sources that influence each other: international, national and institutional. Their role and effectiveness in improving the quality of courses have generated intense debates (Massy, 1996; Middlehurst and Campbell, 2003). Their interdependency is demonstrated by institutional quality assurance being influenced by external requirements from the UK's Quality Assurance Agency for Higher Education (QAA) (Morley, 2003; Brown, 2004; Harvey, 2005).

Closer examination of the internal quality assurance mechanisms used by institutions reveals the tension between accountability and enhancement, which is not easily resolved. This puts increased strain on the capacity of institutions to manage their internal procedures effectively (Middlehurst, 1997; Biggs, 2001; Harvey, 2005; Inglis, 2005). This challenge becomes more demanding as new modes of provision increasingly become part of traditional campus offerings, and as institutions try to use the same mechanisms to deal with these completely new forms of courses.

Internal mechanisms are part of the requirements that higher education institutions have in place as part of their responsibility for the quality of their programmes. These internal processes should align with the relevant QAA ones. But ultimately these mechanisms are set by the institutions themselves (QAA, 2002) and so, while they have common aims, the way they are set up are likely to be different.

The question that arises is whether or not these internal mechanisms are effective for ensuring and enhancing the quality of all courses that an institution provides, particularly its e-learning ones. While the QAA has issued specific guidance for quality assurance of e-learning courses, this is for practitioners only and is not suitable at an institutional level.

The consensus of the literature is that the quality assurance arrangements of e-learning should be different from those of traditional distance education and on-campus delivery. In sum it offers a clear overview of the e-learning aspects potentially impacting quality assurance arrangements (O'Shea, Bearman, and Downes, 1996; CVCP, 2000; Hope, 2001; Middlehurst, 2001; Harvey, 2002; Roffe, 2002; Connolly, Jones, and O'Shea, 2005).

The four main aspects distinctive to e-learning are:
- disaggregated processes – an individual does not take care of the whole process
- organisation of the teams – e-learning courses require teams to work collaboratively, and academic staff need to interact with many other professionals who are involved in the different phases of course design and delivery
- visibility or openness to review – monitoring activities can be more in depth, continuous and unobtrusive than in face-to-face delivery or traditional distance education
- limited access of staff to students.

Methodology
This study comprises four case studies of fully online or blended learning courses. Data was gathered from each course's quality assurance documentation. Interviews were also carried out with 16 academic staff and 10 students who represented each of the selected courses. The documentation and interviews were compared in order to reveal critical aspects not covered in the formal documents. This comparison was carried out by allocating the document content and interview responses to predetermined categories based on the theoretical aspects of quality assurance derived from the literature.

Results
The majority of omissions from the quality assurance documentation related to student participation and support. Other significant issues omitted related to assessment strategies and organisational issues such as equivalence with the traditional delivery courses, staff coverage, and access to resources. The three quality assurance mechanisms that were most impacted by e-learning courses were: module evaluations, student representation, and staff team meetings.

The major problem identified was the difficulty of obtaining feedback from students in e-learning courses and the appropriateness of the tools to achieve this. Given the low response rates and general lack of interest from students in these contexts, the question is raised of whether their representation is an appropriate procedure for e-learning courses. Given the strong student-teacher links, this representation may not be necessary.

In staff terms, while formal team meetings were the main mechanism used to address and resolve quality issues, informal staff interactions were more important. In an online context this is less likely to occur and formal team meetings need much more effort and preparation to work

effectively. This meant that course-related decisions in this context often relied on ad hoc information. This suggests that leaders of online courses within campus-based institutions may not be prepared to deal with distributed teams, and are continuing to use the same mechanisms for coordination and feedback used for on-campus staff.

It appeared that the online and blended learning courses tended to become isolated from the rest of the institutional processes, and this could only be rectified by strong and clear leadership. This isolation was demonstrated by the lack of robust oversight because no particular requirements for these courses had been established. The other main features that adversely impacted the quality assurance of these courses in addition to an unclear position within the institution were the distributed configuration of the course teams and the distant location of students.

Other key findings were that the common element across all courses, irrespective of delivery mode, was the use of external examiners. Annual reviews were also used for all the courses. But the effectiveness of these reviews varied, with some staff noting that they were not used as an opportunity to address and resolve problems and issues. However, they did not think that a separate review was required for e-learning courses.

These findings suggest that quality assurance procedures used for traditional delivery courses need adapting if they are to be effective for their e-learning counterparts. These findings also show that the e-learning delivery mode, combined with complex institutional environments, was affecting the application of quality assurance mechanisms, obstructing their capacity to assure and enhance the quality of the courses.

These findings indicate that institutions might need to approach the quality assurance and enhancement of their e-learning courses from a different organisational perspective. E-learning courses seem to require a stronger definition of coordination, communication and planning strategies, as well as more clearly defined leadership, than their traditional delivery counterparts. The absence of limited clarity of these elements affected the effectiveness and enhancement roles of several of the procedures, in particular staff team meetings and student surveys.

The findings also suggest that institutions and course teams may need to pay particular attention to the strategies they are using to improve the quantity and quality of student feedback. Because of the difficulties of obtaining sufficient quality and quantity of student feedback in e-learning courses, it appears that student representation in its current form is not a useful mechanism as a channel for student opinion. However, the findings do suggest that student-teacher interactions may be a route worth exploring for improving student representation in e-learning courses.

Toward a quality assurance approach to e-learning courses

Authors: Kidney, G., Cummings, L., and Boehm, A.

Reference number: 57

Introduction
Establishing widely agreed quality standards and processes for e-learning courses has proven difficult. The case study institution's senior management were committed to establishing quality standards and processes for their e-learning provision. They created a stakeholder committee but found that how quality was defined in this context varied widely between the different groups. They use a course production process based around a team approach, where a variety of specialists including instructional designers, web developers and programmers, graphic artists, multimedia specialists, and a project manager work with a faculty staff member (Moore and Kearsley, 1996). This process is one indicator of a quality course (Zheng and Smaldino, 2003). But to ensure the process does lead to a quality product, they have embedded a set of quality assurance strategies within their course development cycle.

Quality assurance strategies – team review

Their stakeholder committee identified eight strategies within three broad categories: team, staff, and peer review. The first two of these are the instructional plan and web design review, which fall within the team review category. The instructional plan review typically occurs four to eight weeks into the process.

The quality assurance facilitator organises the review, at which the instructional designer presents a summary of the plan to the senior instructional designer, project manager, faculty staff member, and management (whose attendance is optional). The review checks that the course has benefited from quality instructional design input; it then benchmarks course progress for management, and suggests changes/additions.

Once 10 percent of the course has been completed, a web design review is undertaken. This uses a checklist approach on a number of factors including navigation and any programming requirements. The review helps identify potential problems that might affect staff or students or even derail the project. This has helped identify unrealistic plans (in terms of time and budget), poor navigation, and the replication of existing Learning Management System functionality. This has played a major role in establishing quality courses and enabling more effective use of resources.

Additional benefits established through these reviews include monitoring course progress better, identifying professional development opportunities and needs, establishing a set of checks and balances, and providing information that can be used to adjust policies and standards.

Staff review

Most of the quality assurance strategies are performed by staff. The first of these is a thorough review of the print and online versions of the course by the quality assurance evaluator. They are responsible for editing the course; checking its usability, accessibility, functionality and ease of maintenance; taking reasonable precautions to ensure copyright requirements and obligations are met; and assessing its impact on the institution's infrastructure.

The editing is carried out by a specialist proof reader and editor, with substantive changes only being made after consultation with the production team and faculty staff member. They employ user-centred design processes and philosophies to ensure accessibility and usability are appropriate and meet requirements. They found adopting a checklist approach based on external standards was both insufficient and ineffective. Professional development was provided to relevant staff so that this user-designed process could be adopted effectively.

To increase their return on investment, institutions expect to be able to reuse e-learning courses multiple times. And so it is important that an e-learning course is designed and developed so that it is easy to maintain and complexity is controlled. Ensuring ease of maintenance includes using:
- the existing course delivery platform tools
- external validation methods early in the design and development phase
- unit template pages
- a single, external style sheet to control all page layouts.

Successful strategies employed to reduce the likelihood of copyright infringements include:
- linking to an article rather than copying it from an external website
- providing course-embedded instructions directing students how to make use of the material
- creating new, original media that demonstrate or teach the same concept
- using the 'fair use' doctrine and any legislative limitations to establish the amount of copyrighted work included in the course
- seeking permission for reuse of the copyrighted material
- including the copyrighted material in a course pack or appropriate library service.

A knowledgeable staff member assesses the impact of a course on the institution's infrastructure by reviewing the instructional plan and web design reviews, paying particular attention to

course assignments, how they will be submitted, and related bandwidth issues. This review anticipates mismatches such as course requirements that cannot easily be met within the existing institutional infrastructure or students' available bandwidth. Challenges remain due to the lack of information about the amount of planned future provision and its infrastructure requirements for both the institution and its students.

Peer review

A course with timely, accurate and complete information is fundamental to learning. Maintaining its academic rigour is fundamental to certification and accreditation. The peer review process adopted mirrored both the existing methods for submitting journal articles for publication and similar efforts by other institutions (Ashkeboussi, 2001; Swift, 2006). An internal, and in some cases external, expert selected by the relevant faculty programme coordinator or department chair reviewed the discipline aspects of the course.

This review adopted a checklist approach and focused on rating of key areas including the course's scope, accuracy, completeness, prerequisites, objectives, fit within the specific degree programme, and level of rigour. A white paper documenting the process and results is presented to the Academic Associates Council (primarily consisting of Associate Deans). However, strong objections to this process mean that, at the time of writing, it had not been implemented.

Problems

Aside from the failure to implement the peer review process, there have been three other major problems identified: courses being taught before they have been through the quality assurance process; informal course developments that bypass the quality review process; and staff resistance to the process so they refuse to authorise any changes or additions that arise from this process. Staff objections fall into three broad categories:

- The process adds to workloads and is viewed as a low priority.
- There is a preference to allow students to resolve any problems that arise.
- There are concerns that the reviewers are not as well qualified as the staff member, leading to doubts about the value of their input.

Possible strategies to resolve these problems include: focusing the peer review on applicable accreditation standards and student learning outcomes; mandating it through institutional policy; establishing the equivalence with publication peer review processes; more clearly articulating the reviewers' role; providing evidence that it will reduce time; and supplying information about any release time policies or other incentives to undertake e-learning.

There is evidence that courses that have been through the quality assurance process have higher student satisfaction than those that have not. This leads to the conclusion that these prescribed quality assurance strategies and processes have strengthened e-learning at the case study institution by helping focus its efforts and establishing quality as a priority.

A maturity model for computing education

Authors: Lutteroth, C., Luxton-Reilly, A., Dobbie, G., and Hamer, J.

Reference number: 67

Introduction

Teaching and software development share a number of characteristics: both are complex activities, they both undergo a development cycle, and there is a shared objective of attaining quality even though this is difficult to measure. Furthermore in both domains a key ingredient for success is good structure and processes. Processes are particularly important in teaching as they are the only method by which teachers can influence or impact student learning outcomes. Improving processes can be achieved through utilisation of a meta-process model used in software development: the Capability Maturity Model (CMM). But this is not intended to be prescriptive; rather it is about providing guidance.

This is because teachers generally have few processes in place to analyse and improve their performance. Course portfolios could be used to assist teachers by allowing them to reflect on their practice and guide improvements. But teachers also need supportive departmental processes. Using a model of process maturity would guide both individual teacher and departmental processes.

Capability Maturity Model
This was originally developed in the 1980s as a means to evaluate military software projects and has been subject to continual revision since. The idea underpinning the CMM is that a high-quality process leads to a high-quality product. The CMM tries to define the key elements of an effective process and outlines how to improve sub-optimal ones. It describes key practices for achieving quality outcomes in key areas.

The CMM ranks organisations according to a hierarchy of five maturity levels, with the first being the least mature and the fifth the most. The five levels are defined as: initial, repeatable, defined, managed, and optimising. But a level must be well established before an organisation can move up to the next one; the CMM does not permit levels to be bypassed.

Initial refers to a process that is informal and poorly controlled. At this level the organisation is heavily reliant on individual endeavour; so performance varies greatly depending on their innate skills, knowledge and motivation. This all leads to unpredictable cost, time frame, functionality and quality.

A repeatable process would typically have a project management system in place; management of new projects is based on similar and earlier ones, allowing successful processes to be repeated. An organisation at this level has established policies and procedures which support effective processes that are institutionalised. Key process areas at this level include project planning, tracking and oversight, and quality assurance.

A defined process is standardised and documented. The organisation at this level uses effective management and practices and processes are integrated. Organisations here have established a dedicated governance group that is responsible for all process-related activities. Furthermore, this organisation provides a dedicated training programme for the process (es) so that everybody can acquire the requisite knowledge and skills to fulfil the roles that the process assigns.

With a managed development process both it and its associated products are quantitatively controlled. The process is supported by well-defined and consistent measurements and there are quantitative quality goals for process and product. An organisational measurement programme is used to measure productivity and quality for all important activities, and the surveyed data is stored in a central database. Key process areas here are quantitative process and quality management.

An organisation with optimised development processes has its improvement institutionalised. The whole organisation is focused on continuous process improvement. Data analysis is carried out to identify defects as well as cost benefits and proposed changes. Innovation, once identified, is disseminated organisation-wide, and experience is exchanged between projects. Key process areas are defect prevention and technology and process change management.

But the CMM model is not as effective as others and it is not a guarantee for success; an organisation at level one can in theory be more successful than counterparts at higher levels, although this is unlikely for larger organisations. It has also been criticised for being overly bureaucratic and therefore only suited to large organisations. For example, critics argue that there is too much emphasis on documentation at the expense of more productive tasks. Finally, the major criticism is that it promotes process over substance.

CEMM use in educational organisations
Despite these criticisms, this model was adopted to assess the processes associated with computer education courses and renamed the Capability Education Maturity Model. An educational organisation's course development at level one is typically the preserve of

individual teachers; reuse is low and success depends on the skills and capabilities of individual staff.

At level two, the educational organisation has established policies for important aspects concerning course management, and has procedures in place to implement those policies. Courses have well-defined prerequisites, requirements, and intended outcomes that fit well with the rest of the provision. Reuse of courses is easier and more common. Checks are made to ensure any changes are in harmony with the course plan and other constraints, and managed with a version control system.

At level three, improvements over several iterations mean that the course has reached a certain level of stability. Courses are well documented with rich supporting materials that are readily available online for both staff and students. They are also available in a centrally provided repository that is maintained collectively by all staff. These materials are high quality and reusable. Quality is ensured by the systematic application of reviewing techniques. Staff teaching the same (or similar) courses communicate and work together in working groups. At this level learners can in theory complete their course through guided self-study.

At level four, the educational organisation has established a management programme. Data relating to each course is collected and stored in a central database. Statistical methods are applied regularly to verify course practices and manage quality. Intervention policies are defined and triggered when controlled quality parameters do not fall within well-defined acceptable limits.

At level five, changes to the process are carefully managed and reflect best practice as determined by the community of scholars engaged in educational research. Identification and implementation of process improvements are institutionalised. Quantitative and qualitative research methods are used to gain insight into the process and inform improvements, and statistical methods are used to control and change the process. Defects have to be identified and analysed to prevent recurrences. Knowledge gained here is also used for proactive process improvement.

Organisations that wish to move up the levels will need to invest more time and/or money. They must also use the experience of course iterations for incremental improvements. But these changes must not be made thoughtlessly; they have to be well controlled and managed.

Possible shortcomings
There are significant overheads for organisations using the CEMM, particularly document preparation and measurement. But in a well-organised department documentation would be kept in a content management system. Furthermore, the documentation required as part of the CEMM processes fits naturally with the current processes used in computer education departments. This is also the case with collecting data to support measurements; this process is a basic requirement for computing education.

Benefits
For departments that map their course development to the CEMM levels and attempt to move up the levels, there are a number of large gains, including being able to:
* reuse material and best practice between courses
* measure and document the improvement in their teaching practice
* maintain statistics that can be used at faculty level
* share best practice across the department.

Cost of CEMM
The cost of moving up the levels is primarily one of cultural change. Despite the documentation and data being available to support a move up the levels, in many departments there is still a feeling of ownership with respect not only to the material but also for the courses themselves. Convincing staff to give up this ownership to the department could require quite a large shift.

New Zealand tertiary institution e-learning capability: informing and guiding e-learning architectural change and development

Author: Marshall, S.

Reference number: 69

Introduction

Institutions will always have the ability to choose to invest time and other discretionary resources in e-learning. This project was funded by the Ministry of Education and its main output, the e-Maturity Model (eMM), is intended to assist organisational leaders in changing their organisation's conditions so that e-learning is delivered in a sustainable and high-quality manner to as many students as possible.

