



## **E-learning and Higher Education: Understanding and Supporting Organisational Change in New Zealand**

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### **Abstract**

Over an 18-month period four New Zealand educational institutions—a university, a private tertiary enterprise, a wānanga, and an institute of technology/polytechnic—have engaged in a process of change influenced by technology. Their e-learning capability was benchmarked using the E-Learning Maturity Model, and this information was used to stimulate change activities. The resulting case studies, discussed in this paper, illustrate the issues that face tertiary organisations and leaders engaging with the opportunities and challenges of e-learning. Five factors have been identified as significant influences on the ability of organisations to change in response to technology in the current political and educational landscape of the New Zealand tertiary sector.

**Keywords:** e-learning; organisational change; benchmarking

### **Introduction**

The New Zealand government has identified the need for tertiary institutions to make effective use of technology if they are to maintain their relevance over the coming decades (Ministry of Economic Development, 2008). Technology is seen as both driving the need for skills development and supporting skills development for the New Zealand economy (Treasury, 2008). The government's recognition of the potential offered by technology to tertiary education is in line with the many positive outcomes (including the ease with which information can be accessed and the ability to engage with learners and scholars using a wide range of online tools) that have been identified in the literature (Katz, 2008; Kennedy et al., 2009; EDUCAUSE, 2010; JISC, 2009) and is consistent with the position taken by other governments, including those of the United States (USDE, 2009) and Australia (Bradley, Noonan, Nugent, & Scales, 2008).

Despite this sense of potential there have been many failures. The inability of the United Kingdom's Open University to translate its initial success beyond the United Kingdom (Bacsich, 2005; Meyer, 2006), and the failure of the UK e-University project (House of Commons Education and Skills Committee, 2005), suggest that changing the nature of provision is a complex and high-risk endeavour. One reason for the lack of change in the educational systems experienced by students may be simply that there is relatively little evidence of technology in itself resulting in improved educational outcomes for students (General Accounting Office, 2003; Means, Toyama, Murphy, Bakia, & Jones 2009; Zemsky & Massy 2004; Bacsich, 2005; House of Commons Education and Skills Committee, 2005), as distinguished from the impact of changing course designs (for example, Lovett, Meyer, & Thille, 2008). This absence of evidence

means that it can be hard to justify the expense and disruption of change to sceptical and overworked organisation leaders, colleagues and other stakeholders, particularly when other aspects of tertiary education are subject to specific, if flawed, measures and consequences.

Given this experience, it is reasonable to ask whether tertiary education institutions should contemplate changes in their educational activities beyond ongoing modernisation of the supporting infrastructure. The stability of the current models of education and the lack of change resulting from technology may simply be a reflection of their utility and inherent robustness. The oft-quoted statement by Clark Kerr then becomes an acknowledgement of value, rather than a problem to be addressed:

About 85 institutions in the Western World established by 1520 still exist in recognizable forms, with similar functions and with unbroken histories, including the Catholic Church, the Parliaments of the Isle of Man, of Iceland, and of Great Britain, several Swiss cantons, and . . . 70 universities. (Kerr, 1987, p. 184)

In fact, there has been a significant change in tertiary education in New Zealand, as well as internationally. Once the preserve of a small minority, degree education has grown to become a mainstream activity, with just under 13 percent of the adult population engaged in study annually (Ministry of Education, n.d.). New Zealand degrees can be obtained from universities, institutes of technology or polytechnics (ITPs), indigenous wānanga, and private tertiary establishments (PTEs). Internationally, there are many countries seeking solutions to the problem of educating a population without the resources or opportunities of traditional university education (Daniel, Kanwar, & Uvalic-Trumbic, 2009). These pressures are driving change for financial reasons and using methods that focus on cost, inevitably increasing the scrutiny and political activity that surrounds accountability for public funds. This is not limited to the public sector, with for-profit providers made to comply with legislative and regulatory controls aimed at ensuring public funds are rigorously accounted for (Tierney & Hentschke, 2007).

