

**NZ E-Learning Capability Determination**  
**Determination of New Zealand Tertiary Institution E-Learning Capability:**  
**An Application of an E-Learning Maturity Model**

**Report on the E-Learning Maturity Model Evaluation of the**  
**New Zealand Tertiary Sector**



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New Zealand Tertiary Sector

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UTDC



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The NZ consortium for e-Learning

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## Glossary

ANTA	Australian National Training Authority
ADEC	American Distance Education Consortium
ADL	Advanced Distributed Learning
ALA	American Library Association
CanREG	Canadian Recommended E-learning Guidelines
Capability	Capability, in the context of this model, refers to the ability of an institution to ensure that e-learning design, development and deployment is meeting the needs of the students, staff and institution. As well, capability includes the ability of an institution to sustain e-learning support of teaching as demand grows and staff change
CMM	Capability Maturity Model
eMM	e-Learning Maturity Model
IHEP	The Institute for Higher Education Policy
LMS	Learning Management System
Practice	Activities undertaken by institutions, that contribute to capability in individual processes
Process	A high-level activity that has been found through research and evaluation of e-learning to positively contribute to institutional e-learning capability
Process area	A collection of individual processes that share related institutional capability outcomes
SCORM	Sharable Content Object Reference Model
SPICE	Software Process Improvement and Capability dEtermination
W3C	World Wide Web Consortium
WAI	W3C Web Accessibility Initiative
WCET	Western Cooperative for Educational Telecommunications
WWW	World Wide Web

## Introduction

This report presents an overview of e-learning performance framed in a methodology designed to assess process capability. The approach used is designed to be independent of technology and pedagogy decisions, focusing rather on the ability of an institution to deliver e-learning in a high-quality and sustainable way. The methods used are based on the theoretical work of Marshall and Mitchell (2002; 2003; 2004) and are outlined in detail in the *Methodology* section below. This research is supported by the New Zealand Ministry of Education Tertiary E-Learning Research Fund

The information presented in the body of this report includes a comparison across the New Zealand publicly funded tertiary sector. Using the e-Learning Maturity Model (eMM) framework, the report provides a high level overview of e-learning capability across the sector. It is important to emphasize that the analysis presented is dependent on the materials provided by each institution. This material was supplemented by publicly available material such as websites, policies and enrolment packs, but the self-selecting nature of the projects selected for detailed examination (see the *Methodology* section for details) means that some bias may be present.

It should be noted that this research does not publicly identify any participating institution. The reports provided to participants are confidential to them. This work is not an attempt to rank New Zealand institutions but rather to provide guidance both at an institutional and sector-wide level for improving the quality and sustainability of e-learning. To that end, no attempt has been made to either order the results or assign numerical values to the overall performance. Instead, each section will note in general terms the characteristics observed both in practice and at a policy level that might be said to be exemplars nationally.

This study uses the practices and processes outlined in Marshall and Mitchell (2004). These were formulated from the well-regarded 'Seven Principles' (Chickering and Gamson, 1987; Chickering and Ehrmann, 1996) and the 'Quality on the Line' benchmarks developed for and promulgated by the Institute for Higher Education Policy (IHEP 2000). These are widely cited and regarded as useful for assessing the educational effectiveness of e-learning.

This report is divided up into three main sections. The first section, starting on page 8, provides an overview of the results for the New Zealand tertiary sector that are based on the detailed analysis conducted. This includes observations of relative strengths and weaknesses as well as suggestions for improvement.

The second section, starting page 16 of the report, covers the methodology used in detail, including the underlying research and background to the project.

The final section, starting on page 21, contains detailed, process by process, results for the institutions obtained by this research. This includes the background justification for each process, indicators of capability, exemplars of best practice as well as detailed comments on the New Zealand tertiary sector capability in each process.

## Acknowledgements

A large body of research such as this is dependent on the support and assistance of a number of people. Most importantly are the staff of the various participating institutions who generously gave of their time in the completion of the questionnaires. While you cannot be named, your assistance was vital for the success of this project and is much appreciated; it is hoped that the outcomes of the analysis are of value to your institution.