The eMM builds on the underpinning ideas of existing process capability models such as the CEMM described above and uses them as a foundation for a form of benchmarking explicitly intended to improve the quality of e-learning for learners, staff and institutions. It is also noted that it could be used for benchmarking against institutions in many other countries. Questions that organisational leaders need to consider in this context are:

- Is the organisation successful at learning from past mistakes?
- Is it clear that the organisation is spending limited resources effectively?
- Does everyone agree which problems within the organisation are the highest priorities?
- Does the organisation have a clear picture of how it will improve its processes?

Key concepts

Given the large investments made in e-learning by both students and institutions, it is essential that delivery is robust and reliable and able to cope with changes in the personnel involved, growth in the number of learners, and changes in technology requirements and skills, as well as the increasingly challenging digital communications environment. This model necessarily focuses on the institutional level so will not pick up localised or individual innovations.

The idea underpinning the eMM is that the ability of an institution to be effective in e-learning depends on their capability to engage in high-quality processes that can be reproduced, sustained and built upon. To 'future proof' the eMM, technology is separated from other organisational detail, because any benchmarking approach that presumes particular e-learning technologies or pedagogies is unlikely to meaningfully assess a range of institutions within a single country, let alone internationally, particularly over an extended period of time.

Processes

Building on previous models, the eMM divides the capability of institutions to sustain and deliver e-learning into five major categories or process areas as follows:

- Learning – processes that directly impact on pedagogical aspects of e-learning.
- Development – processes surrounding the creation and maintenance of e-learning resources.
- Support – processes surrounding the oversight and management of e-learning.
- Evaluation – processes surrounding the evaluation and quality control of e-learning through its entire lifecycle.
- Organisation – processes associated with institutional planning and management.

Within each of these areas are a number of processes derived from the research literature on e-learning quality, sector consultation, and experience from previous eMM assessments. Processes define one particular aspect within a given area and help institutions break down complex work into related sections that can be assessed independently and presented in a comparatively simple overview without losing the detail.

The focus of the processes is high level and focuses on the outcomes or characteristics of successful, or capable, e-learning delivery. This may appear to overlook some obvious things like an e-learning strategy. However, what is important is not whether or not an e-learning

strategy exists but that an institution guides its investments and efforts systematically and in line with defined teaching and learning goals that are clearly communicated to staff and students.

Examples of individual processes within the areas or categories include:

- **Learning** – learning objectives are apparent in the design and implementation of courses, students are provided with mechanisms for interacting with their teachers and peers, student skill development for e-learning is provided, and courses are designed to support diverse learning styles and learner capabilities.

- **Development** – teaching staff are provided with design and development support when engaging in e-learning, course development design and delivery are guided and informed by formally developed e-learning procedures and standards, courses are designed to support disabled students, and all elements of the physical e-learning infrastructure are integrated using defined standards.

- **Support** – students are provided with technical assistance when engaging in e-learning, student enquiries, questions and complaints are collected formally and managed, and teaching staff are provided with pedagogical support and professional development in using e-learning, and with technical support in handling electronic materials created by students.

- **Evaluation** – students are able to provide regular formal and informal feedback on the quality and effectiveness of their e-learning experience, teaching staff are able to provide regular formal and informal feedback on the quality and effectiveness of their e-learning experience, and regular formal independent reviews of e-learning aspects of courses are conducted.

- **Organisation** – formal criteria are used to allocate resources for e-learning design, development and delivery, institutional teaching and learning policy and strategy explicitly address e-learning, a documented specification and plan guides technology decisions when designing and developing courses, and e-learning procedures and which technologies are used are communicated to students before they start their courses.

Dimensions of capability

One of the problems with a process-oriented framework is that it incorrectly implies a hierarchical model of institutional improvement where capability is assessed and developed in a layered and progressive manner. In contrast, the key idea underpinning the dimension concept is holistic capability. This describes the capability from synergistic perspectives.

An organisation that has developed capability on all dimensions for all processes will be more capable than one that has not. Strong capability in some but not all of the dimensions will not deliver the desired outcomes. For example, strong capability in dimensions one and two but not at the other levels will mean the organisation's e-learning activities will be ad hoc, unsustainable and unresponsive to changing organisational and learner needs.

These too are split into five levels: delivery, planning, definition, management, and optimisation. Delivery is concerned with the creation and provision of process outcomes. Planning assesses the use of predefined objectives and plans in conducting the work of the process. Definition covers the use of institutionally defined and documented standards, guidelines, templates and policies during the process implementation.

Management is concerned with how the institution manages the process implementation and ensures the quality of the outcomes. Optimisation captures the extent to which an organisation is using formal approaches to improve capability measured within the other dimensions of this process.

Practices

Each dimension is further broken down into practices that define how organisations might achieve the process outcomes. These practices fall into two categories: those essential for the process to be successfully achieved and those that are merely useful in supporting the outcomes

of the particular process. These are identified as a series of items that are derived from empirical evidence, the e-learning literature or expert practitioner judgement that can be assessed easily by institutions.

Capability assessment criteria
When conducting a process assessment, each process is rated for performance as: not adequate, partially adequate, largely adequate, or fully adequate. Evidence collected by the institution is used to support a particular rating and is a combination of whether or not the practice is performed, how well it appears to be functioning, and how prevalent it appears to be. This provides a useful future-proofing mechanism because performance that is currently fully adequate may not be so in three or four years as technologies evolve and experience in e-learning grows.

Once each practice has been assessed, the results are averaged for the process's given dimension. Practices listed in bold are those essential for the achievement of the process and are the main basis for the assessment; the others are primarily used to make a choice between two possible assessments. A purely mechanical process with a mathematical summation has been deliberately avoided in order to provide enough flexibility within the model for differences of pedagogy, technology, organisational culture and national culture.

Sector assessments
The revised eMM meant that there was a decline in sector capability compared with the first assessment, particularly in the organisation and evaluation areas. This reflects the general absence of evidence collection informing a systematic and strategic engagement with e-learning. Any evidence of capability in these areas was generally disconnected from the governance and leadership of institutions and there was no evidence of e-learning driving or responding to organisation changes. There was also a lack of flexibility in e-learning activities and a relative absence of innovative pedagogies.

Disabled students were not well supported and there was limited evidence of business goals and strategies driving investment in e-learning infrastructure. Teachers were not being formally supported through the use of guidelines, templates or case studies and e-learning was not systematically incorporated into institutional evaluation and review procedures. The noted increases in capability are likely to be attributable to the institutions having employed dedicated staff whose job involves both an operational and a strategic responsibility.

Quality assurance, enhancement and e-learning

Authors: Mellar, H., and Jara, M.

Reference number: 74

Background
E-learning in and of itself does not constitute an enhancement of the quality of teaching and learning, but it is a potential enabler for such enhancement. Many of the Pathfinder projects referred to quality and least one-quarter made specific references to, and in some cases were focused on, quality assurance. However, the focus of this paper is on the move from quality assurance to quality enhancement.

From quality assurance to quality enhancement
The UK has a dedicated quality assurance agency for higher education (QAA). The QAA acknowledges institutional autonomy but expects institutions to address their responsibilities for standards and quality through the assessment of students, and their procedures for the design, approval, monitoring and review of programmes. These internal quality assurance procedures generally involve the use of course validation, external examiners, annual reviews, student feedback and representation, and team meetings.

Quality assurance and enhancement are both components of a larger process of quality management. Quality assurance is typically concerned with determining that objectives and

aims have been achieved, while enhancement focuses on making improvements. The QAA shifted to a quality enhancement approach/focus in 2006. However, the literature supports a common framework that brings quality assurance and enhancement together (e.g. Middlehurst, 1997; Biggs, 2001; Harvey, 2005; Inglis, 2005; Raban, 2007).

But tensions remain, as quality assurance is primarily about accountability rather than improvement (Middlehurst, 1997). Biggs (2001), in contrast, argues for a distinction between retrospective quality assurance, which focuses on accountability, and prospective quality assurance, which is geared towards quality as fit for purpose and encourages improvement.

Changes to quality assurance/quality enhancement procedures for e-learning
A review of 2003-2006 QAA institutional audits reveals that higher education institutions acknowledged a need to change their procedures to match the specific features of e-learning courses. The most common procedures in this context were: validation, annual monitoring, periodic review, and course evaluations.

E-learning-inspired modifications to these generic procedures included requiring an e-learning specialist or external assessor to participate on the validation panel, contingency plans, and specific economic factors such as development cost details, specification of computing and staff requirements, and evidence of long-term market demand.

This approach of modifying procedures to meet the specific requirements of e-learning courses has support in the literature (Hope, 2001; Roffe, 2002; Middlehurst and Campbell, 2003; Robinson, 2004; Stella and Gnanam, 2004; Connolly, Jones, and O'Shea, 2005). This is because of four main differences between e-learning and traditional delivery courses:

- Distributed teams: in the development and delivery of e-learning courses academics typically work in collaboration with a wide range of professionals and teams, who are not always located in the same place.

- Disaggregated processes: the processes of design, teaching and assessment are usually carried out by different people or teams (and in some cases these are outsourced), resulting in a disaggregated structure of activities.

- Distant location of students: in both fully online and blended courses staff have limited opportunities to interact with learners and they increasingly depend on their willingness to respond to their requests using technology.

- Openness to review: as content, communications and resources in e-learning are mainly text based and usually archived in electronic form, it is possible to carry out more in-depth, continuous and unobtrusive monitoring of participants' activities.

Case studies
These involved analysis of documentation of four postgraduate e-learning courses and interviews with stakeholders. They supported the literature by stressing the importance of disaggregated processes, distribution of teams, and distant location of students in how they developed and managed their quality-related procedures, and in particular course evaluations, team meetings, and annual monitoring. The distant location of students made course evaluations challenging. Furthermore, any data that was collected was typically not analysed, as it was not clear who would do this.

The distributed nature of teams meant formal meetings rarely occurred and there was an overreliance on informal encounters. This meant that tutors were not always informed of course-related issues, their feedback was not consistently gathered, and problems with the course were not reported and therefore not addressed. This was typically overcome by deliberately creating more frequent and more formal interactions between team members, both face to face and online. Because staff did not feel supported or understood by senior management, their course reviews tended to be limited and formal and were of no assistance for enhancement purposes.

However, they also identified one element missing from the literature, namely the organisational context in which the courses were located. These courses were localised in terms of their development and maintenance. While this allowed for more autonomy, it also increased the feelings of isolation in respect of support from central units and senior management.

It was also noted that this isolation often meant course teams failed to collect relevant quality assurance information, such as students' course evaluations. This may be because when an institution is faced with an inherently risky enterprise its response may be to keep these initiatives at arm's length and at least partially outside the normal quality processes.

Examples of modifications to quality assurance and enhancement procedures for e-learning

Barnett (1994) argues that course teams need to exert greater control and ownership over these procedures if they are to be useful to them. Other suggestions include embedding evaluations within course activities. Where evaluation is carried out concurrently with teaching, it is argued that student learning is improved.

The Peer-to-peer Reflection on Pedagogical Practice (PROPP) model is modelled on an action learning set and encourages collaborative reflection on teaching practices, based on participants' specific examples of online teaching (Swinglehurst, Russell, and Greenhalgh, 2008). This model replaces the quality assurance role of peer observation of teaching with a collaborative approach to quality enhancement through reflection on practice.

A framework for periodic review was developed as part of the Pathfinder projects (Papaefthimiou, McCullagh, and Bird, 2008). It has the following stages:

- Consultation – to identify criteria, a schedule and a timeline.

- Data gathering and review – carried out centrally by the development support team to create a snapshot of the current state, drawing on: competitor analysis and programme context; e-learning review; and inclusion of the student voice. This step also seeks to identify how e-learning might be more effectively exploited to address issues arising from the review process.

- Contextual review report – written by the development support team.

- Reflection process – the analysis and interpretation of data jointly by the course and development support teams, including a facilitated off-site day. Discussions are held around the contextual review document in order to arrive at a shared understanding and vision for the future. The result is an action plan and a self-evaluation document.

- Enhancement – this occurs in response to the reflection and consolidation stage. Short-term needs might be addressed through the provision of staff development sessions and training, while longer-term needs relate to the creation of new programmes and ongoing support for enhancement including the application of technology.

- Evaluation occurs a year after the periodic review process, when the School will be given the opportunity to evaluate progress and report on actions and progress to date.

Conclusions

Course teams need to strengthen their coordination and communication channels through stronger leadership and a higher level of formalisation. Course teams need to examine strategies to improve the amount and quality of student feedback and to focus efforts on analysing and acting upon it. Online environments also provide opportunities for collecting feedback and monitoring students' participation and progress.

Campus-based institutions need to re-examine their approaches to quality assurance and enhancement of e-learning courses. Too often these were not on senior management's agenda and were not well supported from the centre. This resulted in quality assurance not being applied with the same rigour to e-learning courses.

This situation may arise from an unwillingness to confront risk as an essential part of innovation. Rather than developing procedures able to manage this risk appropriately, these innovations are seen as inherently risky and treated as special cases and simply excluded from oversight. Institutions need to develop approaches to the quality management of innovation (and in particular where this involves technology) that support it rather than stifling or sidelining it.

Perspectives on distance education: towards a culture of quality

Authors: Mugridge, I., Mills, R., and Smith, A.

Reference number: 81

Background
This report was prepared for the Commonwealth of Learning to review quality assurance approaches within individual institutions. The institutions that form part of this annotation come from the bibliography's prescribed overseas jurisdictions, that is, Canada, the UK and Australia.

Case study of quality assurance in a Canadian dual-mode institution
Quality assurance has achieved significant prominence in the English speaking world, as evidenced by increasing institutional and government agency efforts and activities. There are many different models for implementing quality assurance. However, distance education institutions have been at the forefront of these efforts (e.g. O'Shea and Downes and other case studies in Tait, 1997).

Canada has a decentralised education system but Ontario, where this institution is located, has established a dedicated agency-funded and -directed board to review applications from their equivalent of polytechnics. But in higher education this has been done internally on a similar basis to New Zealand, where a university-controlled entity undertakes the quality assurance process.

Quality assurance strategies used by the University of Guelph
The University of Guelph has extensive experience in distance education and provide robust support for these students. They have achieved considerable success and recognition for their distance education provision. The commitment to quality and learner-centred approaches is well supported by the institution as demonstrated by the establishment of a dedicated support office for students (Office for Open Learning).

However, these are merely paper guidelines and theoretical commitments. To ensure these commitments are met in practice, the Office for Open Learning (OOL) has established rigorous procedures for course development and delivery. The OOL Director reports directly to the chair of a senior management committee dedicated to open and distance learning. This committee oversees the development or adaptation of courses into distance mode, develops relevant policies, and provides the main link between the institution and the OOL. The OOL is responsible for administering student surveys and ensuring teacher quality.

As part of course development, the OOL works in partnership with relevant academic departments, who provide expertise and ensure pedagogy is at the forefront of these developments. They also work with the library to ensure students are well supported in their studies, and with the university's internal review committee, providing input into reviews of each department's distance education provision, with particular emphasis on quality.

More specifically, the OOL assigns distance learning specialists to course development projects and each of these experts has responsibility for a portfolio of courses. Drawing on the institutional best-practice guide, they work with the departments and relevant staff members to establish appropriate pedagogy and learning outcomes for a particular course. Following this, a pilot is developed, and if it passes exhaustive testing then the rest of the course is developed and provided. This full course is reviewed regularly and changes to it made in consultation with the course teacher.

An online editor ensures that each course has standards consistent with the institution's other courses and that the proposed changes are appropriate. The manager of the OOL's educational technology section advises of the latest developments in this context so that, where useful, the course can incorporate these. But context is critical: quality assurance systems must be tailored to the institutions in which they operate if they are to be truly effective. An effective quality assurance system will not be achieved by 'off-the-shelf' solutions and external consultants (Tait, 1997).

Because quality assurance systems should be designed for particular institutional contexts, it follows that the primary requirement for an effective system is institutional commitment and support. Without this, any system is bound to fail. This commitment means that all delivery modes must be treated equally. Another essential component is that faculty participating in course development have this recognised as a scholarly activity, that those teaching through non-traditional delivery do so as part of their regular teaching load and that there are award programmes for courses of excellence.

However, this commitment is insufficient and other measures are required. These include the establishment of a dedicated, specialised central unit that can work with faculty and departments to ensure they are freed from the technical aspects of distance development and can therefore concentrate on course content and learning objectives and outcomes. This unit should also provide training or at a minimum have an input into it. This training should reflect prescribed/recognised institutional best practice.

The unit should also pay close attention to student support, which is particularly important in distance education. This means that their needs should be taken account of in course design and delivery, and teachers and support staff need to be encouraged to provide guidance and support. It is also important that students are aware, and assured, that their feedback will be used to inform course redevelopment.

Finally, the central unit should also undertake several other activities to assure the quality of its institution's courses and programmes. These activities include subjecting courses to continual review to ensure their content is current, that assignments are congruent with content, and that the course's presentation and delivery are enhanced. On the technical side, they ensure that pedagogy remains at the forefront and that technology is used mainly to facilitate effective delivery. They also need to make sure that the institution has a stable technical infrastructure and that teachers' and students' needs for technical help and support are well provided for.