Higher education increasingly shows many of the characteristics of failed organisations noted by Seddon (2008), particularly the focus on performance targets and managerial systems, with much of the change from technology simply being used to mechanise existing procedures or tasks. This type of change is described as a 'sustaining' innovation by Christensen, Anthony, and Roth (2004). Sustaining innovations improve aspects of a business, service, or product by extending existing characteristics in desirable ways. The key to understanding this form of innovation is that it doesn't question any presumptions about how the organisation functions, and may even reinforce traditional models. Christensen et al. (2004, p. 99) also identify higher education as an industry in which there is significant potential for innovation that disrupts and transforms, rather than sustains.

In addition to the larger issues of the motivation for change and the culture that enables or inhibits it, in reality most organisations are sufficiently complex that change cannot be seen as a single entity or event. Inevitably, multiple changes occur simultaneously. As a result, there are a multitude of change models in the literature that characterise change by scale, pace, and impetus (By, 2005; Demers, 2007; Seel, 2007). Many institutions have supported early-adopter (Rogers, 2003) initiatives through project funds. However, leadership, systems, and a supportive climate for change are essential if this investment is to be translated into change on a greater scale (Southwell, Gannaway, Orrell, Chalmers, & Abraham, 2005).

The complexity of the issues facing educational institutions intending to make effective use of technology for learning and teaching is illustrated by the range of issues identified in the *Taking the Lead: Strategic Management for E-Learning* project (Higgins & Prebble, 2008), and in Bates and Sangrà (2011), which examines the experience of 11 European and North American public universities.

The *Taking the Lead: Strategic Management for E-Learning* project developed a “set of resources and tools that will assist institutional leaders to plan and manage their use of e-learning more strategically” (Higgins & Prebble, 2008, p. 3), and identified a number of key issues or themes:

- institutional strategy, planning, and policies
- market positioning and identification for e-learning
- organisational structures
- resourcing
- collaborative relationships with other institutions
- staff development, instructional design, and course development
- teaching and learning models and alignment with e-learning
- student support
- ensuring the reliability and validity of e-learning assessment and moderation
- technological infrastructure.

Bates and Sangrà (2011) identified the following areas as important components of the response to the challenge posed by technology:

- institutional planning and strategy
- leadership
- operational planning at the programme level
- organisational structures
- quality management and evaluation
- financial management
- organisational culture
- the role of government.

Unsurprisingly, while the language used is different, there is a very strong degree of overlap in the issues and areas identified. These analyses illustrate the range of organisational activities and systems that need to be understood and monitored as change occurs, because these are not independent entities. Change in any one of these areas is likely to generate a range of changes throughout the others. Despite the potential for change, the complexity of addressing all of these factors suggests that many educational organisations may currently be unable to make purposeful changes to their activities (Marshall, 2010b) without external pressure being applied by governments and regulatory agencies. Birnbaum’s (1988) cybernetic model of educational change recognised this complexity in the observation (p. 205) that a step change is easy for leaders only when their institution is either:

- in a state of acknowledged crisis
- small
- conspicuously out of date, or
- led by an autocrat.

Short of precipitating a crisis or adopting a style of management inconsistent with the values of most educational institutions, there is thus an inevitable need for change strategies that can operate simultaneously and synergistically at multiple levels (Moore, 2006; Russell, 2009; Southwell et al., 2005).

## Methodology

The E-Learning Maturity Model (eMM) (Marshall, 2010a) provides a quality improvement framework by which institutions can assess and compare their capability to sustainably develop, deploy, and support e-learning. The eMM has been adopted internationally as a means for both institutions and sector agencies to explore institutional and sector e-learning capability. It has been developed, refined, and validated through a series of projects conducted in New Zealand (Marshall, 2006b), Australia (Marshall, Mitchell, & Beames, 2009; Marshall, 2009), the United Kingdom (Sero Consulting, 2007; Bacsich, 2008; University of London, 2008), and the United States (Marshall, Udas, & May, 2008).

One of the major objectives of this project was to examine whether the eMM analysis supported organisations in making changes to their systems in line with the theoretical models of organisational change embedded within it. There are a number of benchmarking frameworks and quality assurance models in the literature (Bacsich, 2008). However, the eMM is distinctive in its focus on organisational change rather than measuring operational activities.