The model owes much to the work of Dr Geoff Mitchell and his contribution and ongoing friendship remain key to the ongoing research. Also important was the contribution made by the two research assistants, Charlotte Clements and Darren Hoshek.

The support of the New Zealand Ministry of Education's Tertiary E-Learning Research Fund and staff in enabling this research is acknowledged with gratitude.



# 1. Overview of results for the New Zealand Tertiary Sector

This report presents assessments of e-learning capability made of a total of nine New Zealand tertiary education organisations using the methodology of Marshall and Mitchell (2002; 2003; 2004). These represented six of New Zealand's eight universities and three polytechnics. The institutions range from very large to small, including distance and rural institutions as well as urban providers.

Capability, in the context of this report, refers to the ability of an institution to ensure that e-learning design, development and deployment is meeting the needs of the students, staff and institution. Capability includes the ability of an institution to sustain e-learning support of teaching as demand grows and staff change.

Performance of each institution was assessed by the examination of up to three typical projects supplied by that institution against measures from the e-learning and pedagogical research literature. Typically, the assessment of capability is made by identifying evidence of individual processes actually taking place within courses (more information on the methodology is provided in Section 2, page 16).

One of the objectives of this report and the underlying research was to validate the methodology used. It is important to emphasise that, while the model is based on widely accepted indicators of e-learning capability, in many cases there is a lack of empirical evidence supporting their use. Assessments of individual institutional capability in particular areas should thus be used as a guide to further investigation and planning rather than absolute indicators of performance. It is hoped that ongoing work will provide evidence of the usefulness of the methodology as further assessments are made of other institutions nationally and internationally as well as changes in assessments over time for particular institutions.

Examination of the summary view of results for the sector in Table 6 (page 15, also repeated in the back cover of this report) illustrates that a range of capabilities have been assessed, with no institution uniformly stronger compared with the others. It is noteworthy that while the weakest overall capability was seen in one of the smallest institutions, much larger institutions are also assessed as lacking capability in many areas.

A number of observations that appear to apply across the sector can be made. Principally, there is a need for a greater self-awareness within the sector. In a number of cases very strong performance was seen in isolated projects and this is not being recognised by the institutions concerned and used as a basis for improving performance across the whole institution. Particularly within universities, it appears that many decisions within individual courses are made without an awareness of the work of other teachers in the same institution or of the wider scholarship surrounding teaching and learning.

Following on from this is the absence of a planned intentionality in the way many institutions are engaging in the use of e-learning. While all institutions are making use of learning management systems, many are not placing the use of these systems within a framework of strategy and guidance to teaching staff that will transform learning. There is a definite sense that existing approaches for teaching and learning are being carried over to technology without reflection and planning. A clear example of this is in the absence of linkages provided to students between the learning objectives of courses and the technologies and pedagogies they encounter. Similarly, there is little information provided to students across the sector that prepares them for the use of e-learning within their courses. Only one institution assessed told students prior to enrolment what technology they would encounter in their learning. The ability to improve the use of e-learning technologies and pedagogies is also compromised by the weaknesses in the evaluation and review of existing practice seen throughout the sector.

Some institutions are engaging in a formal process of improving the use of e-learning technology and pedagogy within their courses. It is perhaps not unexpected that this has resulted in a stronger overall assessment than for institutions which have not done so. However, it is clear from the general absence of results in the higher levels of the model that much work yet remains to be done.

This section provides a brief summary of the performance of the sector in each process area. Readers may find the material provided on page 20 helpful when interpreting the tables. Detailed comments on each of these process areas and individual processes along with recommendations for improving capability are below in the main body of the report (page 23). Readers are strongly encouraged to review the detailed comments for each process area and may also find the fold-out table at the end of the report helpful.

## Learning

This process area is concerned with the pedagogical aspects of e-learning, particularly those which communicate the underlying structure and logic of a course to students. The goal is ensuring the attainment of the highest quality learning outcomes possible for students in an e-learning context. The individual processes are directed at preserving and extending the essential aspects of an effective learning environment that apply regardless of the particular technology, pedagogy and discipline.