Case study of quality assurance at the UK's Open University
The Open University (OU) is not only the UK's largest distance education provider but also the only university solely devoted to this type of provision. It has 10 regional centres throughout the UK, and many of its students reside outside the UK. Many other institutions (at least at postgraduate level) now offer distance education provision, and in response, the UK's Quality Assurance Agency for Higher Education (QAA) has produced guidelines for the quality assurance of distance education programmes.

Quality assurance processes
The OU has not managed to obtain overall institutional accreditation in a quality assurance context because of the mismatch between the way their academics operate and business management approaches. They operate within a framework established by the QAA. Of particular importance is their Code of Practice, which all OU processes align with or link to. Explicit rationales are provided if there are deviations from the code because of the unique nature of OU structures and business.

In addition, the QAA:
- provides subject benchmarks designed to make explicit the general academic characteristics and standards of UK honours degrees

- requires a programme specification setting out its learning outcomes in terms of the knowledge, skills and understanding students are expected to have on completion, as well as an assessment strategy that demonstrates how these outcomes are tested
- operates institutional reviews every six years and has assessed the quality of teaching and learning in 25 subjects across all UK higher education institutions.

But recent QAA developments have been much less prescriptive and have focused on how institutions themselves approve programmes, how the QAA and institutions are working together and how institutions are using agency reports to inform their business. The OU has done well in QAA audits.

Good practices noted included the systematic and comprehensive collection and use of feedback from students, and the OU's proactive stance in giving students academic guidance and support. The OU defines quality as a process or product that is fit for purpose. The OU's governance structure and internal review ensure its internal processes are robust and effective.

Governance and internal review
The OU has governance structures at high levels of the organisation dedicated to teaching and learning, student support, and quality assurance. All their provision is subject to regular reviews and student services are reviewed annually. The review is supported by a range of monitoring processes including:
- student recruitment, retention, performance and progress
- learner satisfaction with provision and services
- external examiners, assessors and advisors
- feedback from course team members, regional staff and tutors
- monitoring of the quality of teaching, and assessment of tutor-marked assignments.

Regional centres are also expected to carry out an annual review of their student services including provision of information, guidance and advice on course choices, learning skills and careers, support and advice for students with disabilities, and provision of appropriate resources to support examinations and assessment.

Specific quality assurance activities
They have adopted a team approach to course development. This involves a course team including not only subject specialists but also instructional designers, media specialists, and teaching specialists, particularly in e-learning. This group reviews the design and content of materials, which are also subject to regular reviews throughout their development by an external assessor.

In addition to the aforementioned specialists a range of others are involved in most course production including professional editors, copyright experts, designers, illustrators, photographers, and audio-visual, multimedia and software staff. These localised reviews and processes are supported by institutional equivalents.

Assessment is managed by developing and approving a strategy, typically two years before course commencement. Within this the course team needs to specify the number and relative weighting of assignments, student feedback levels on computer-marked assignments, examination type, deviations from the standard (i.e. closed book) examinations, and projects or dissertations. The assessments are moderated by comparing individual marking with the institutional average and external examiners.

The OU has a well-recognised staff development programme, including providing at least two paid days for training and development, and pairing new tutors with peer mentors. But monitoring student-tutor interactions is more challenging. Although often neglected, administrative and operational processes are critical to successful distance education. The OU is moving towards establishing standards for some of these basic processes such as responses to emails and telephone calls, dispatch of materials, and handling of assignments. This will be further supported by the recent introduction of a Customer Relationship Management System.

These processes are time-consuming and institutions need to address this. Quality assurance cannot be imposed: it must be owned by the staff. The OU has shifted to a localised approach to address quality assurance with the relevant central committee's role mainly restricted to providing advice to a wide range of other bodies on quality requirements.

Key factors in the OU's quality assurance success include early and committed leadership from the highest levels of the institution, the public nature of their materials, students who were not afraid to voice their demands, quality and committed staff, good linkages between the central and localised areas/regional centres, robust systems, and external recognition by the government and public that they have quality teaching and learning.

Case study of quality assurance at Australia's University of Southern Queensland
They offer a wide range of provision and delivery modes, from print-based distance education to e-learning and also traditional delivery, to a large number of geographically spread and diverse students. The quality of their teaching and learning has been recognised within Australia and internationally. They committed early to e-learning as it offered opportunities for both domestic and international students as well as being more economically sustainable.

Achieving quality e-learning requires major investment in ICT and an associated proactive commitment to organisational development and transformation. They have used quality systems to achieve their vision of an 'e-university'. This institutional model offers a range of coordinated services and access to resources through integrated organisation-wide systems. This approach has also been fundamental to their administrative, teaching and learning, and student support functions.

For example, they are able to provide courseware to students in a variety of delivery modes from a single document source. It has also allowed for more automated publishing processes, which ensure a consistent look and feel for their course materials. This ability to provide materials simultaneously through a range of different delivery modes has resulted in the emergence of new and innovative pedagogies across several disciplines and a significant change in classroom organisation and teaching styles.

They also use technology to provide 24/7 assistance to students and manage interactions with them. This was the only efficient and cost-effective way to do this. It allows for a single point of contact (electronic or otherwise) as well as the recording of student queries to assist those who have similar problems in the future. This enables immediate, personalised responses to more students at reduced variable cost for the institution, and frees up student support personnel to provide more customised support. They have also set up an initiative that provides wireless access from about 90 percent of their on-campus locations.

As these processes and systems have been developed, international quality frameworks such as ISO 9001:2001 have either continued to be maintained or have been implemented progressively across many parts of the institution. This has assisted them significantly to meet the strict accreditation requirements of many professional associations and international bodies including the Distance Education Training Council in the US.

Lessons learnt and future directions
In many institutions the use of systems and the development of web-based initiatives are not systemic, and often result in 'random acts of innovation' initiated by individual academics, which are not sustainable over time. In contrast, the University of Southern Queensland's (USQ's) systems have been planned strategically and integrated systematically, and are institutionally comprehensive.

This institution-wide approach and resulting model provide students with a higher-quality, more personalised experience at noticeably lower cost than traditional distance education and classroom delivery. Well-defined and documented quality systems and processes are well embedded at USQ. Staff buy-in has been achieved within a consistently applied and progressively developed quality system framework across all the major institutional systems.

Developing a culture of quality in any educational institution takes time and leadership. Stability of approach and the personal drive of key figures (including senior management) have been fundamental to USQ's success. They have supported not only the embedding of new initiatives into practice and sought the views of a wide range of stakeholders but have also ensured that new staff are inducted into USQ's quality culture.

The centralisation of key services and the integration of core systems have also been critical to developing a culture of quality. Smaller institutions lack the financial resources to develop and implement their own localised versions of centrally set initiatives including e-learning. USQ has made many important decisions regarding infrastructure, systems and delivery from a corporate viewpoint rather than local concerns, as is the case at many institutions. But this approach has led to more consistency, which in turn has been a major contributor to academic quality.

Once quality is achieved, an institution cannot be static. As ICTs change and become more sophisticated, new additions and modifications to existing processes and systems are required. Testing new applications, making changes to organisational structures, and upgrading the qualifications and expertise of both academic and general staff become essential mechanisms to maintain quality and retain high standards.

Finally, a culture of quality must be owned and encouraged by the various individuals and groups within the institution if it is to succeed over time. At USQ quality remains a high priority and, irrespective to changes in the operating environment, remains paramount in their vision, mission and future directions. This well-established culture of quality also allows USQ to differentiate itself from its competitors and enhances its reputation both within Australia and internationally.

The quality dilemma in online education revisited

Author: Parker, N. K.

Reference number: 86

Background
The large increase in e-learning provision has been matched by attempts to define and develop best practice and quality assurance standards. Organisations need demonstrate to students, employers, faculty, staff, regulators and government agencies the quality of their e-learning provision. But staff and faculty are accustomed to traditional delivery and are sceptical of the attempts to quality assure e-learning.

Some of these problems arise because e-learning has attempted to replicate traditional delivery instead of maximising its potential to offer an alternative educational experience (Schank, cited in Caudron, 2001). But Larreamendy-Joerns and Leinhardt (2006) believe the limitations of e-learning are inherent in distance education's founding principles.

Regulatory attempts to address quality assurance in e-learning in Australia, the UK and US have been far from successful (Harvey, 2005; Reid, 2005; Zemsky, 2007). One of the tensions is that while self-review can be a key component of quality assurance frameworks they are to a large degree driven and determined by external concerns. However, there has been good progress in benchmarking e-learning activities in organisations in New Zealand (Marshall, 2006), Australia (Bridgland and Goodacre, 2005) and England ((Morrison, Mayles, and Gule, 2006).

Definitional issues
One of the critical issues with quality assurance is that ultimately it is a subjective assessment. Much of the quality assurance in TEOs derives from the corporate world. Many higher education institutions use Total Quality Management and Continuous Quality Management as the basis for their own quality assurance processes and procedures (Banta and Associates, 2002; Moore, 2005). In a similar vein, the International Standards Organisation makes it clear that quality is determined by establishing processes that maximise services to customers.

This sort of language and origin does not sit well with many in higher education, which traditionally has derived its quality from the professionalism of its academics, rigorous peer review and the principles of scholarship. In an e-learning context it is still unclear if quality is best assessed by comparisons with traditional delivery.

New higher education systems and their impact on quality assurance
Increasingly, e-learning is leading to a more learner-centred system. But the traditional quality measures associated with accreditation or state-administered quality assurance frameworks do not match this new teaching and learning framework. Many inputs and outputs can be measured in e-learning environments such as enrolments and completions but there is a lack of measures to address the fundamental integrity of the online learning environments. Pond (2002) summarises this as the traditional quality assurance frameworks being based on a restricted, institution-centred view with e-learning in contrast being more flexible and learner-centred.

International quality assurance systems
Much of the recent development in quality assurance systems for e-learning has occurred at international level. This is driven in part by the need to protect students from the risks associated with large, international start-up e-learning ventures. It is also being determined by the increasing desire to harmonise quality assurance frameworks internationally, particularly in higher education, for example the Bologna Declaration in Europe. However, local responses have varied and this is partly because many quality assurance frameworks are well established and often e-learning is viewed with suspicion.

Australia
In Australia quality assurance is complex due to the differing accountabilities at state and federal level. Each state determines its educational policies but the federal government directly funds universities (DEST, 2002a). The Australian Government has also established a separate body, the Australian Universities Quality Agency, to oversee quality assurance in the university sector.

But concerns were raised early in the life of this agency that it had too much emphasis on institutional quality assurance and not enough on learning outcomes. There were also concerns about e-learning, including the introduction of new costs, equity of access, cost-effectiveness, quality of courses, and the impact on learning outcomes and academic work (DEST, 2002b).

United Kingdom
The UK has three different external approaches to quality assuring e-learning: licensing procedures administered by a government agency, a voluntary accreditation association, and a certification scheme based on quality marks. In 1997 the UK created the Quality Assurance Agency for Higher Education (QAA).

In 2004 part of their revision to the code of practice encompassed good practice for e-learning delivery options. As part of this guidance QAA references the Open and Distance Learning Quality Council standards. These are in turn divided into six broad categories: outcomes, resources, support, selling, providers, and collaborative provision. While these have an institutional bias, they also contain useful guidance for prospective students. This is partly in response to a myriad of alternatives, for example the British Association for Open Learning, which in turn derives its guidance from the European Foundation for Quality Management.

Canada
In Canada each province has its own quality assurance framework. There is also extensive private sector involvement. For example, the Canadian private sector has been involved in the development of the Canadian Recommended e-Learning Guidelines (Barker, 2002a). This is organised into three sections: Quality Outcomes from e-Learning Products and Services; Quality Processes and Practices; and Quality Inputs and Resources. As with the UK, more student-oriented guidance is also available in the form of a Consumer's Guide to e-Learning (Barker, 2002b). This guide asks key questions such as why they are taking the course, what the hardware and software requirements will be and whether they have the requisite skills.

United States

The federal government allocates funds based on the accredited status of qualifications and courses. Traditional approaches to accreditation focus on the verification of site-based resources contributing to a learning environment. To address the differing requirements for e-learning, the eight regional accrediting commissions developed a best-practice guide.

This is split into the following five areas: institutional context and commitment, curriculum and instruction, faculty support, student support, and evaluation and assessment. This guide, however, is intended for traditional delivery institutions offering e-learning, rather than specialist distance education providers upgrading or changing their delivery mode and does not address, unlike the UK, learners taking responsibility for their learning.

New Zealand

New Zealand universities have participated in the Australasian Council for Open, Distance and E-Learning (ACODE) benchmarking project. This project established performance indicators and measures in eight areas:

1. Institutional policy and governance for technology-supported learning and teaching.
2. Planning for, and quality improvement of, the integration of technologies for learning and teaching.
3. Information technology infrastructure to support learning and teaching.
4. Pedagogical application of information and communications technology.
5. Professional/staff development for the effective use of technologies for learning and teaching.
6. Staff support for the use of technologies for learning and teaching.
7. Student training for the effective use of technologies for learning.
8. Student support for the use of technologies for learning (ACODE, 2007).

Common themes

One of the main threats to institutional as well as government quality assurance schemes in an e-learning context is the proliferation of alternative systems, such as the Online Education Database, which ranks institutions accredited by the Distance Education and Training Council. Established online programmes are also increasingly a part of discipline-based league tables such as the business school ratings in the Financial Times. If they wish to counteract this trend, institutions must construct a consensus around quality with key stakeholders.

There is an emerging consensus within the various quality assurance frameworks that there is a need for sustained institutional support for distance learners. This is important, as too often online delivery has been presented in an experimental mode, without long-term, planned infrastructure development. Online delivery should not be considered, or implemented as, a 'one off'.

Code of practice for the assurance of academic quality and standards in higher education: collaborative provision and flexible and distributed learning (including e-learning)

Author: The Quality Assurance Agency for Higher Education

Reference number: 90

Background

The Quality Assurance Agency for Higher Education (QAA) is the UK equivalent of the New Zealand Qualifications Authority (NZQA), although, unlike QAA, NZQA is not directly responsible for the quality assurance of universities. This code of practice is an update to take into account the increasing amount of provision being delivered collaboratively by universities. It also updates the QAA's guidelines on the quality assurance of distance learning.

The Code is intended to provide a set of system-wide principles covering matters relating to the management of academic quality and standards in higher education. These are supported by accompanying explanations of why the principles are important. It is expected that individual institutions can effectively tackle the matters raised in the principles through their own management and organisational processes, taking account of their needs, traditions, culture and decision making.

The Code is a statement of good practice that has been developed with and endorsed by the higher education community. Institutions may find the explanations useful for developing their own policy and for allowing some flexibility of practice at subject level, depending on local needs. The Code is not part of the institutional audit process and is not intended to specify required compliance by organisations.

While stressing that e-learning is now an integral part of higher education provision and its teaching and learning, the Code also emphasised that there are particular considerations that apply to it. The underlying assumption is that e-learning should widen learning opportunities without compromising academic standards or quality. The quality assurance arrangements for e-learning should be as rigorous, secure, and open to scrutiny as those applying to other forms of provision and delivery.

There are particular risks associated with e-learning provision and the Code is intended to help institutions address these effectively. Equivalence is also important. For example, an institution could find value in comparing the learning opportunities available to students through different forms of provision. Of particular importance in this context is identifying whether one group is being significantly disadvantaged in their learning opportunities relative to others.

Flexible and distributed learning (FDL), as broadly defined in the Code, encompasses e-learning as well as distance learning, and it does not:
- require a student's place of study to be physically located within the institution
- assume that a student's programme of study is necessarily delivered directly by the awarding institution or that a student is directly supported by that institution's staff
- assume that a student is working routinely with their peers
- necessarily require assessment of a student's achievement to take place at the location of the awarding institution.

This can be represented as a continuum, where at one end programme delivery, learner support and assessment are provided entirely by the awarding institution and its staff. At the other end of the spectrum is a learner who has no direct contact with the awarding institution and whose programme delivery and support are provided by other organisations. In between these two extremes is a range of options provided by the awarding institution and their collaborative partners, including e-learning.

These levels of flexibility make it difficult to position the Code in a framework that reflects traditional organisational functions. Instead it focuses on the viewpoint of a student experiencing an FDL programme, supplemented by consideration of the particular responsibilities of the awarding institution. The FDL section of the code is therefore grouped into three separable categories:
- The delivery of an FDL programme.
- The support of students in that programme.
- The security of academic standards of the award and assessment of the achievements of those students.

It was noted that many students would only experience components of a programme delivered or supported by FDL methods. But there is no volume above which this Code applies or below where it does not. What is important is that consideration has been given to the applicability and relevance of the principles to the provision in hand.

Principles associated with the responsibilities of an awarding institution in respect of FDL and/or collaborative arrangements that lead to its awards

- The academic standards of awards arising from FDL arrangements should meet the expectations of the UK Academic Infrastructure such as the relevant Framework for Higher Education Qualifications.

- The awarding institution should inform any professional, statutory or regulatory body of its FDL arrangements, and the status of these programmes in respect of their recognition should be made clear to prospective students.