The eMM capability assessments were done with the eMM version 2.3 practices and processes outlined in Marshall (2006a). Interviews with staff in a range of roles were also conducted. Further evidence was gathered online and in response to detailed questions following an initial analysis. This evidence base was used to make assessments of individual practice and process capabilities. A draft copy of the assessment report was provided and used to solicit final updates. This report was then presented to staff at a workshop held at the institution, where priorities for improvement were identified and change projects initially scoped.

At the conclusion of the project an additional set of interviews was held with staff to inform the final assessments and gather evidence of how the change projects had been undertaken and how they had influenced the institution. Full human ethics approval to conduct this research was obtained from the Victoria University of Wellington Human Ethics Committee (Approvals #17271/2010 and #73/2004).

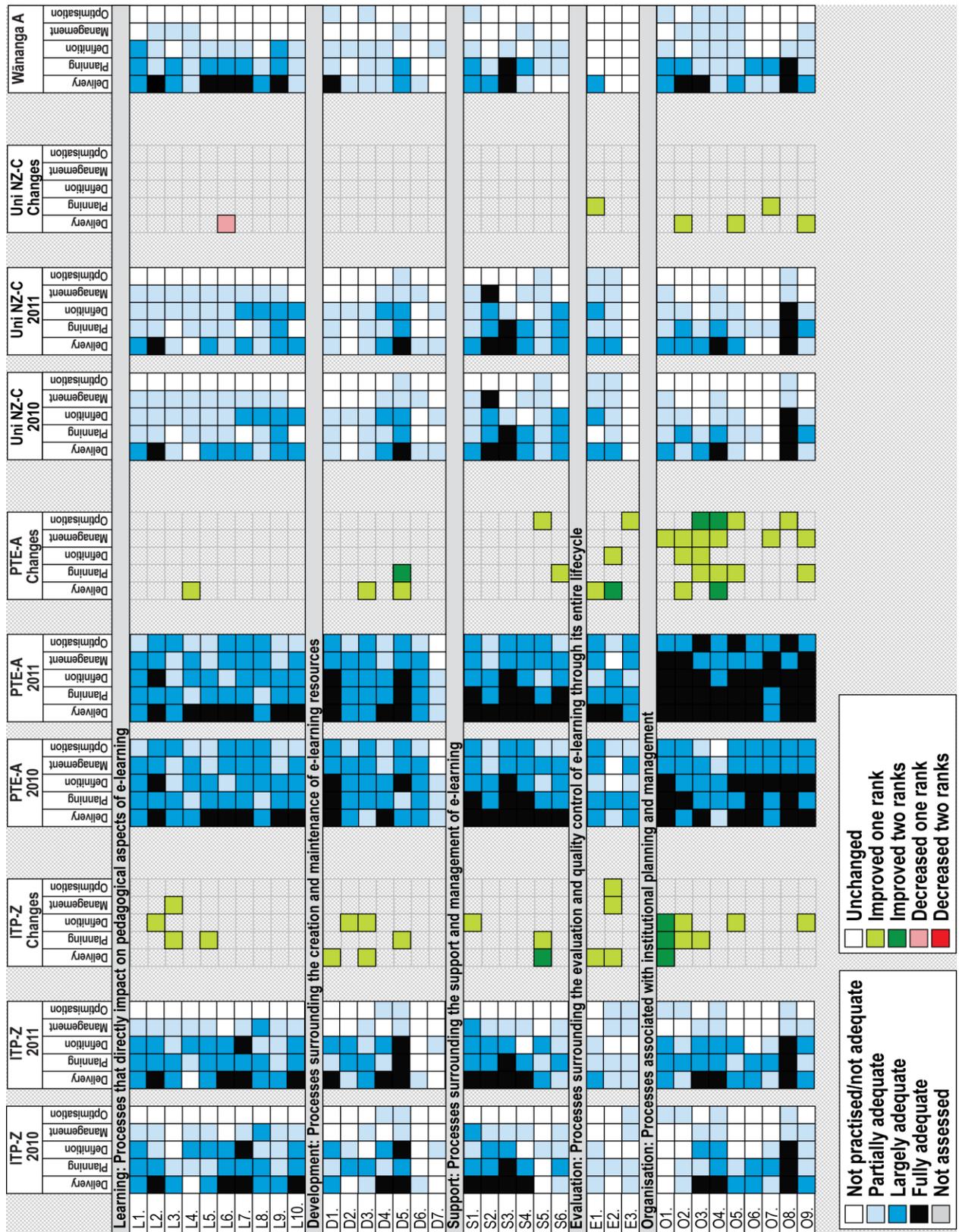


Figure 1 Project eMM assessments: Changes from 2010 to 2011 outlined in red

## Results

Seven institutions commenced the project: four universities, a PTE, a wānanga, and an ITP. Three of the universities were unable to complete the project due to internal issues resulting from restructuring, and the wānanga's involvement was substantially delayed (as outlined below), and consequently the final assessment has yet to be conducted. The final data set thus consisted of a university (University NZ-C), an ITP (ITP-Z), a PTE (PTE-A), and a wānanga (Wānanga-A), with seven eMM assessments conducted over 2 years (Figure 1).

### University NZ-C

University NZ-C is a medium-sized New Zealand university with a traditional focus on face-to-face education and an emphasis on research and postgraduate education. A commercial learning management system is used to provide a standard set of online services for all courses but, beyond this, technology is used in courses primarily for presentation purposes and for access to library services. There is very little use of social networking, and most students report spending less than 1 hour a week online for their courses. The 2010 assessment for University NZ-C in Figure 1 shows capability concentrated primarily in the delivery dimension, with some strength in the areas relating to student support and the technical infrastructure. This pattern is similar to that seen in a number of institutions that have treated e-learning purely as a technological challenge.

The following areas were identified as priorities for action by University NZ-C following the assessment:

- recognition of the strategic impact of technology on learning and teaching
- stronger alignment of course activities and assessment with course learning objectives and technology affordances
- professional development in course design for all teaching staff, with support and resources developed to encourage innovation and effective use of new technologies
- an increased emphasis on feedback as a pedagogical tool.

Despite these priorities, very little changed during the period, as shown in the 2011 assessment in Figure 1. University NZ-C established a working party to examine the role played by technology, and the role it could play in the operations of the university. The working party included participants from across the university. It was tasked with developing a strategic plan for technology use that would support the main university strategic plans. This group developed an extensive report for the university management that reviewed in detail the wider context for technology use by universities and how technology was currently being used within the university, and outlined a range of possible strategic options for the senior management.

This response is consistent with that seen in a number of other universities. Many institutions have made an investment in a technological infrastructure without any substantive changes to the model of learning and teaching, or the experience of staff and students (Marshall, 2010b). The problem facing all universities is that the model of funding now in place in New Zealand means that the government caps revenue and student numbers. Consequently, change must drive improvements in the quality and efficiency of operations, rather than support growth in access by larger numbers of students.

### ITP-Z

ITP-Z is a mid-sized ITP, based in an urban setting, with a clear intention that technology should play a significant role in its learning and teaching activities. The institutional strategy has stated for several years that technology should drive new opportunities for students and for the

institution in the future. ITP-Z has provided a standard learning management system facility, and a range of electronic resources through its library, but has only recently started exploring other technologies for use by students and teachers. Uniquely, ITP-Z has been applying the eMM over the last 7 years and consequently has four assessments showing change over an extended period of time (Figure 2). The assessments in Figure 2 show an overall strengthening of capability over the period 2005–2010, although some aspects have weakened between 2008 and 2010.