- FDL arrangements should be fully costed and accounted for accurately and fully. Institutions need to ensure that the associated financial arrangements do not jeopardise the integrity of the academic standards, the quality of provision or the interests of students. For example, the awarding institution retains responsibility for ensuring that learners admitted to a programme can complete it in the event that a partner withdraws from an arrangement.

- Any agreement or contract should make clear that only where express written permission is granted by the awarding institution can a partner organisation offer FDL provision approved by the awarding institution elsewhere or assign the awarding institution's delegated powers to a third party. A significant risk in this context is that these arrangements are such that the awarding institution is no longer in a position to have full confidence in its ability to control academic standards effectively.

- The awarding institution is ultimately responsible for ensuring that the quality of learning opportunities offered through FDL arrangements is adequate to enable a student to achieve the academic standard required for its award.

- The scope, coverage and assessment strategy of an FDL programme should be described in a programme specification that refers to relevant subject benchmark statements and the level of award, and that is readily available and comprehensible to stakeholders.

- In the case of an FDL arrangement with a partner organisation, or engagement with an agent, the awarding institution should be able to satisfy itself that the terms and conditions that were originally approved have been, and continue to be, met. It is good practice to monitor not only adherence to the terms, conditions and processes identified in the formal agreement, but also the learning outcomes and the student experience delivered by a partner organisation.

- The awarding institution should be able to satisfy itself that staff engaged in delivering or supporting an FDL programme are appropriately qualified for their role, and that a partner organisation has effective measures to monitor and assure the proficiency of such staff. In this context, it is important to emphasise that it is the role which staff are to undertake that should be used as the starting point to determine how appropriately staff are qualified to fulfil it.

- External examining procedures for FDL programmes should be consistent with the awarding institution's normal practices. In the case of joint awards, awarding institutions will need to consider what external examining arrangements are appropriate to satisfy the requirements and expectations of all the partners involved and to secure the award's academic standards.

- External examiners of FDL programmes must receive sufficient briefing and guidance approved by the awarding institution for them to fulfil their role effectively. External examiners need to be in a position to appreciate the FDL environment in which they will be examining, and to understand any special circumstances relating to particular methods of assessment, such as online assessments.

- The awarding institution should ensure that it has effective control over the accuracy of all public information, publicity, and promotional activity relating to its FDL provision. The

awarding institution should satisfy itself that this control is exercised consistently and fairly and that the public cannot reasonably be misled about the nature and standing of the programmes and awards.

Principles specific to FDL

- Students should have access to information that sets out the respective responsibilities of the awarding institution and programme presenter, describes the components of the programme including its intended learning outcomes, teaching, learning and assessment strategy and methods, and provides a clear schedule for the delivery of their study materials and for assessment of their work.

- The awarding institution, whether or not they are working through a third-party programme presenter, should ensure that students can be confident that:
    - any FDL programme or component offered for study has had the reliability of its delivery systems tested, and that contingency plans would come into operation in the event of failure of one of the designed delivery modes
    - the delivery system of an FDL programme or component of study delivered through e-learning methods is fit for purpose, and has an appropriate availability and life expectancy
    - the delivery of any study materials provided directly to remotely based students by e-learning methods is secure and reliable, and that there is a means of confirming its safe receipt
    - study materials delivered by e-learning methods meet specified expectations of the awarding institution in respect of the quality of the teaching and learning support material for a programme or element of study that lead to one of its awards
    - the educational aims and learning outcomes of an FDL programme are reviewed periodically for their continuing validity and relevance.

- Delivery systems need to take account of lowest levels of technology available to students and their special educational needs. They also need to be secure and virus-free.

- Prospective students should receive a clear and realistic explanation of the expectations placed on them for study of the FDL programme or elements of study, and for the nature and extent of autonomous, collaborative and supported aspects of learning. Students need clear guidance on the characteristics of learning required for their FDL studies, and on the general expectation of time commitment they should be making. In an e-learning environment they may need time to become familiar with the technologies and as a result require some introductory support such as an opportunity to participate in the environment before the course starts.

- Students should have access to available learner support including what is available locally and remotely and documents confirming their responsibilities and those of the awarding institution and where necessary the support provider. For example, students need to know the expected response times for their technical queries as well as particular requirements for learner support provided by e-modes. They should also be aware of the ground rules and protocols for peer and teacher communication.

- From the time they start study, students should have an identified contact, available through a variety of channels and media, who can give them constructive feedback on academic performance and authoritative guidance on their progression. There should be regular opportunities for peer discussions about the programme as well as provision for their feedback on it.

- The awarding institution, whether or not they are working through an external partner, should ensure students can be confident that staff are available who have the appropriate skills and training/development to provide support on an FDL programme. When delivered

by e-learning methods, this support must meet specified expectations of the awarding institution for the quality of learner support for a programme of study leading to one of its awards. Relevant staff skills comprise both technical and pedagogical capabilities and expertise.

- The awarding institution, whether or not they are working through a support provider, should ensure students can be confident that their assessed work is properly attributed to them, particularly where work is submitted electronically and therefore vulnerable to interception or interference. Assessors need to be capable of identifying plagiarism in e-learning environments. E-learning mechanisms for the transfer of work directly to assessors need to be secure and reliable and there is a means of proving or confirming the safe receipt of their work.

Breaking boundaries: quality e-learning for the global knowledge society

Author: Rajasinghham, L.

Reference number: 91

Introduction
There is a need for new quality frameworks for e-learning because of technological advances that challenge conventional assumptions and indicators of quality assurance and accreditation. Quality assurance frameworks need to be developed that can improve pedagogy in diverse cultural, knowledge and delivery platforms in both physical and virtual contexts. Another driver for re-examining quality assurance frameworks is the shift of university provision from traditional delivery to e-learning.

Problem analysis
Distance education has always used ICT to bridge the gap between teachers and students. While e-learning has evolved from distance education, it has struggled to gain recognition in mainstream education as a legitimate quality option. E-learning's delivery systems test conventional assumptions as to the quality of content and delivery approaches.

University systems are designed for traditional delivery. In an increasingly competitive environment that makes more use of the internet, external stakeholders such as employers are demanding new quality assurance frameworks. E-learning is also increasingly being delivered through mobile devices, to the extent that this is often referred to as m-learning.

But with all these approaches, what is quality and who sets the standards? This question is addressed in part by disaggregating place, content, delivery and judgements; in effect e-learning can unbundle the instructional process. This allows traditional roles to be redefined and new ones to emerge (Twigg, 2001).

It is important to recognise that, unless change is made in the way education is examined to measure the indicators that are relevant to all the different varieties of e-learning, the 'no difference' phenomena between it and traditional delivery will prevail. Technology allows the replication of traditional delivery teacher-student interactions as well as creating new possibilities. But what difference does it make to the quality of education whether these interactions occur in a physical environment or anywhere in the world via technology?

Problem definition
It is a challenge to establish quality assurance frameworks when there is such a diversity of terms and approaches used in an e-learning context (Gooler, 1986; Rossman, 1992; Twigg, 2001; Tiffin and Rajasinghham, 2003). This is compounded by the fact that quality assurance itself is an abstract, referential and paradigmatic concept. Parker (2004) argues that in an educational context quality comes from the pressure to apply management techniques to higher

education, a perceived crisis in confidence with tertiary systems, and the growth of government-sponsored accountability systems.

Quality assurance systems were designed for the industrial age and are characterised by management and administrative approaches designed to satisfy the requirements of a business model geared towards profit and financial imperatives. They have little to do with improving pedagogy, creativity and innovation. However, pedagogy, along with other teaching and learning areas such as course curricula, content, and learning outcomes, is complex and difficult to measure.

In this context, some challenging questions need to be addressed, including who defines quality and in what context and for whose teaching and learning environments? How is knowledge assessed and accredited? How is quality measured and managed?

Accountability for quality is familiar to universities. For example, they are called on to demonstrate the quality of their services to stakeholders including students, staff, employers, and government agencies. Standards are of critical importance in demonstrating this quality. These take the form of internal programme reviews and external benchmarking exercises. Government agencies such as the New Zealand Qualifications Authority and its international counterparts also assist in this context.

Quality is related to the effectiveness and appropriateness of the learning process and approaches. But is there a breakthrough technology to measure quality in education (Tiffin, 2006)? In an increasingly globalised, user-pays learning environment how is quality determined? This article argues that it should not necessarily be determined by developed, English-speaking countries and therefore what is required is a global not simply a local framework.

The framework suggested by this article is an adaptation of the Sloan-C Quality Framework and the Five Pillars. The quality framework is a tool for continuous improvement of online programmes in higher education. The five pillars guide this process of continual improvement. Sloan-C has argued that any learner who engages in e-learning should have, at a minimum, quality education that represents the institution's overall quality.

Any institution, they maintain, demonstrates its quality in five-interrelated areas, which form the Five Pillars: learning effectiveness, access, cost-effectiveness, institutional commitment, and staff and student satisfaction. Learning effectiveness is supported by good practices related to course design, learning resources, staff development, student characteristics, pedagogy, interactions, assessments, and learning outcomes that reflect learner satisfaction, retention, achievement and performance.

Cost-effectiveness and institutional commitment to quality and finite resources require continuous improvement policies for developing and assessing appropriate measures and practices. The goal is to control expenditure so that tuition is affordable yet sufficient to meet development and maintenance costs, and to provide a return on investment in start-up and infrastructure.

For access, the objective is to provide meaningful and effective access throughout the entire student's lifecycle. This would include providing technical infrastructure, academic administrative services such as student loans, student support that incorporates 24/7 assistance, assessment, and social support groups, and fostering learning communities and learning resources, for example, digital learning objects, and course previews, schedules and timetables.

Staff satisfaction is where they find the online teaching experience personally rewarding and professionally beneficial. At an individual staff member level this might mean being able to interact with new cohorts of students and publishing associated research. Staff satisfaction is increased when the institution supports them with a robust and well-maintained technical infrastructure, appropriate training, and ongoing technical and administrative assistance.

Staff also expect to be included in the governance and quality assurance of e-learning programmes, especially where they relate to curricula decisions and relevant policies in such areas as intellectual property, copyright, plagiarism, and collaborative design and delivery. Staff satisfaction is closely related to institutional reward systems that recognise the greater time commitment in developing and teaching e-learning courses. Promotion, administrative and technology support issues also need to be equitably addressed.

Student satisfaction reflects the effectiveness of all aspects of the educational experience. The goal is that all students who complete a course express satisfaction with its rigour and fairness, with staff and peer interactions, and with support services. Students are satisfied when institutional services including academic and administrative, learning resources, and technology and infrastructure support are responsive, timely and personalised.

The teaching/learning/knowledge nexus

The main difference between e-learning and traditional delivery is that with the latter students and teachers are brought together physically, whereas for the former ICT means they can interact and participate virtually. From being teacher-centred, education is becoming learner-centred, non-linear and self-directed. Teachers move from central actors to facilitators, shifting paradigms. Universities need to attract students and this can be assisted by removing the regulatory and administrative barriers to developing innovative quality curricula that seamlessly map onto the learners' preferred technology platforms.

Improving quality in curricula design

As universities become businesses for profit, with reduced government subsidies and staffing, increasing enrolments, and cutting staff and student support services, staff-to-student ratios rise, and inevitably standards fall. To ensure quality and accreditation, e-learning in higher education will need to adopt a rigour in course design and assessment, and introduce new processes and strategies beyond those currently in existence. This includes separating summative assessment from teaching, and developing curricula in conjunction with national and international associations in the subject field (Tiffin, 2004).

The university needs to prepare students for an entirely different world, including increasing moves towards globalisation. To respond to this they need to be not only global, but also commercial, multicultural and multilingual within web-based spaces. This will equip students with the skills to solve global problems and at the same time act locally in consonance with their own cultures and social networks (Rajasinghham, 2003).

Improving quality in pedagogy – JITAITs

JITAITs are just-in-time artificially intelligent teachers. However, a virtual teacher can also have human intelligence. The real strength of the JITAIT is its ability to provide close to real-time feedback to students (Tiffin and Rajasingham, 2003). JITAITs are expert systems, effective where the domain of knowledge they address is restricted, paradigmatic, and oriented towards problem solving. They would improve from each learner encounter provided it received feedback from a human teacher and could act as a personal teacher to individual students.

With frequent and ongoing exposure to student FAQs (Frequently Asked Questions) their role would increase and the student-to-teacher ratio could be progressively increased without lowering quality. Human subject specialists could use e-learning to stream their lectures globally, and there need be no limits to the numbers who attend. Institutions could pay staff who were successful in this context on a per-student royalty-type arrangement.

Access, quality and costs

Education is underpinned by the assumption that increasing access to education will lower quality and raise overall costs. Similarly, raising quality will increase costs and therefore reduce access. Daniel (2004) challenges universities to overcome these constraints and break the link between quality and exclusivity in education.

Quality assurance, open and distance learning, and Australian universities

Author: Reid, I. C.

Reference number: 93

Introduction

With the shift to a more user-pays tertiary education system in Australia and increased study choices for students, the issue of quality became more prominent. This led to the establishment of the Australian Universities Quality Agency (AUQA). AUQA allows universities to be largely self-directed in a quality assurance context but with overall guidance from the government, who have used their experiences from other areas as well as applying lessons from other jurisdictions to better inform their activities (Kickert, 1991; Marceau, 1993; Gashler, 1994; Knight, 1994; Marginson, 1997; Vidovich, 2002).

The establishment of specialist distance education centres in seven Australian universities provided an impetus for a reconceptualisation of quality by introducing notions of quality of commodities (for example, learning materials), service (through student service centres), and production and delivery as a 'Fordist' process (Evans and Nation, 1989; Calder, 1994).

However, overall distance education at this time did not greatly influence mainstream policy debates related to quality assurance. This paper aims to investigate the changing relationships between distance education and quality assurance by comparing two Australian universities, with respect to their submissions to the AUQA audit process.

Australian universities

At the time of writing, there were 38 universities that received federal government funding. Each of them has its own particular role and character within the educational market (Marginson and Considine, 2000). However, they are not equals. It would be reasonable to assume therefore that their representations of themselves and their quality would be different depending on the particular roles they play in the 'market' and the 'niche' within it which they choose to pursue. Distance education technologies enable engagement with new markets so their use can create new definitions of quality.

The case study institutions in this paper are the University of Southern Queensland (USQ) and the University of Adelaide. USQ has a significant and successful history of delivering distance education to students in Australia and internationally (Smith, 2005). In contrast, the University of Adelaide has little tradition of distance delivery. However, both institutions do employ e-learning for delivery purposes and this is also an area of interest in AUQA's audit manual (Woodhouse, 2001).

Research framework

The main data source used for this study was the performance portfolio documents that each institution submitted for the AUQA audit process (referred to herein as 'the submission'). Text analysis of the submissions was carried out using the theory and methods of critical discourse analysis (Fairclough, 1992, 1995, 2001, 2003; van Dijk, 1993, 1997; Luke, 1995; Fairclough and Wodak, 1997; Janks, 1997; Chouliaraki and Fairclough, 1999; Wodak and Meyer, 2001).

This approach allows each individual social event to be connected with the larger patterns of social relationships that persist from one event to the next (Lemke, 1995, p. 20). In the context of this study, particular interest was paid to the discourses of distance education, as represented by e-learning, and of quality assurance. These discourses were then related to the societal discourses as a whole.

The e-learning discourse attempts to demonstrate its educational and institutional advantage by, for example, improving the efficiency and effectiveness of teaching (Scott, 1995). It also allows greater visibility and reach as well as a more commercial aspect to institutional operations. For distance education, e-learning's advantages are usually portrayed as its ability to provide

increased interactivity compared with other delivery modes (Inglis, Ling, and Joosten, 1999; King, 2001; Rumble, 2001; Taylor, 2001; Meyer, 2002; Salmon, 2003).

For on-campus education, e-learning is promoted as providing increased flexibility and richness for students by, for example, freeing them from attendance at particular places and times (Bottomley, 2000; Nunan, 2000). The quality assurance discourse is often based on idealised notions of what a good university is.

This can be demonstrated by quality assurance, where universities can satisfy their stakeholders by showing them they have appropriate measures in place to ensure the education they provide is of a satisfactory standard, or at least comparable with that of other universities (Kemp, 1999; Woodhouse, 1999; Salter and Tapper, 2000; Harman, 2001; Twigg, 2001; Pond, 2002). While promoting independence, this discourse is actually about control and accountability because it proscribes and prescribes key areas of organisational activity and views educational outcomes as important commodities to be measured and promoted (Rhodes and Sporn, 2002; Vidovich, 2002).

The USQ AUQA submission

USQ's institutional commitment to e-learning is emphasised throughout its submission. For example, one of its key institutional priorities listed in the submission is the 'completion of a totally integrated e-infrastructure including… [a] new learning management platform and appropriate access portals' (p. 10). This creates an impression of innovation and technological competence. The submission also places a strong emphasis on e-learning in describing its future directions and current quality claims.

Its e-learning environment claims to provide a range of high-tech solutions. But what is not clear is what problems these solutions address. Rather, they are provided as evidence of a progressive and innovative university and are used to position USQ as a leader in the higher education sector in an e-learning context. It also makes strong claims to be a leader in a flexible delivery context. It places technology at the heart of this claim by stating that it is developing a new 'generation' of distance education technologies (Taylor, 2001).

USQ also makes quality claims for this environment, which is at odds with how new it is. It is difficult to claim established quality in an area where the means of teaching are so rapidly developing and changing, and when quality is often associated with experience developed over a long period of time.

To counter this challenge, the submission does not argue for the quality of its overall e-learning, but rather of its specialist Distance Education Centre (p. 8). This is justified because of the international distance education awards it has won. However, this means there is a disjunction between the rhetoric of e-learning being fundamental to its operations on the one hand, and their absence from the quality discourse on the other.

The University of Adelaide AUQA submission

Adelaide's submission draws together information to present its case for institution-wide quality. One way this is achieved is by making a general claim, followed by examples that appear to demonstrate a systematic process, but that are not coordinated. For example, it cites its quality learning support through the use of discipline-specific advisors. However, they clearly do not monitor all at-risk students, advise on study skills or monitor assignment requirements.

This is an attempt to imply that examples are exemplars of quality. In a largely decentralised organisation such as Adelaide this is a way to demonstrate that centralised processes for quality assurance exist. Its overall objective is to present an argument that decentralised quality assurance processes equates to institution-wide equivalents.

The submission spends limited time on teaching and learning and acknowledges that improvements in this context are required. They try and mask these deficiencies by attempting to equate teaching and learning with their research quality. However, they do not convincingly demonstrate quality in either area nor do they show how one links to the other thereby leading to increases in the quality of their teaching and learning.

In any case, the submission makes clear that Adelaide's current strengths lie in research not teaching and learning. For example, they acknowledge that they have been slow to 'embrace the opportunities afforded by new educational technologies…Its emphasis has been less on the opportunities they provide for distance education, and more on their potential for improving teaching efficiency for staff and learning flexibility for students' (p. 36).

This is an odd combination as e-learning is normally characterised by rapid innovation. This allows e-learning to more easily align with the quality assurance discourse of the submission. There are also tensions between teaching efficiency and flexibility for learners. But the tensions do not end there. They state in their submission that e-learning is in conflict with their institutional culture. This is because centrally administered e-learning does not sit comfortably within a largely decentralised organisational structure.

E-learning is not mentioned explicitly in the submission's description of their institutional quality assurance processes. Distance learning is portrayed as a work in progress and its e-learning developments are positioned in the future in contradiction to their past tense management commitments.

The Universities' locations in the market
For Adelaide, e-learning is not important in its market positioning. It views its main market advantage as deriving from its reputation and research performance. E-learning is part of its activities, but does not occupy a central place within its market strategy. In contrast, USQ uses e-learning as a key tool to market itself, but does not use this significantly for quality assurance purposes. In this context it relies on data from traditional distance education methods and processes.

Conclusion
This analysis suggests that the underpinning logic in their quality claims have more to do with business drivers than educational rationales (Cummings, Phillips, Tilbrook, and Lowe, 2005; McConachie and Danaher, 2005; McConachie, Danaher, Luck, and Jones, 2005; Nunan, 2005). It also indicates that quality is best demonstrated by traditional, bounded and well-known data.

New universities have a different position in the marketplace from older ones. New universities are more able and willing to adopt innovative approaches and use these to expand their operations. Older ones in contrast are more likely to incorporate these approaches within their existing operations and these more established processes would have priority. This indicates that the particular location of each institution in the market may have a decisive influence on the use made of distance education methods in their respective arguments for quality educational provision.

Conceptualising quality e-learning in higher education

Authors: Usoro, A., and Abid, A.

Reference number: 105

Introduction
Due to the immaturity of the research field, it is not yet possible to be conclusive about what constitutes quality in e-learning. For example, the International Organization (ISO) for Standardization has yet to finalise framework standards for quality e-learning. This article attempts to explore the concept of quality in e-learning through a review of higher education and e-learning literature. An attempt is then made to identify common themes and summarise what may be regarded as quality criteria in e-learning. Future research areas are also identified.

Operational definitions – quality in higher education
Green (1994) identifies four key factors that have fuelled the current interest in quality in higher education: the rapid expansion of students in the context of increasingly constrained funding, the general mission for better public services, increasing competition for resources and students,

and the tension between efficiency and quality. There have been attempts to conceptualise quality in higher education (Harvey, Burrows, and Green, 1992; Ashworth and Harvey, 1994).

However, the definitive work in this context is by Owlia and Aspinwall (1996), who produced a conceptual framework summarising quality in higher education into six dimensions: tangibles, competence, attitude, content, delivery, and reliability. The ISO (2007) quality areas are: pedagogy and content; achievements and programme impact demonstrated by performance indicators such as number and nationalities of students; programme connection to external stakeholders including agencies and business; and replicability and visibility of the programme.

Increasingly, institutions and quality agencies (and other external stakeholders) are investigating quality in higher education from a student's perspective (Higher Education Funding Council for England, 2002; Quality Assurance Agency for Higher Education, 2002). Hill, Lomas and MacGregor (2003) found that the most influential quality factors in higher education provision were the teacher and student support systems.

Quality teachers were defined as those who knew their subject, were well organised, and engaged students by being positive and enthusiastic. These factors could be adversely impacted in e-learning environments (Gibbs, 2001), which mean quality assurance in these contexts is essential. Quality can also be jeopardised if institutions lower their entry standards and allow students with less ability to participate (Wilson, 2007). But this can be mitigated by effective student support systems.

E-learning
There are many definitions of e-learning but the common thread is that ICT is used in varying degrees to support students' learning (Gunasekaran, McNeil, and Shaul, 2002; Higher Education Funding Council for England, 2005; Ellis, Jarkey, Mahony, Peat, and Sheely, 2007). It can also remove identified barriers to entry including geographical isolation and scheduling conflicts (Hijazi, Prosper, Plaisent, and Maguiraga, 2003).

Successful e-learning tends to adopt a blended approach. But one of its notable failures, the UK's e-University project, occurred because it was supply led, was predominantly driven by technological possibilities, and did not undertake sufficient market research. The end result was that only 900 students were recruited in its first three years, rather than the projected 5,000 (Ennew and Fernandez-Young, 2006). While it is unclear if e-learning is superior to traditional delivery, it continues to grow rapidly (Gunasekaran et al., 2003).

There are some noted advantages with e-learning, including better access to resources, materials and external networks for students and staff. In addition, it has the potential to lower costs for institutions through the replication of delivery and materials. Studies at course and programme level demonstrate that e-learning can have superior achievement compared with traditional delivery (Larson and Bruning, 1996; McCollum, 1997; Alexander, 2001; Antonucci and Cronin, 2001; Gunasekaran et al., 2002; Hijazi et al., 2003; Osborne and Oberski, 2004; Stansfield, McLellan, and Connolly, 2004).

But a number of factors contributing to e-learning mean that quality assurance in this context is important (Alexander and McKenzie, 1998). These factors include:
- outcomes that do not match the available budget and time frames
- poorly designed courses
- software development without adequate planning
- learners not having access to the supporting technologies and lacking the capabilities to be more responsible for their learning
- increased workload for staff (Connolly and Stansfield, 2007)
- student isolation leading to adverse outcomes including lower levels of motivation and higher rates of attrition (Carr, 2000; Rovai, 2002).

Quality in e-learning
One of the pre-conditions of quality in e-learning is for it to be widely accepted by staff. But staff attitude has been identified in a number of studies as being a barrier to the acceptance of

e-learning (Pajo and Wallace, 2001; Sellani and Harrington, 2002; Newton, 2003). These staff-related barriers include increased time commitment, lack of incentives or rewards, lack of strategic planning and vision, lack of support, and philosophical, epistemological and social objections (Newton, 2003).

However, it is not just staff attitudes that act as a barrier to the uptake of e-learning. For example, students, employers who are cautious of e-learning and governments who do not recognise e-learning qualifications are also problems. But these stakeholders' confidence could be restored through the development of a supporting framework for quality e-learning in higher education.

The ISO (2007) is developing a comprehensive quality framework for e-learning. The US Institute has also provided quality assurance benchmarks (Gunasekaran et al., 2002). These include a documented technology plan that incorporates, at a minimum, back-up systems and reliable delivery as well as appropriate security. Other benchmarks cited were established standards for course development, design and delivery, good facilitation of interaction and feedback, and the application of specific standards for evaluation.

A more teaching and learning focused framework was developed by Boticario and Gaudioso (2000, p. 121). Its components comprise:
- an interactive and online resource model, provided through a Learning Management System, that considers staff, students and other stakeholders at various levels
- significant and active learning, created by stimulating student participation in the various learning resources
- individualised communication to learners
- a 'community of practice' with capability for knowledge sharing and collaboration among learners.

Adequate support for students in e-learning includes advance course requirements information, close personal interaction, and having the same access as their on-campus peers to the library, academic counselling and advice. They should also have equally rigorous assessments as their on-campus-peers. Plagiarism, authentication and online academic misconduct must also be addressed (Newton, 2003). Thomas (1997) adds provision of learning materials and appropriate facilities and enabling questions and discussions.

At a faculty level, Alexander (2001) outlined proposals that included development of a vision for e-learning, development of workload policies that take into account e-learning's demands, technical support for both staff and students, market research support, and provision of time release for staff engaged in e-learning developments. Zhao (2003) has a much broader framework with only three components: course effectiveness, adequacy of access in terms of technological infrastructure, and student satisfaction.

Revisiting Owlia and Aspinwall's (1996) dimensions in an e-learning context and taking into account the literature reviewed for this article, the following key factors to support quality in e-learning in higher education can be identified:
1. Tangibles – the technology that gives easy access with necessary security provisions, as well as a platform for opportunities and services such as an online library and research.
2. Competence – capable technical support.
3. Attitude – ensuring students' satisfaction through an appropriate interaction and feedback system (which also entails monitoring, counselling, guidance, and technical support).
4. Content – effective course design and development that successfully achieves learning outcomes.
5. Delivery – effective presentations that facilitate practical work (where necessary) by, for example, simulation; delivery that actively involves students at both group and individualised levels.

6. Reliability – setting of evaluation standards and success criteria; assessments equivalent to that of traditional delivery; handling of plagiarism, authentication, and online academic misconduct; the use of market research to plan and test the outcome of e-learning.
7. Globalisation – customisation of format for online delivery and ensuring language accessibility.
8. Creating communities of practice – creating formal and informal communities for questions and discussions.
9. Developing an e-learning vision, strategies, policies and plans – policies should include workload and time release to enable effective participation and development of e-learning activities.

Areas for further research
There were suggested areas. Firstly, the mapping of the quality dimensions needs to be validated and refined by primary research. Secondly, the issue of workload needs to be addressed. Questions could include: does e-learning save time or take time off the teacher? Are there intervening factors such as phases in development, e-learning skills, and the experience of the teacher that decide whether e-learning saves or consumes time? Finally, what are the relationships between the proposed dimensions of e-learning and their counterparts in higher education e-learning quality (and if they exist, what is their significance)?

10 ECONOMICS OF E-LEARNING

Making relevant financial decisions about technology in education

Author: Annand, D.

Reference number: 3

Background
In assessing the costs of e-learning delivery it is important to distinguish between direct costs such as the cost of the LMS and indirect costs, for example institutional insurance. There are also variable costs that change (e.g. student text books) depending on the number of students enrolled, and fixed costs such as staff salaries. But all costs vary over time so organisations need to determine the time frames in order to differentiate between fixed and variable costs.

Differentiating these costs is important to obtain an accurate picture and avoid sub-optimal purchasing decisions. In e-learning this is also important as it tends to have higher fixed costs than its traditional delivery counterpart.

Cost-volume-profit (CVP) relationships
This is a more accurate method of predicting total costs once costs are allocated correctly to either the fixed or variable category. CVP analysis is underpinned by calculating the total contribution margin (total revenue less total variable costs), then the net revenue (total contribution margin less fixed costs). So to break even, the total contribution margin needs to equal total fixed costs. The contribution margin is the gap between revenue (i.e. course costs) and variable costs (e.g. student textbooks). CVP analysis can help determine other critical decisions such as which course to fund (the one that has the higher contribution margin).

Segment margin analysis
But CVP analysis assumes all direct costs are fixed costs. However, this may not be correct. Therefore, to obtain a more accurate picture, organisations should use segment margin analysis, which differentiates the fixed costs as either direct or indirect. It is important to recognise that direct fixed costs only include those that can be controlled by the organisational unit or activity under consideration. This analysis highlights the danger of making decisions based on arbitrary allocations of costs.

Relevant costs

Arbitrary allocation of costs can be avoided if organisations determine their relevant costs. These costs need to differ between alternatives. They also need to take into account future costs; but these future costs also need to take account of sunk costs. For example, if a Learning Management System's implementation runs over budget, the sunk costs should be discounted as they are irrelevant to the future costs and benefits. In this scenario, although both options (continuing or termination) would lose money, less would be lost by continuing and the organisation could still benefit as per the original proposal.

Relevant costs only pertain to those that involve cash outlays. Once monies have been committed, decisions need to be made as to how much more will be required and the expected benefits. As with the above scenario, monies already invested cannot be recouped so it may be more cost-effective to continue, even if it is operating at a loss, and a decision made to keep the course only when hardware needs to be upgraded, for example, as this effectively restarts the process.

Time value of money

But the cash inflows and outflows associated with e-learning may occur over a lengthy time frame. Therefore it is important for organisations to calculate not only the future costs but also the present value using standard formulas and techniques, as this can determine if an investment will generate positive returns in the longer term.

Discounted cash flow (DCF) analysis

These future cash flows that differ among alternatives when combined with time value for money are the essential components of DCF analysis. This technique allows decision makers to translate future cash flows that are projected to occur at different times back to the same point in time by using present value techniques. This allows a more accurate assessment of investment alternatives.

Activity-based costing

In situations where broad categories of costs are insufficient or inaccurate, organisations can use more detailed breakdowns to assess costs. For example, rather than having a costs category of salaries, activity-based costing would break down this category into individual salaries as well as including other fixed costs such as rent, office supplies and utilities. But this breakdown should only occur at a level that is meaningful and will add value to the overall analysis and decision.

Where possible, costs should be allocated to pools such as administration, which would include not only salaries but also office supplies. Allocations within this pool should be identified, and they need to have some relationship with how costs are actually incurred. Finally, an appropriate hourly rate for each type of cost needs to be determined.

It is important for organisations to remember that initial estimates do not need to be extremely accurate. They are just that, estimates: over time if they are grossly in error the results will be obvious and adjustments can be made. But activity-based costing that is time driven can provide more accurate information about the costs and underlying efficiency of value-creating processes.

Costs of e-learning scoping exercise: report

Author: Bacsich, P.

Reference number: 12

Background
This is a discussion paper for the Joint Information Services Committee (JISC) Teaching and Learning Committee on areas for future funding that would build on their earlier project that attempted to identify the tangible benefits of e-learning. It was based on a brief desk-top research exercise and consultation with experts.

Methodology
The sector expert consultation acquired greater prominence due to the lack of available literature and the limitations of web searching on this particular topic. This is because many relevant agency reports either are not publicly available or have meta-data that does not support easy access to it.

US and UK e-learning costs literature
In the US only eight relevant pieces of literature were identified and in the UK only two. E-learning is of increasing interest to US institutions but the overall field is hampered by the lack of availability of data/literature and even the most expert sector in this context – for-profit universities do not share their methodologies or results. In the UK many agencies are aware of its increasing importance and the lack of supporting information and evidence. There are individual institutional examples but no wider exercises have been identified.

Work planning
Work planning is a critical component of costing but is an area that is largely neglected in UK universities. However, the University of Leicester has done some detailed work in this area. This consists of an annual bidding round for allocations for non-delivery costs. Other areas are determined by set formulas. At the time of writing they were commencing a formal project to determine their e-learning costs.

Australia, Canada and New Zealand
There was no relevant literature available in any of these countries. Local experts in both Canada and New Zealand indicated that costing of e-learning was not a strong topic at their universities.

Costing methodologies
Costing of e-learning is one of the identified weak areas within the UK's benchmarking methodologies. There is little evidence of work planning or activity-based costing exercises in this context.

Activity-based costing (ABC) is defined by Wikipedia as: 'a costing model that identifies activities in an organization and assigns the cost of each activity resource to products and services according to the actual consumption by each in order to generate the actual cost of products and services for the purpose of elimination of unprofitable and lowering prices of overpriced ones. In a business organization, the ABC methodology assigns an organization's resource costs through activities to the products and services provided to its customers. It is generally used as a tool for understanding product and customer cost and profitability. As such, ABC has predominantly been used to support strategic decisions such as pricing, outsourcing, and identification and measurement of process improvement initiatives.'