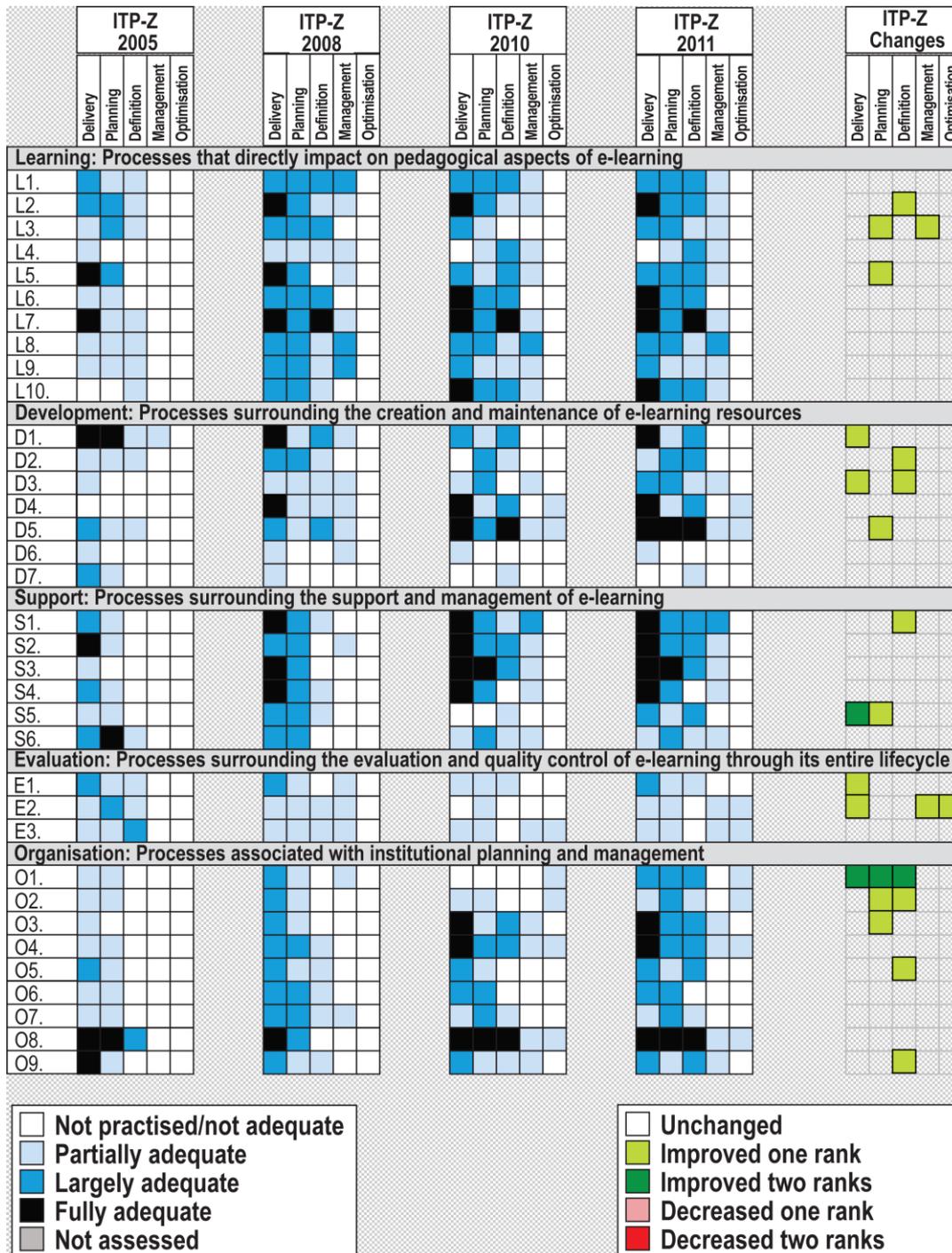


Figure 2 ITP-Z eMM assessments: Changed capability from 2010 to 2011 outlined in red on last carpet

The major issue identified in ITP-Z's 2010 assessment was the absence of a structured set of operational activities that aimed to realise the strategic goal of the institution for technology use. This lack, which included the need for greater development of staff skills and the use of technology to change the experience of students, was identified in planning documents, but had not been reflected in actual activities at that time.

Two projects were identified from the eMM assessment at the workshop held at the end of 2010 with respect to the need for change projects to be achievable in the context of the institution at that time:

1. development of a professional development qualifications for staff focused on e-learning
2. development of library resources for students supporting digital literacy.