Methodologies that can be used include in addition to activity-based costing are 'Flashlight'. This methodology from the US has a supporting handbook that allows users to develop an economic model which describes patterns between the use of key resources such as time, money and space. However, like a similar JISC-funded methodology (CNL and Insight), it is a derivation of an activity-based costing model.

The US developed a methodology referred to as TCM (Technology Costing Methodology). This is an authoritative costing analysis tool that includes standard definitions of cost categories and allows institutions a) to analyse the costs of instructional approaches that make significant use of technology and b) to legitimately compare cost data for different teaching approaches. But this has not been widely adopted outside the US.

The former British Educational Technology Agency (Becta) developed a Total Ownership Cost (TCO) model. It quantifies the visible costs and importantly makes assessments on 'hidden' costs such as where staff informally support each other. The model also goes beyond pure costing to assess a range of additional outcomes, including user satisfaction, service reliability, and appropriateness. But it has not being used in the tertiary sector despite its increasing uptake and importance in schools.

The Higher Education Funding Council for England (HEFCE) has developed a costing model for use in the tertiary sector that will help institutions determine their costs associated with teaching. But at the time of writing this did not have an e-learning component. This reflects Bell and Farrier's (2008) assertion that 'costing models and workload models which take into account the extra requirements for e-learning have yet to be developed'.

Other work

Professor Diana Laurillard (a UK e-learning expert) has identified several limitations in the existing sector approaches to costing:

- There is no consistency in methods to cost and measure these for new technologies across institutions.
- There is no consistency in the parameters used to compare costs of e-learning and traditional delivery across institutions.
- There is an absence of critical literature.
- Existing costing models provide little assistance for institutions who are trying to estimate their organisation-wide, department or course costs.

In her view, this situation exists because existing models and initiatives are trying to provide a definitive and generalised answer to the question of whether e-learning is cost-effective, which is not possible with an emerging educational innovation. She presents an alternative model which would incorporate the following cost-specific components:

1. Definition of the cost parameters that can be associated with comparative benefits.
2. Focus on the major cost driver of staff time.
3. Support of the local exploration of the cost-benefit relationship.

This model is intended to assist prospective planning for the internal relation between critical benefits and their related costs. However, it only focuses on easily identifiable teaching- and learning-related benefits and costs and does not explore less tangible benefits such as flexible study and wider accessibility for off-campus students. Furthermore, the model cannot be generalised and would have to be checked as costs and benefits depend on the specific institutional context.

Recommended system

Based on the available literature, existing initiatives and expert views, any costing system used must:

1. align with any existing national or sector models
2. use a range of tools within a general methodology so it is more flexible and allows institution-wide and localised costs to be determined
3. reflect the language and culture of institutions
4. be able to easily incorporate additional measures such as student-generated content
5. focus on a development, not an audit-type, approach
6. incorporate both quantitative and qualitative measures
7. have no limits on how e-learning is defined and used.

Evaluating the cost effectiveness of online and face-to-face instruction

Authors: Bartley, S. J., and Golek, J. H.

Reference number: 17

Background

The growth of internet and technology use has led to renewed emphasis on e-learning within institutions, as it provides unique opportunities to reach larger numbers of learners than was possible previously. For example, universities can now provide distance learning to a wider

range of learners including international students. E-learning is particularly valuable for learners who need to balance study, work and/or family commitments.

The rapid adoption of e-learning has created a gap in the literature. Many studies focus on comparing e-learning with traditional delivery rather than evaluating the ability of an online course to meet its pre-determined goals (Newton et al., 2002). There is a lack of conclusive research concerning the effectiveness of e-learning. Cost comparison factors could serve as the primary criterion to determine the choice of methodology. But from an institutional perspective the question is how to determine the cost-effectiveness of e-learning when compared piecewise with traditional delivery.

Theoretical framework

The technological infrastructure necessary for e-learning is now firmly established. But if universities fail to recognise the large potential commitment of time and resources to the development, maintenance and upgrading of these systems a significant drain could be placed on the organisation's finances and resources.

Traditional delivery has many established models for optimising the learning process, but e-learning lacks these. This can lead to unsuccessful attempts to replicate traditional delivery within e-learning environments. This restricted pedagogical view is hindering e-learning, not the available technologies. The main e-pedagogies are student-centred and experiential learning.

The ILDIC (Integration Learning Design in Multimedia CD-ROM) model identifies many core requirements for e-pedagogy. These include the need to incorporate conventional pedagogy, the ability to plan and manage events online, an understanding of the current and future potential of technology, and the ability to incorporate e-learning into the course design (Good 2001).

In addition, Taylor (2002) asserts that e-learning needs to consider additions to traditional delivery through the use of multimedia and synchronous and asynchronous programmes, assessing learner needs, the teacher's learning curve, ability to access course material and distribute its information, techniques to measure results and manage an e-learning environment, and costs. To meet these requirements an infrastructure has to be developed to support it (Evans and Haase, 2001).

Wild et al. (2002) discuss the development of an e-learning value chain within organisations that includes the following steps: assessing and preparing organisational readiness; designing appropriate content and presentations; and implementation. Bates (1995) recommends using the ACTIONS model to assess e-learning. This model includes consideration of the access, costs, teaching and learning, and the interaction, organisation, novelty and speed of the e-learning intervention being developed.

Benefits and limitations of e-learning

E-learning reduces costs by removing the need for learners to travel to study or participate in learning activities with their peers (Cornford and Pollock, 2003). Economic benefits include the ability to reach new learner markets, the ability of e-learning to recover costs quickly, and the reduced time to introduce new courses (Bartolic-Zlomislic and Bates, 1999).

There is a lack of evaluation of e-learning (Kilby, 2001). Other limitations include limited literature relating to the financial constraints associated with e-learning. Swanson (2001) proposed a way to show the costs and benefits of e-learning, but others have focused little attention on cost comparisons between different programme options. For example, Phillips (1997) proposed that costing methods should determine 'fully loaded costs' – all costs identified and linked to the design, development and implementation of a specific programme.

While Phillips provided a cost matrix for a fully loaded programme, this stopped short of a comparison between different programmes. A final limitation identified is an overemphasis on technology at the expense of teaching and learning.

Models for determining the costs of e-learning

Determining the costs of e-learning is an essential component for organisations to decide if particular technologies are appropriate. The value-add of e-learning is important, but the costs and whether these are justifiable also need to be considered. Bartolic-Zlomislic and Bates (1999) suggest dividing cost factors into three groups: capital and recurrent costs, production and delivery costs, and fixed and variable costs.

Capital and recurrent costs include such things as equipment and its associated support. Fixed and variable costs are those that either remain constant regardless of the number of learners (fixed) or change with the number of students (variable).

Calculating the return on investment (ROI) of e-learning

Without a comprehensive evaluation of the costs and expected savings to be achieved through the implementation of e-learning, organisational leaders will have difficulty approving the necessary funds for its development. To calculate ROI requires only knowledge of the net programme benefits and costs. But many are unwilling to make this ROI calculation because the benefits cannot be accurately predicted and determining them requires some complex assumptions about the effectiveness of a programme that has yet to be implemented. In contrast, calculating the costs is relatively straightforward.

Evaluating the costs of e-learning vs. traditional delivery

In most situations it will be true that experienced staff with sufficient time can develop e-learning programmes that will become more cost-effective than traditional delivery. However, this does not take into account the large initial expenditures on new equipment and training and the substantial time that may be required to implement an effective e-learning programme. These start-up costs can often be prohibitive for many organisations (Bartolic-Zlomislic and Bates, 1999).

Consideration of e-learning costs is not new. In addition to Bartolic-Zlomislic and Bates, Turoff (1997) discusses the costs for the development of an online university under a set of assumptions. These assumptions include that there will be a group-oriented communications system, faculty are familiar with the technology, and the internet is the primary delivery mechanism. However, for many organisations these assumptions are unrealistic.

Matrix for determining e-learning costs

The authors developed a comprehensive cost matrix. They structured it to be consistent with the basic Instructional Systems Design (ISD) model for training (Beckschi and Doty, 2000). Each stage of the model (i.e. Analyse, Design, Develop, Implement and Evaluate) is associated with a set of costs that would be relevant for e-learning, traditional delivery, or both.

Its key elements are summarised here. It has two separate areas for e-learning and traditional delivery, which are broken down into one-off and per-session costs. To allow for a valid comparison to be made, costs are divided into four broad categories based on the ISD model stages: analysis, design and development, implementation, and evaluation. The components that make up analysis include office supplies and expenses, printing and reproduction, external services, equipment, and general overhead allocations.

In addition to the analysis category, the design and development category also includes the design and development team, user interface, function elements, graphical resources, programme materials and supplies, and computer resources. The unique components of the implementation category are learner and teacher costs, student replacement costs, lost production, and facility costs. The different component for the evaluation category is the evaluation team.

The matrix also provides a set formula to calculate the totals for each of the relevant costs, that is, fixed costs for training session, per-session training costs, anticipated number of training sessions, total overall costs for all sessions, and total overall costs. In determining the costs, an institution would consider the programme being developed, the number of times it will be used with and without updates and the total number of anticipated learners. Using these factors along

with knowledge of the existing technological infrastructure, the organisation can use the matrix to make a comprehensive evaluation of the cost-effectiveness of the proposed e-learning programme.

Tangible benefits of e-learning: does investment yield interest?

Author: Joint Information Services Committee (JISC)

Reference number: 49

Background
Despite the massive investment in e-learning by organisations, it is unclear whether this has delivered tangible benefits. This briefing paper summarises a JISC-led project, in partnership with the Association of Learning Technologies and the Higher Education Academy, that worked with 16 universities and eight subject areas to try and determine what evidence is available relating to the return on investment in e-learning.

The project produced 37 case studies which show clear evidence of a range of significant benefits resulting from investment in various types of e-learning activity. For the purposes of this bibliography the benefits relating to cost savings and resource efficiency will be the focus. However, the project also found evidence of a return on investment in the following areas:
- Recruitment and retention.
- Skills and employment.
- Learner achievement.
- Inclusion.
- Widening participation and social equality.

The project also noted that there were often clear differences between the various subject disciplines in terms of technological and pedagogical innovation. In some subject areas, there are well-embedded practices that in another subject area would be considered quite innovative.

Cost savings and resource efficiency benefits
Arguably the most readily quantifiable cost savings were identified in the area of e-assessment, where automated marking of examinations for large learner cohorts could be done in seconds rather than hours. Other savings resulted from the improved ability to deal with larger numbers of learners, even where they were geographically spread. The use of e-portfolios also resulted in cost savings.

Institutional strategic implications
Institutional strategies are providing top-level support for initiatives that improve teaching and learning but they appear rarely to be the key driver for innovation. There is a clear need to ensure close alignment between strategy and policy in an e-learning context and they both need to keep pace with developments within the institution and wider society. The use of social media is one clear example and all academics need exposure to current technologies and sound advice on how to apply these to teaching and learning.

Economics of e-learning in the 21st century

Authors: Kasraie, N., and Kasraie, E.

Reference number: 54

Introduction
High costs are one of the factors affecting the changes and transitions occurring in education. Higher education institutions have responded by using advanced information technologies (Palloff and Pratt, 2000). These new technologies have helped higher education institutions save money through improved processes, distance education, and reduction in costs. At the same

time, it has led to increases in personalised learning and enrolments as well as expanding the scope and content of the curriculum (Horgan, 1998).

Different organisations and industries have used e-learning in a wide variety of contexts. In a business context, e-learning refers to the strategies that particular companies use to deliver training to their employees via their network. It is a planned learning experience that uses a wide spectrum of technologies. In contrast, e-learning in a higher education context refers to a delivery mode which allows students to reduce (in some cases significantly) the amount of their on-campus, face-to-face interactions and activities.

Any system using e-learning consists of four major components: teacher, learner, course content, and technology. Each component has specific needs and characteristics, and faces different challenges. Any change to one of these components also requires changes to the other three in order to achieve the same goal (Leh, 1999).

E-learning has helped secure a strategic advantage for higher education institutions and is a major initiative for them. For e-learning to be truly effective it needs to be more interactive than traditional distance education. It does present challenges for learners, including the requirement for high levels of competence with ICT as well as increased motivation and self-discipline. But there are challenges for institutions as well, such as the need for their admissions systems to include an assessment of a learner's ICT competence, motivation and suitability for e-learning and needing to provide induction programmes that meet students' requirements in terms of academic level, flexibility, and content.

Cost-efficiency
Faculty and administrators often ask if e-learning is as effective as traditional delivery, and expect a simple yes/no answer. But it depends. Before an institution begins its e-learning design and development phase, it is necessary to understand the difference between efficiency and effectiveness. In order to compare the effectiveness of the two different delivery modes, it is necessary to compare the economics of e-learning with traditional delivery.

The following formulas clearly distinguish between cost-efficiency and cost-effectiveness:
- TCTP – TCNP = PNS where TCTP equals the total administrative costs of the former programme, TCNP equals the total administrative costs of the new programme, and PNS equals the projected net savings.
- TACT / number of students = CPS where TACT equals the total administrative costs of training, and CPS equals the cost per student (Setaro, 2001).

A simple calculation clearly shows that e-learning is demonstrably more cost-efficient than traditional delivery. Traditional delivery incurs travel costs for students and variable costs related to utilities and building and maintenance each time and the economies of scale cannot be realised to the same extent. But these calculations do not capture the entire return on investment, which is necessary to ultimately consider the effectiveness of the training as determined through evaluation. Only then can cost-effectiveness and efficiency be compared (Carnevale, 2003).

To understand the total benefits derived from e-learning, specific metrics and standard measures of effectiveness must be defined. This will allow the cost-effectiveness and return on investment (ROI) of an e-learning project to be assessed. Standard, end-of-course evaluations are insufficient for this purpose.

In order to calculate the true percentage of ROI in an e-learning project, Setaro (2001) offers the following standard measures: multiply the total benefits (TB) of training in dollars by 100 and divide that by the total training cost (TTC). TB (in $) x 100 / TTC = ROI%. But the major challenge in this model is representing total benefits as a dollar value. Some researchers believe that this is not possible.

Benefits and dollars
There are two types of benefits: hard and soft. Hard benefits such as increased productivity are relatively easy to convert into dollar values because they are objective and easily measured. In

contrast, soft benefits, such as improved communications within the organisation, are more subjective and much harder to measure. But can these intangible benefits be measured?

Often survey research is utilised to convert soft benefits into dollars in organisations. An alternative approach would be evaluating the extent to which training achieved its instructional or performance goals. Not considering the cost factors of training, this model can test the effectiveness and soft benefits of such initiatives. Other e-learning benefits that are more easily converted into dollars include the savings on participant travel and any related accommodation and food expenses.

E-learning economy
This involves delivery of educational services and is largely funded in an institutional context by taxpayer monies and students' tuition fees. This is heavily regulated because of the existence of a rigorous accreditation process. Another major component is educational content, which, although controlled by the private sector, is heavily influenced by institutional requirements and associated legislation such as copyright laws. Finally, there is infrastructure, which traditionally refers to physical buildings and their associated costs including utilities and maintenance.

This shows that most educational expenses are incurred by the institution not the learner. However, the internet impacts these components in a number of areas (Weippl, 2002). This is because it changes the nature of service provision, content and infrastructure, creating new spending in some areas, decreasing it in others. But the expectation is that per-student costs will decrease. However, this is offset by larger numbers of learners because of increased efficiencies.

Conclusions
Faced with the choice between providing the same type of education to a smaller number of people or adapting to more cost-effective educational delivery methods, institutions will opt for the latter. As the overall costs decrease and the numbers of students increase, institutions can provide more specialised and higher education for a greater number of people.

The growth of e-learning is due in part to its competitive cost advantage. In the US context, regardless of economic growth, increasing expectations of capital efficiency will force organisations to continuously reduce cost/hour of learning delivery. But even if the costs benefits are unrealised because of the more expensive content, mature organisations are still likely to shift to e-learning because of its performance benefits.

A recession is likely to benefit e-learning because it is a proven cost-friendly alternative to traditional delivery. E-learning is also more efficient in providing training. Finally, e-learning's market share is likely to increase because of improvements in technology infrastructure combined with lower data access costs.

Economies of scale and scope in e-learning

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Reference number: 78

Introduction
The drivers for e-learning and its expected advantages have shifted from simplistic discussions of monetary costs and benefits towards emphasising the potential pedagogic gains and positive impact on student learning. For example, surveys carried out by the Observatory on Borderless Higher Education among their member universities reveal that cost cutting ranks only tenth among the drivers for adopting e-learning (Garrett and Jokivirta, 2004).

In fact, it has proven impossible, despite many years' experience with e-learning, to identify the costs associated with it, let alone quantify the benefits in financial terms. But despite the lack of evidence for positive economic effects of e-learning, 'economies of scale' are sometimes used as a potential justification for investing in it.

The economic argument for expanding e-learning has suffered from a lack of discussion of where the gains might arise and whether the supposed benefits are due to scale effects at all. In particular, economies of scope are rarely mentioned, even though this is clearly what is being referred to. It this confusion between economies of scale and scope that this article attempts to address in order to promote a clearer analysis of what e-learning can offer higher education.

Scale, scope and size

In traditional economic terms, economies of scale are savings that accrue from falling average unit costs as output volume expands. In e-learning terms, these declining unit costs are a function of fixed costs being spread over more courses being delivered and longer production runs, which result in a decreased proportion of staff time being spent on redevelopment activities.

A further important component in this context is learning by doing. This adds a dynamic aspect to an otherwise essentially static concept. Learning by doing (or repetition) reduces costs, as teachers progressively refine production by developing the specific skills needed for efficient operation, which in turn assists with finding solutions to operational problems and the elimination of unnecessary processes.

Economies of scale were a prime rationale underpinning investment in the UK's e-University. They were defined in this context in three separate ways: in terms of target markets, in terms of the costs of developing learning materials, and through the use of a common technology platform and e-tools framework which other institutions could use, thereby sharing development costs, experience and expertise (Higher Education Funding Council for England, 2000b).

However, sharing of experience and expertise are actually economies of scope not scale. Importantly, these gains can be realised simply by sharing common technologies without an underpinning platform. Similarly, economies of scope can be realised in development activities without reuse of components in a number of different end-products.

The definition of economies of scale as outlined above begs the question in this context of output of what? In economics this typically refers to a single product at a single location. However, this can be broadened to include a range of products produced by a single organisation. In these cases there can be two sources of economies of scale. The first relates to increasing the output of a single course. Overall economies of scale arise when the output of a number of courses that share inputs, such as teaching staff, are jointly produced by an academic department.

But is size the most important variable in reducing costs? For example, size can be increased by taking on more unrelated activities. Economies of scale may also have negative aspects, for example courses becoming further out of date as production runs lengthen.

However, there is also an important distinction between internal and external economies of scale. When an organisation increases production and reduces unit costs, internal economies of scale have been achieved. In contrast, external economies of scale have been achieved in the UK tertiary education sector through the provision of inter-university authentication systems and network infrastructure, and the distribution of and access to e-resources (JISC, 2006).

The best-known ways to achieve economies of scale are the spreading of fixed costs, use of specialised assets (including people), and division of labour. Higher education fixed costs include course development and the provision of IT infrastructure. While some inputs such as research and development, marketing and recruitment, and professional labour are expensive, generating increased efficiency can lead to a reduction in average costs. Increasing staff expertise is one way to generate efficiencies.

Centralisation of resources may lead to economies of scope. Economies of scope are cost savings that result from the sharing of inputs, including knowledge, across the processes used in the production of different, but related, products. Examples of economies of scope include spreading the impact of successful brand images and reputations and sharing research and development.

Economies of scale and scope can co-exist because the former is volume related whereas the latter is variety related. This may be why they are often not differentiated and tend to be conflated into economies of scale. It may also be because it is difficult to meaningfully define units of output in multi-product organisations like universities.

Some economists actually use the term economies of scope to refer to limited economies of scale (Baumol, Panzar, and Willig, 1982). However, this article differentiates the two: economies of scale typically refer to the efficiencies associated with increasing the scale of production of a single product. In contrast, economies of scope refer to efficiencies associated with increasing demand for a range of diverse but related products.

If both are applied intelligently, organisations can reap the benefits of increased size and products and activities that are greater in scale and scope. Exploitation of economies of scope allows large organisations to effectively serve smaller market niches, as achieving economies of scale would not be the prime driver of cost-efficiency.

But it is important to recognise that larger size can cause problems for higher education institutions. For example, diseconomies of scale in marketing and recruitment could outweigh the economies of scale in production. If an institution increases its online student market, it must also cater for a greater diversity in student experiences and hardware/software. In doing so, it may negate any benefits to be gained from attracting extra students.

This also applies to putting materials online where users are required, or want, to print them off; the savings from the former are negated by the costs of the latter. Similarly, offering more courses may reduce enrolments in others and increase complexity for staff. Diseconomies of scope can also outweigh economies of scale. For example, savings generated by sharing inputs may be less than the costs associated with the additional labour skills needed to design and develop new subject areas and/or market them to new student groups.

The evidence for economies of scale and scope in e-learning – the 'globalisation' of higher education
A common theme in the globalisation debate and discussions is the development of an organisational strategy which stresses common global elements. This includes establishing a physical presence in other jurisdictions as well as other modes of overseas delivery and student mobility. Costs are arguably not the primary driver here as such things as government encouragement, regulatory effects, and increasing competition may be more important (Yip, 2003).

The most obvious incentive for institutions to offer internationally based provision is the potential size of the student market. But substantial investment is needed to create a curriculum to appeal to these markets. There is also the problem of fee setting, which needs to reflect the local not the international market. The obvious solution to these problems is achieving economies of scale. However, institutions attempting this have not been successful. Failures in this context are often because the demand and development times were underestimated.

Reaching new markets relies on economies of scope, not scale, whereby institution-specific provision is offered across a wider range of locations and/or to meet more diverse student needs and requirements (Collis, 2003). This tends to be the approach adopted by institutions. Despite what some writers (e.g. Wilson, 2005) have suggested, potential economies of scale in e-learning do not create global markets.

National policy interventions
In the UK there has been a shift from funding centralised initiatives in favour of allocations to individual institutions. The major justification for funding centralised initiatives is the presence of strong external economies of scope and scale which outweigh other diseconomies associated with centralisation such as increased bureaucracy, monitoring and compliance costs. For example, the primary rationale for investing in the UK's e-University was the supposed potential economies of scale.

However, UK agencies are increasingly shifting their emphasis from economies of scale to economies of scope. For example, the Higher Education Funding Council for England (HEFCE) intends its most recent e-learning strategy to be implemented through a partnership approach.

This would be achieved through such measures as 'co-ordinated strategic management approaches to development of e-learning', evaluating and disseminating 'national and international good practice in e-learning', and 'increasing opportunities for interoperability of materials through common standards in order to promote sharing' (HEFCE, 2005b). Similarly, JISC while ostensibly promoting economies of scale to achieve effective e-learning in higher education, will reach this objective through economies of scope such as producing guidance, developing standards-based systems for federated access management and repositories, and enhancing interoperability of systems within and between institutions (JISC, 2007).

Institutional level

A study of US universities by Laband and Lentz (2003) found that the economies of scale combined with the economies of scope in research and graduate teaching were sufficiently large to offset the diseconomies of scale in undergraduate education. However, the evidence for economies of scale in e-learning at the institutional level is limited. For example, a UK project found that the only consensus among participating institutions was that costs and benefits could not at present usefully be measured (HEA, 2006).

Nonetheless, exploiting internal and external economies of scope allows institutions to feed off their traditional delivery, and blended and fully online delivery modes through sharing knowledge, pedagogic innovation, and reusing course materials. Within and across institutions, the development of federated repositories of digital teaching and learning objects promotes the possibility of re-purposing materials for use in different contexts (scope effects), rather than simply replicating their use in their original form (scale effects).

Units of study

Economies of scale and scope are more likely to be achieved at the course level as this is where most e-learning provision resides. Even at programme level few are done entirely through e-learning and even though the number is growing it represents only a small proportion of total provision. This has led to initiatives attempting to achieve economies of scale through the reuse of courses and the development of reusable learning objects. The economic argument used to justify this is that fixed costs of developing e-learning materials are high, while the variable costs of delivery are low, relative to those of traditional delivery.

However, lower distribution costs need to be balanced against higher costs in other areas such as student support. This has led to a realisation that economies of scale at this level are not automatic, and depends on the way the course is designed, especially in regard to student support and assessment (Weller, 2004a, b; Laurillard, 2007).

However, economies of scope can be achieved through the creation and exploitation of digital assets (Rayport and Sviokla, 1995). Typically the development of digital learning object repositories is rapidly reducing the costs of discovering, evaluating and modifying reusable course materials. Discovery costs are reduced by allowing multiple repositories to be searched simultaneously. Evaluation costs can be decreased by using a peer review system. Modification costs can be lowered through adherence to agreed standards.

If output is measured in terms of enrolments, differential retention rates between modes of delivery are not important. But if completions are the measure, low-support, low-retention modes of delivery like large-scale e-learning are much less attractive, economically. Content-heavy, teacher-centred pedagogies may be less expensive than student-centred ones (Weller, 2004a; Laurillard, 2007). But redesigned courses can raise quality at the same time as reducing costs even when large numbers of students are involved (Twigg, 2004).

It is difficult to accommodate diverse staff and student preferences in wholly online courses without substantial investment in staff-intensive communications which assist in building student engagement and retention (Department for Education, Science and Training, 2003). But

other courses that are designed around communities of practice rather than content engagement are much more successful.

These initiatives exploit economies of scope by using common capabilities to serve multiple (formerly discrete) student market niches. This is possible through low-cost, enabling technologies, such as reliable web conferencing and meeting systems, and video and other rich content streaming, which facilitate the kinds of teacher-student communications that they are both used to and value in traditional delivery environments.

The 'new' economics of scale and scope
Universities need to stimulate and exploit collaborative opportunities. This need not occur with other geographically dispersed institutions. For example, it could involve the sharing of best practice. It might also be realised through cross-pollination of ideas to inform innovation. Finally expertise can be shared which would improve decision making. This can be referred to as the economics of knowledge sharing.

But there are significant barriers to collaboration. The two major ones noted here are the strong local groupings within universities and their organisational complexity. Local groupings may resist external ideas and influences and complexity makes it more challenging to connect knowledge. To overcome these barriers universities need to develop strategies to promote collaboration and realise knowledge economies of scope. At an operational level this might mean adjusting recruitment and promotion criteria for staff and generating cross-cutting rather than hierarchical or departmentally based communications mechanisms.

Universities can also exploit the economies of reach, whereby they can exploit the vastly growing networks to attract new students. The larger size and spreading of fixed costs (scale effects) combined with increasing variety of use (scope) and the breadth of users (reach) provide the ability to simultaneously reduce prices and increase the variety of services.

But e-learning is increasingly attractive because of not only its greater reach but also the increased quality of communications enabled by the availability of greater bandwidth and the development of new social software systems. But these virtual networks cannot replicate the depth of social relations which, for many students, enhances their performance (Duke, 2002). Economies of scale and scope now interplay in a cycle driven by specific technological developments such as digitisation of content, managed learning systems, and dynamic networks.

For example, the internet creates new sources of economies of scale. However, it has the same effect on economies of scope when the new related technologies (such as Web 2.0) reduce in costs and become more flexible. This makes it easier to manage increased business complexity and allows common capabilities to be exploited to serve smaller, niche student markets as well as existing ones.

To realise the benefits of the economics of knowledge sharing and reach, higher education leaders and policy makers need to recognise and understand their existence and take appropriate action. This includes both reducing the barriers to collaboration and promoting knowledge sharing and investment in ways of exploiting the possibilities for e-learning offered by enhanced reach.

The financial benefits of e-learning

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Reference number: 82

Introduction
Technology is widely viewed as an aid to productivity. In addition its ability to lower costs, increased output through automation, fast information processing, and improved communications make it an important competitive tool. In an educational context e-learning is viewed as a means for making teaching and learning potentially more interactive, effective,

efficient and accessible. Costs are also of paramount importance to tertiary institutions in the context of course development and delivery. Rumble (1997) argues that financial analysis of education design and delivery is 'central to the planning and development of education systems' (p. 2).

The productivity benefits for e-learning in a workplace context are well established (e.g. Rosenberg, 2001; Rueda, n.d.). However, little work has been done on whether or not this is the case in the education sector (Rumble, 2001). According to Cukier (1997), most existing studies are more concerned with the cost-effectiveness of distance education compared with traditional delivery, although there are some exceptions (Boeke, 2001).

Typically institutions fund e-learning at the strategic level but require limited financial accountability beyond the setting of an annual budget. However, increased accountability would be challenging. This is because e-learning projects have very high fixed costs and very low variable costs. This means the initial development costs are substantive and therefore any financial benefits would take time to accrue.

It is also difficult to isolate specific e-learning costs from those generally associated with course design and delivery. Adding to this complexity is the varied nature of e-learning projects, ranging from course adaptation to the development of simulations and digital media. Each of these projects has a unique mix of scope and cost.

This paper draws on workplace approaches to e-learning when costing these initiatives. It explores ways in which Tertiary Education Institutions' (TEIs') e-learning departments can proactively and transparently account for their activities.

TEI vs. workplace e-learning
Workplace e-learning budgets tend to be much larger than TEIs' because of the substantial savings they can achieve, particularly in the areas of travel, less disruption to productivity, and flexible scalability (Rosenberg, 2001). Of particular benefit to employers is the ability of e-learning to reduce the time it takes employees to become proficient at their job (Rueda, n.d.). This is more difficult for TEIs to achieve as they also need to consider learners' cognitive development.

While financial considerations are important for TEIs, it is harder for them to quantify the relative worth of e-learning expenditure than it is for workplaces. For workplaces, e-learning can be justified because of its contribution to four of their major criteria for business performance: cost, quality, service and speed (Hammer and Champy as cited in Rosenberg, 2001). While these are not easy to quantify for TEIs, they all affect their financial performance.

These criteria are defined as follows:
- **Cost** – the relationship between financial investment and financial return, the focus of cost-benefit analysis (CBA), and return on investment (ROI).
- **Quality** – better meeting and exceeding client expectations.
- **Service** – better responses to customer needs and improvements in their satisfaction.
- **Speed** – communications and information updating are possible in real-time.

What does e-learning cost?
More general costs associated with overheads, development and delivery should be considered when evaluating more specific e-learning costs (Rumble, 2001). But even with these clear categories, budgeting and controlling e-learning expenditure is very difficult. Little is known about the specific financial dynamics of e-learning although general principles are emerging. These include the following from Boeke (2001, p. v):
- E-learning is more expensive than traditional delivery. The major factors for this are communication costs and course design. Institutions not experiencing high costs in these areas are probably not effectively leveraging the technology.
- Planning costs substantially reduce development costs.
- People costs are generally the most significant for e-learning design and delivery.

One of the major challenges in this context is a general lack of reporting in the following key areas:

- **The actual scope of the recorded costs** – for example, should website development costs include those related to content as well as the technical ones? Does the cost include the scoping and evaluation?
- **The mix and management of personnel** – and their respective skills and experience in e-learning design.
- **The learning process required of students from the resource** – this could involve passive activity, for example reading or more interactivity such as completing a set of pre-determined tasks. It could also involve a passive link to another website or the preparation of fully interactive simulations. These activities cost different amounts to develop.
- **The level of the course being prepared.**
- **The level of overhead** – which differs from institution to institution, and in some instances is disregarded.
- **The actual quality or level of professional input into the finished product** – for example, there are major variations in the professional input and the quality that results when developing digital video resources.
- **The amount and state of pre-existing materials used in the design.**

If TEIs track the internal costs of e-learning, they obtain the benefit of being able to formulate an hourly rate that can be used to budget projects. It also has the advantage of clearly differentiating the real internal costs of production and those associated with outsourcing. In this context inclusion of overheads is critical as otherwise e-learning may appear to be less expensive than what it actually is. However, any hourly rate or equivalent figure should be fit for purpose and not overly prescriptive. This is in recognition of the trade-off that exists between what works and what is perfect in terms of budgeting and forecasting.

A project management approach

A project management approach is likely to help in the allocation of accountability and limited resources. Under this approach each project follows a formal design process, which is carefully managed and justified. Ideally projects would be justified on the following basis:

1. The student learning/access needs it will help to meet.
2. The advantages of the e-learning solution over the status quo.
3. The existing materials and resources that can be used in the e-learning solution.
4. The potential financial value of the project.
5. A detailed budget that includes contingency costs as well as projected ROI or CBA.
6. An overview of what is already available for purchase or licence, including their respective strengths, weaknesses and costs.

This approach will help determine if there will be any financial return on the project. This also helps an institution consider different implementation options including breaking the project down into smaller components, having it as a course-level solution or merely as one part of an existing course, or developing a solution through joint ventures or partnerships. However, projects with a broad application are able to justify higher levels of investment.

Determining ROI and CBA

Despite the fact that both ROI and CBA can be manipulated and therefore must be treated with caution, they can be calculated. The ROI is usually determined post implementation. It is the benefit less cost divided by cost, where benefit equals the profit or surplus and the cost is the actual amount invested in the intervention. For example, an ROI of 0.125 would indicate that every $1 invested in a project resulted in a surplus of 12.5 cents. This can be used to compare interventions.

The CBA divides the estimated benefit of the intervention by the cost of design, development, implementation, and evaluation. So if an intervention results in a return of $125 and costs $100

the CBA figure would be 1.25. The ROI in this instance would be 0.25. As these figures are broadly similar either can be used and this would be determined by the institution.

Costs
Costs include both direct (real) and indirect (associated) expenditure. Indirect costs are commonly referred to as overhead costs. For example, an employee represents a direct cost, whereas electricity, hardware and software are indirect or overhead costs. Overhead costs should be based on their total budgeted department expenditure divided by the number of hours they can be used for production. These can be used as the basis for determining internal costs. Overhead costs tend to be higher than actual production and development costs so should be listed separately.