In addition to the eMM assessment, ITP-Z undertook a strategic review of their teaching. This was led by an external consultant who had a strong relationship with the institution. These two reviews, combined with a survey of staff confidence in the use of existing technologies, led to senior managers realising that existing operational actions were not generating the outcomes envisioned in the strategic plan. In response, two more projects were initiated to develop ITP-Z-specific models of e-learning, and to help staff develop their capabilities with the range of technologies available.

The combination of an explicit acknowledgement of staff needs, combined with a genuine opportunity to generate new ideas for how they might teach, has resulted in a very positive improvement in the institutional culture. The managers responsible for much of the activity over the last year set goals and provided resources, including new staff, but then stepped back and let much of the detail be determined by the teaching staff. The most recent eMM assessment in Figure 2 shows substantial capability improvements throughout the process set.

This case illustrates the length of time and resilience needed for an institution to make substantial changes in learning and teaching. It provides an example of how an institution's leaders can recover from unsuccessful strategies, engage with and re-energise their staff, and generate a new sense of collegial involvement in the future of the institution.

## **PTE-A**

PTE-A provides vocational training to approximately 1500 students engaged in full-time and part-time study. The students are predominantly mature and are based throughout New Zealand, usually in either part-time or full-time employment in the industry. Distance delivery was originally undertaken using paper materials in a traditional correspondence model; however, an online option was introduced in 2009. Unusually, PTE-A has developed its own online learning system, although this is heavily based on commercial software. This system provides a standard set of content delivery functions combined with discussion facilities that are heavily used in all online courses.

The capability assessment for PTE-A in 2010 shown in Figure 1 demonstrated that the institution was already very capable in its engagement with e-learning. The assessed capability was stronger than that assessed for any other New Zealand institution at that time, and was comparable to the largest international tertiary providers. Notably, PTE-A had a strong capability in the Optimisation dimension, reflecting an ability to drive systemic change that is not evident in many institutions.

The eMM assessment results and analysis were shared with a group of PTE-A staff and managers at a workshop, and a process of issue prioritisation and project planning was facilitated. Four projects were identified as a result of that workshop:

1. a formal risk analysis and examination of the technology infrastructure
2. collection of feedback information from staff and students on their experience using technology
3. a re-examination of the pedagogical model being used in courses to triangulate the learning objectives, learning activities, and assessment
4. a re-examination of the ways in which technology is integrated into online courses, and an expansion of the types of technology being used.

Two events helped give the initial eMM assessment additional relevance. The first was the introduction of requirements that students demonstrate information and communications mastery in order to get registered. The second was the Christchurch earthquakes of December 2010 and February 2011. The earthquakes demonstrated the practical benefits of having a well-designed set of information technology (IT) systems supporting learning and teaching. Systems were already sited and managed in a way that meant that physical disruption to the servers was a minor issue and no data was lost. Consequently, PTE-A has undertaken the change projects and already achieved a substantial improvement in capability for 2011, as shown in Figure 1.

### **Wananga-A**

Wānanga A has been established for approximately 30 years. It undertakes teaching and research based on āhuatanga Māori, in accordance with tikanga Māori informed and embodied by mātauranga Māori. Wānanga A offers qualifications at a range of levels throughout New Zealand, primarily by face-to-face instruction. The wānanga has invested in a learning management system and has a limited set of electronic resources available for students through its library. Beyond this, little technology is used for teaching.

Wānanga A's weak 2010 assessment in Figure 1 reflected the reality that they had only relatively recently committed to the use of technology by establishing their learning management system and associated support unit. An issue identified early in the assessment process was that, despite the intention for all staff to be enabled and able to use technology, there was still a heavy dependence on a single middle manager's leadership. The E-Learning Director was responsible for developing the substance of the e-learning strategies and vision, and was clearly trusted by the senior managers to lead the wānanga's thinking and planning in the e-learning space. Unfortunately, the E-Learning Director was killed in an accident early in the project, and this dominated the organisation's activities over the remainder of the project.