While there are many ways that costs can be categorised (for example Bartolic-Zlomislic and Bates, 1999; Sjogren and Fay, 2002), splitting them into fixed and variable costs is typically sufficient for e-learning project purposes. Actual categories of expenditure for an e-learning project (based on Barfoot, Brown, Butts, Cenedella, Duckworth, Herrod et al., 2001) are:
- **internal** – salaries of e-learning staff
- **personnel** – additional costs including staff development
- **outsourcing** – these comprise the costs of releasing subject experts for the project, external designers and programmers, and the costs of sourcing materials and content for the project
- **management** – administrative costs
- **overhead** – these consist of institutional services such as premises, security, cleaning and desks, asset costs and depreciation including equipment purchase, maintenance and upgrading, and administrative costs, for example telephone and stationery.

Each new staff member allocated to the project also incurs additional overhead costs. Calculating the departmental overhead based on their overall budget divided by hours of productivity has the advantage of outlining all the costs associated with internal staff. Projected costs need to consider all project stages from needs assessment through to implementation and evaluation.

Benefits
Benefits that should be quantified include all potential flow-on benefits including:
- **cost –** reduced from traditional delivery including travel time and room maintenance. They should also include justifiable fees or materials charges through added value and potential on-selling revenues. Any increases should also be noted
- **quality –** enhanced institutional reputation and improved student satisfaction and retention
- **service –** improved learning, increased access and enrolments, larger capacity through reduced use of physical teaching space, and subject matter expert and development team professional development. Work with SMEs who work in lecture environments has demonstrated that subject matter expert professional development, particularly where this involves reworking of existing resources, helps them to better understand and express their main points.
- **speed –** enhanced delivery through flexibility and increased adaptability and updating of course materials.

This is a general list and not all of these benefits will apply to each e-learning project. But where they do apply they should be quantified if possible. Financial benefits should be calculated over the projected life of the course or learning object as they may not accrue in the short term. To make it clear that, while a large initial investment is required, the benefits will be realised for a number of years, the financial benefits of e-learning projects should be based on three categories of benefit: direct (the 'cost' category of direct financial benefits); indirect (from the estimated financial benefits from 'quality, service' and 'speed' categories); and on-selling.

The difficulties of quantifying these benefits, outside of costs, mean they should be used cautiously and in some cases institutions may not be comfortable on-selling their e-learning

materials. This makes it frequently necessary to create CBA and ROI figures that gradually include each form of benefit.

Universal College of Learning (UCOL) case study
UCOL created a simulation for a small number of photography students because it would aid their understanding of complex technical issues, enable them to experiment, and allow the adaptation of content, and no similar solutions were available. Direct benefits included reduced materials cost, freeing up of the studio, and a decrease in maintenance expenditure. Indirect benefits included enhancements to the traditional delivery component, an increase in staff expertise, and an enhanced institutional reputation. There were also on-selling benefits available through their sale of the object under their institutional licence.

While the process for arriving at their calculated dollar amounts is not stated, the overall result was a per annum ROI of just over $2,100. This is based on total savings derived from all the benefits of $12,800 as against a budget of $8,100 for the project. By benefit the ROI was: direct, -0.54; indirect, -0.04; and on-selling, 0.58. But UCOL and other institutions still need to address the issues of whether or not the monies would be best spent elsewhere, the effect of increased use of facilities such as computer labs and servers, and the fact that most of the costs are already absorbed into the e-learning team's salaries.

Conclusions
While this case study may appear to show that ROI and CBA figures are arbitrarily determined, it is still a useful exercise because many of the benefits of e-learning projects are indirect and are often not sufficiently considered. Tracking costs within individual projects has the additional benefit of revealing potential blockages or fine-tuning the outsourcing of tasks. Once a history of actual project costs is developed, it can be used to assist with decision making and staff buy-in. While the figures may not be fully accurate, they will be indicative and therefore of pragmatic use in justifying and illustrating the use of e-learning budgets.

Counting the cost

Authors: Perraton, H., and Naidu, C. G.

Reference number: 88

Background
There have been many costly e-learning ventures that have failed most notably the UK's e-University. These failures demonstrate the need for sustainable funding and good management of income and expenditure.

Differences between traditional and open and distance education
Some of the differences between the economics of traditional delivery and distance education arise from their respective participants. For example, distance students are often assumed to be working and, because they do not attend campus, they make smaller demands on the institution's infrastructure and services.

Distance education allows economies of scale that cannot be achieved in traditional delivery environments. For example, in traditional delivery increases in learners generally means a proportional increase in staff. While the upfront costs of teaching materials are higher in distance education, they are available to larger numbers of students and there is an ability to hold down tutorial costs.

This is because materials replaced some of the teacher roles and responsibilities so their costs could be lowered even if the materials costs were higher. By doing this, achieved costs per student were lower than in traditional delivery. It also means that as learner numbers increase the cost per student falls.

This presents a number of opportunities for institutions pursuing cost-effectiveness. A course unit cost is determined by three main factors: the fixed cost of development, which is in part a

function of the sophistication of the delivery media used to teach it, the number of learners enrolled, and the recurrent cost of tutor support offered to students. This can lead to tensions within institutions as teachers will tend to favour well-supported, high-quality courses with limited students, whereas the business arm would prefer larger classes, simple delivery media and little expenditure on tutors.

Many institutions are ignoring the opportunities to achieve economies of scale in their distance education provision. As a result there is often little difference in per-student costs in distance education or traditional delivery but off-campus study tends to have higher costs than on-campus study (JM Consulting Ltd, 2003). This tends to undermine one of the key rationales for investment in distance education.

E-learning changes the cost structure of distance education. Electronic distribution of materials is cheaper than its paper-based equivalents. It also shifts printing costs from institutions to learners. But e-learning can also increase two types of costs: the material development costs and tutorial costs through more frequent learner-teacher interactions.

How can institutions pay for distance education?
Cross-subsidies can be used within or between institutions. There is a case for bigger institutions to generate their surpluses from large, entry-level courses in order to be able to fund more advanced courses with smaller numbers. It is important that development and continuing funding is identified if distance and e-learning ventures are to be sustainable.

Determining costs
Prices set for open and distance learning courses should be a function of costs, institutional policy, learners' ability to pay, and competition. But realistic calculation of costs can only be made if there is an adequate system to monitor them. Institutional policy may determine the proportion of costs to be met by particular learner cohorts and the possibility of using cross-subsidies.

A UK case study illustrates the risks associated with setting fees too low based on expectations of continuing funding and lower ongoing costs associated with e-learning. In this particular case it led to a dramatic, but necessary, fee increase. Realistic fee setting and/or partnerships can be used to manage these risks.

Where costs fall is as important as determining the actual amount required. For example, in a distance education context, the costs of attending campus to meet practicum, residency or other course-related requirements and the printing of materials tend to fall on the learners.

It is more helpful for institutions if it can be shown how expenditure is allocated between activities. This will show, for example, what proportion of expenditure is allocated to materials developments or teaching of students and assists managers in determining the effects of changing technologies among other things. Establishing fixed and variable costs is also crucial. Fixed costs tend not to vary with changes in learner numbers. One of the advantages of e-learning is that, unlike traditional delivery, costs associated with the distribution of materials are fixed.

Differences between institutions in their expenditure, revenue and allocations mean that it is unlikely that simple formulae will be uncovered to translate recommendations for good practice into cost estimates. Actual costs depend not only on the choice of technology but also on the culture and economy within which the institution is working. This variation means that norms for the costs of a particular delivery mode are unlikely to be determined.

However, in examining costs institutions need to distinguish between total costs and cost per student or cost per successful student. When focusing on delivery mode costs, institutions should ask three sets of questions. First, they need to distinguish between set-up and running costs. Secondly, they need to determine how much of the running costs are fixed or variable. Finally, institutions should differentiate between production, reproduction, distribution and reception costs of teaching materials (Perraton et al., 2002, p. 45). Institutions need to be careful that, if they transfer costs to their learners, they do not price their courses beyond sector norms.

Comparing costs
The literature on distance education contains a number of comparisons between its costs and those of traditional delivery (e.g. Rumble, 1997; Perraton, 2000). But two major difficulties limit their value. First these comparisons are rarely like-for-like. Open and distance learning learners often differ, in age and educational background among other things, from their traditional delivery peers.

Second, the supporting data for distance and traditional delivery students is often poor. For example, many costings are flawed and overheads are often disregarded or inadequately reported. But determining these costs is important. For example, if a particular delivery mode has significantly higher costs it will need to be clearly superior in terms of outcomes, access or status to survive.

It is also important for day-to-day management decisions particularly around staffing costs. If staff time is measured in contact hours but a teacher is asked to develop teaching materials or teach at a distance, procedures need to be developed that adapt a traditional delivery formula to a different kind of work.

Three different approaches have been used. The first is to estimate the length of time it would take a staff member to develop a given quantity of material and then calculate a course writing fee which could be set at the mid-point on the salary scale. Some institutions have looked at other incomes sources for a potential course writer and attempted to find a point of comparison with, for example, examination marking or work on curriculum development to calculate a writing fee.

However, a number of Australian universities have adopted a third alternative. They require academic staff to be responsible for teaching a number of student units per year. This can be achieved through traditional delivery or by preparing open learning materials. But if they do prepare open learning materials they do not receive additional payment. It is assumed that the extra work required in the first year of materials development is compensated by a reduction in hours spent on teaching in subsequent years.

E-learning – a financial and strategic perspective

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Background
Two major obstacles to the widespread implementation of e-learning appear to have been resolved. Firstly, most administrators and students now believe that the quality of e-learning matches that of traditional delivery. Secondly, there has been a massive increase in provision and associated student enrolments (Allen and Seaman, 2004).

This appears to downplay the 'no significant difference' criticism. This argument stated that it was always possible to extrapolate successful results from a localised context to a much wider population. This concluded that there were no significant differences in results between e-learning and traditional delivery without studying the larger population for potential variation (Wilson, 2005).

Is it too good to be true?
Wilson (2005) argues that e-learning in non-profit contexts can become financially viable. However, in the wider context of US tertiary education and the massive sums of money and students involved even large-scale and successful e-learning ventures appear too limited in enrolments and services to be cost-effective. But the UK's Open University with an annual budget of well over US$200 million and a multi-million dollar revenue stream can provide high levels of student services in addition to top-rated courseware, carefully crafted exercises, and easy-to-use interfaces.

Comparing large-budget institutions like the Open University and the University of Phoenix with their traditional counterparts suggests that the latter will encounter consistently decreasing returns on e-learning investment as an inevitable result of the strategic model they employ. Three distinct challenges require solutions if traditional institutions are to successfully confront the economic realities of distance learning:

- Many traditional universities are not willing to draw useful lessons from the more advantageous financial and IT models of for-profit or other non-traditional institutions.
- Many e-learning programmes have high student enrolments, with some having no limits. Only about a third of these are accredited by professional bodies. Most e-learning provision is not provided by the US' top institutions but its third or fourth-tier universities, which affects its quality.
- The production of e-learning content by university professors is not guaranteed. Growing evidence suggests many are sceptical of investing much time and effort in e-learning courses, believing this to be low in yield both financially and intellectually.

Leveraging others' experience

The University of Phoenix and the Open University were compared. Both institutions staff and course costs are significantly lower than their US institutional counterparts. Both institutions also provide traditional delivery options, but this is decreasing as a percentage of total enrolments. Critics would say that these lowered costs are only possible because non-traditional and for-profit institutions cut corners. However, this report argues that in all the important indicators such as student services and support the non-traditional institutions are comparable or better than their traditional peers.

This report indicates that the great advantage non-traditional institutions have in their deployment of distance learning is their financial and administrative model. For example, both institutions have a massive number of part-time staff but also a large number of full-time staff (it is between four and five to one in favour of part-time staff). Full-time staff include not only teachers but also managers and support personnel.

This means only a small percentage involved in course delivery receive full staff benefits including dedicated office space, and promotion and tenure. Both institutions have a cadre of senior faculty play a quality assurance role and train the adjunct staff, enforce standards among other things. But neither has even a close proximity to the tiered department-college-school hierarchy found in most traditional US universities and those of other developed nations.

Adjunct versus full-time faculty

A crucial issue in the non-traditional institutions' distance learning model is the significantly lower costs associated with adjunct staff. The disparity between full-time and adjunct staff is over 600 percent if overheads are taken into account. The role of adjunct staff may be ambiguous in traditional universities but the financial advantage is clear.

Twigg (2001) notes that while the lower costs of adjunct staff are well recognised concerns have been raised about the quality of teaching and learning where they are used to replace full-timers. This is because quality assurance may be difficult to maintain because the institution does not have the infrastructure or culture to support an effective monitoring regime of adjunct staff. There are also concerns that financial expediency may determine decisions rather than academic quality.

Why do some university administrators dismiss the non-traditional model? One complaint is their limited range of provision mainly in popular areas like business and health. But this ignores the fact that many traditional universities also restrict their e-learning provision to certain disciplines and courses. In doing so they are unlikely to achieve the student numbers of the non-traditional institutions.

Another criticism is that they are low quality in terms of who can enrol and successfully complete a degree-level programme. However, a large majority of students in a survey saw no

difference between an online and traditional delivery degree in terms of quality or employment outcomes (cited in a 2005 issue of the Government Technology publication).

Saving on overhead

Massive enrolments not only make it possible to offer extensive services and support in e-learning courses but also mean different return-on-investment rules. The smaller numbers in traditional universities mean that IT and courseware overhead cannot be spread as successfully which results in lower service levels for students and higher unit costs. This ability to share overhead also has an advantage in the availability of library resources, the consistency of educational materials, class size, and the ability to provide online technical help.

Faculty concerns about course development

Who develops the e-learning course material? A critical question for traditional institutions is whether or not full-time faculty are willing to develop suitable e-learning materials. Schell (2004) for example, found that full-time faculty tried to avoid e-learning duties because of its perceived interference with tenure and promotion. The reluctance of some full-time faculty to participate in e-learning has several causes. Firstly, there is a perceived loss of research time because of the work involved in developing and teaching e-learning courses.

Secondly, many faculty members feel that the financial reward structure for e-learning is not commensurate with the amount of work involved. There are few incentives and this may be because administrators' perceptions that e-learning is a routine element of academic duties (Shifter, 2000; Carnevale, 2004). Thirdly, some faculty are concerned about the quality of the e-learning courses they are creating. While staff training is available to ensure that these courses are of an acceptable standard participation in this detracts from their research time.

There is also the issue of intellectual property (IP). Rationalising IP rights and addressing the associated legal issues adds to the cost of the e-learning deployment further reducing the yield per course at a traditional university. This is not an issue for non-traditional institutions because they tend to own the IP as they supply most of the course and teaching materials which also reduces staff preparation time. They also support this with high-quality technical resources.

Conclusions and possible solutions

As the popularity of e-learning increases, a two-level system appears to be emerging. Many traditional universities, particularly those deemed to be in the top tier, use e-learning extensively but are reluctant to set up full-scale programmes. This is partly because of their high fixed costs, which cannot be overcome unless massive numbers of students are enrolled or adjunct staff are used extensively.

Traditional universities have several options to achieve full utilisation and potential profitability in their e-learning provision. Five possibilities are:
- investigate mergers and integration
- establish a globally oriented virtual university
- limit bricks-and-mortar investment in favour of blended learning
- support the deliberate proliferation of adjunct staff
- accept that e-learning is costly but crucial.

Both mergers and integration and a globally oriented virtual university would require unprecedented collaboration to work effectively, but the potential revenue and savings would be massive as it would allow true economies of scale to be developed and implemented. Institutions could also consider more effectively utilising their physical environment, for example by double-booking classrooms where the associated courses were taught partly by e-learning. They could also consider significant investment in virtual classrooms.

Universities would have to deal with the real challenge of trading capital construction dollars for investments in leveraging e-learning. However, if this trade-off is to be achieved, staff buy-in and cooperation are critical. But a large university could potentially save millions of dollars a year in building and maintenance costs associated with new structures, and considerably more in reduced unit costs per course even after paying faculty for their participation.

The major obstacle at traditional universities to offering distance learning is financial. Under current university staffing norms traditional delivery will always be cheaper than e-learning. However, if faculty were used to develop and approve the teaching materials and the actual instruction was carried out by adjunct staff, substantive savings could be made. But there is a caveat to this suggestion: because of the second-class status of adjunct staff at traditional universities, there would need to be a clear settlement on pay, benefits and other disputed issues.

However, the easiest solution is simply to accept the status quo as a valid approach to e-learning programmes at traditional universities. While in financial terms e-learning poses many problems for traditional universities, this ignores the fact that for them it has become an essential part of their provision. But given the financial implications, this means that traditional institutions should only offer e-learning where it fits with institutional strategy.

Ultimately, though, each institution will have to weigh the trade-offs and make e-learning-related decisions according to its own culture, finances and objectives. However, in making these decisions, institutions could look at the possibilities for changing their e-learning model to one potentially more profitable than the traditional, heavily subsidised one in place on many campuses.