Staff in the e-learning support unit and IT group rapidly took responsibility for a range of operational tasks to ensure the continuity of the learning and teaching done by the wānanga using technology. Meetings and a workshop were held with these staff to review the eMM assessment and to identify priorities for the next 1–2 years. Four projects were identified and assigned to particular staff to own and facilitate:

1. more formal management of the e-learning infrastructure
2. defining how technology changes the nature of learning and teaching within the wānanga philosophy
3. improvements in communication to students regarding the benefits of technology
4. re-engagement by the wānanga leadership with the existing technology strategies and plans.

This case illustrates the significant risks all institutions face when they depend on a single person to lead and enable the use of technology. It provides an example relevant to the situation of many small institutions that depend on a single innovative leader during the early phases of a shift to e-learning and are consequently unaware of the range of roles that the person undertakes and the

‘invisible’ organisational activities they perform. The key lesson in this case is the need to plan early for the implications of success, and ensure that resilience, robustness, and redundancy apply equally to staff as they do to technology infrastructures.

## Discussion

The four institutions can be seen as falling on a continuum, with Wānanga A moving from an ad-hoc and early adopter-led approach to create an infrastructure for e-learning; University NZ-C having established a solid infrastructure but not yet defining goals for the effective use of it; ITP-Z, having tried one approach, moving to empower its staff as part of changing its models for learning and teaching; and PTE-A experiencing a dramatic change in its use of technology as its new model sweeps away the old.

Allowing time for change to occur is an important factor. All of the institutions have invested in technology for a number of years, providing staff with systems with which they are able to become familiar, if not expert, in their pedagogical application. ITP-Z has had the same strategic objective for technology for the last 6 years while a series of operational plans and approaches have been tried. PTE-A operated multiple models of delivery simultaneously for several years while developing a robust and complete model relevant to their students and disciplines. In both of these cases there is evidence that this commitment has finally started to generate a sustainable change to learning and teaching. In contrast, Wānanga A is still at a very early phase of exploration, while University NZ-C has paused in many respects.

The PTE-A case also illustrates the other extreme of time. The e-learning model and systems they have developed have gone from being one option of three modes supported 18 months ago, to being essentially the only mode of delivery now. The lesson here is that institutions contemplating change of this type need to be aware that success, as well as failure, is risky. Leaders need to be sure they can manage the rapid pace of successful change.

Leadership of different types is also evident in the cases as a significant factor influencing change. The experience of Wānanga A is a salutary reminder that, while individual staff can take very influential leadership positions, organisations need to ensure that leadership is shared, and collective responsibility is taken for significant changes. The smallest institution, PTE-A, has benefited in part from their size, because direct leadership from the top is a practical proposition. PTE-A also had a strong management team at the start of the project and an awareness of the need for shared responsibility for key activities, and this has been maintained through staff restructuring as the implications of change have become apparent.

The model of leadership in University NZ-C is strongly influenced by the collegial and devolved nature of a university management culture. University management has to consult and involve staff in the process of identifying the reasons for, and purposes and methods of, change. This is inevitably slower, but balancing that pace are the substantial resources available to a university when committing to change.

ITP-Z has seen a strongly positive response from staff as a result of its shift to a collegial approach, with staff actively involved in creating new models and being actively supported with professional development. The shift from a centrally driven, commercial model to one where the staff are able to be involved in the process of identifying and setting priorities for change has been very well received, and has seen a re-engagement with the opportunities technology provides.

Interestingly, despite the change in method, ITP-Z has maintained clarity in its strategic goals for technology in learning and teaching. As well as drawing on a stable strategic plan, staff in

management roles can articulate clear operational outcomes that the strategy is intended to achieve. PTE-A has also benefited from following a stable strategic plan over the last few years, again with explicit operational benefits and support from the management team. Wānanga A has a clear strategy and a role for technology to play in supporting specific operational objectives, but has not yet seen that strategy realised. In particular, it is still cast in technological terms, describing goals for infrastructure and the use of specific technologies, but not yet in terms of the quality or nature of learning and teaching it will enable.

University NZ-C remains unclear in its strategic objectives for technology. Bates and Sangrà (2011) have observed that universities' intentions for technology can often be described as cautious and limited to the classroom, and this certainly seems true here as well. The PBRF, applied as an external requirement, has been very influential on the priorities affecting staff work and management. Only very recently has this been balanced, to a very limited extent, by the creation of performance indicators for learning and teaching.

The Tertiary Education Commission performance indicators may have had a positive influence on institutional management throughout the sector, but they are measures of activity at a very high level of abstraction, and fail to motivate any change in pedagogy, including technology. The government caps on student numbers also act as a negative incentive to the adoption of technology. One of the clearest benefits of e-learning is the ability to increase the scale of education. However, the government has prevented institutional growth. Institutions are now forced to consider how they can increase their internal efficiency to manage inevitable cost increases. Adopting technology that increases costs, even for transitional periods, is increasingly hard to justify, particularly if it requires a degree of risk, as innovation inevitably does.

The PTE-A and Wānanga A cases illustrate the need to manage change and the unexpected events that can influence organisations. PTE-A benefited unexpectedly from an unanticipated change in the professional accreditation standards applied to practitioners in their field. This imposed a standard of technical literacy and competence on graduates that was very helpful in encouraging students to transition to e-learning from traditional distance and face-to-face pedagogies. PTE-A had also already been responding to the first assessment's recommendations regarding risk assessment and business continuity when the 2010 and 2011 Christchurch earthquakes illustrated the requirement for robust IT systems. A combination of good management and a little luck saw no disruption to their systems, and subsequently both staff and students based in Christchurch were able to continue courses even as the institution's facilities remained closed in the 'red zone'. Wānanga A had a far less positive experience, with the death of the person who had been leading their use of technology. Many institutions using a strategy of incremental change from an initiative started by an early adopter are in exactly the same position and risk a similar disruption to their plans, if only as a result of staff leaving unexpectedly.

## **Conclusion**

These four quite different cases illustrate that, while technology might be increasingly standardised and ubiquitous, the ways in which it can change educational experiences are as varied as the needs of students and the types of institutions that support them. Functionally, there is very little difference in the technological infrastructure available at all four of these institutions, or indeed in the infrastructure provided at virtually every provider assessed by the eMM to date.

Historically, institutional leaders have recognised the necessity for investment in a technological infrastructure to support education. The analysis presented in this report suggests that as well as finding the resources to maintain that investment, leaders need to consider a set of key factors

when considering how their institution can change and respond to the opportunities offered by technology:

- **Time:** Allowing sufficient time for experience and systems to develop to the point that they can support change, but also being able to sustain the rapid pace of change flowing from success.
- **Leadership:** Maintaining the strength and clarity of leadership, while also allowing for models of shared leadership and engagement consistent with collegiality and participatory innovation.
- **Strategic and operational outcomes:** Identifying clear operational benefits from the use of technology and associated changes, and having a robust strategy to support their achievement and the confidence to maintain that strategy despite external and internal challenges.
- **External coercion:** Recognising and managing the threats and opportunities arising from the actions of external actors in the sector, particularly by government agencies.
- **Chance:** Being able to manage the random events that affect organisations with effective risk-management strategies and organisational agility that can respond in a timely and positive manner to unexpected situations.

Interestingly, while there are definitely overlaps with the factors identified by others, particularly with regard to strategy and leadership (Higgins & Prebble, 2008; Bates & Sangrà, 2011), time and chance seem to have been more significant here than is perhaps generally acknowledged. The other factors identified in the studies cited above are also reflected in the processes and practices of the eMM, and certainly form the foundation for change.

The eMM embodies theories of organisational maturity, cybernetic change, and systems thinking. The information presented in the analyses is intended to stimulate change responses that are systemic, strategic, and undertaken with an awareness of the distributed consequences throughout the organisation. The eMM assessments have been actively used in all four of these institutions to stimulate an organisational response, with PTE-A and ITP-Z both demonstrating significant improvements in their organisational maturity resulting from a systemic approach to change. All four cases have also clearly demonstrated the need for a ‘whole of organisation’ response to ensure that change is able to occur despite a wide variety of events, both predictable and unpredictable.

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