Across the sector there is clear evidence that pedagogical practice is dominated by the independence of the individual departments and teaching staff working on courses. The common thread is that good policies are provided without guidance or examples as to how to actually comply with them in practice. Similarly, good practice is not being codified as guidelines and templates for reuse so as to encourage the building of capability. This information typically remains the province of a limited number of specialists or is buried within a single group.

Learning objectives are poorly used by most institutions, with only one providing course objectives in a clear, structured, statement prior to enrolment (process L7). When objectives are provided in a clear statement as part of the course materials, they are not linked throughout the course outline and used to assist students in their understanding the logic of the course. As well, the objectives stated are dominated by recall and comprehension rather than by analysis, synthesis and evaluation (process L1).

A major problem identified in the sector is the poor support of accessibility (process L10). Ensuring that course materials and activities are able to be accessed by students with a range of disabilities is a legislative requirement. Many of the courses and projects examined had little or no formal accessibility strategy incorporated into their design and development.

All of the institutions assessed need to consider better ways of sharing and promulgating solid solutions to standard problems as well as innovative and effective teaching practice. A number of examples of exceptional performance by individual teaching staff were observed in a number of processes in this and other areas. Sadly, comparison with the other courses from the same institutions makes it clear that this excellence is not being recognised and used to stimulate improvements in other courses. The sustainability of the results once the individuals involved leave must also be called into question. Institutions need to establish formal processes for sharing excellence and using it to support and training teaching staff.

Table 1 illustrates the overall findings of the research for this process area. A more detailed discussion of this process area can be found on page 22.

	University A	University B	University C	University D	University E	University F	Polytechnic Z	Polytechnic Y	Polytechnic X
<b>Learning: Processes that directly impact on pedagogical aspects of e-learning</b>									
L1.	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate
L2.	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate
L3.	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate
L4.	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate
L5.	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate
L6.	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate
L7.	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate
L8.	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate
L9.	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate
L10.	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate

**Table 1:** Sector wide *Learning* process area capability

## Development

This process area is concerned with the management and technical aspects of e-learning design and development. The goal is efficient and effective use of resources in the creation and maintenance of e-learning resources. The individual processes are directed at informing the development of resources and ensuring that this is done in a way that sustainably builds capability based on experience and success of e-learning deployment in the institution.

Capability in this process area across the sector is particularly dependent on the existence of formal procedures and e-learning support within an institution. Institutions with dedicated staff working within a documented policy and management framework have stronger capability (Universities A, B and E, Polytechnics Y and Z). Institutions that have no dedicated e-learning support staff or limited resources, operating in the absence of formal frameworks have been assessed as significantly weaker in this area (Universities C, D and F, Polytechnic X).

It is important to note that capability in this area is not conditional on the use of a centralised e-learning support facility. A largely devolved model of support, such as that used by University A, can work very well provided it is combined with comparatively strong policies and management oversight. Irrespective of how the resources are allocated, centralised or decentralised e-learning support facilities need to have some way of identifying and promulgating standards, guidelines and templates out to the wider university population, along with examples and case studies illustrating the benefits. The decentralised approach has the risk of pockets of excellence developing, while the centralised approach has the risk of building dependence on a limited number of specialists rather than building capability on a broader front.

A weakness prevalent in the sector is the lack of linkage between the educational outcomes desired and the technologies deployed (process D3). Technology use, such as the facilities of the LMSs, is dominated by administrative and peripheral requirements rather than educational activities. Across the sector there is very little evidence that teaching staff are being provided with training and support in how technology can enable more effective learning.

Table 2 illustrates the overall findings of the research for this process area. A more detailed discussion of this process area can be found on page 44.

	University A	University B	University C	University D	University E	University F	Polytechnic Z	Polytechnic Y	Polytechnic X
<b>Development: Processes surrounding the creation and maintenance of e-learning resources</b>									
D1.	■	■	■	■	■	■	■	■	■
D2.	■	■	■	■	■	■	■	■	■
D3.	■	■	■	■	■	■	■	■	■
D4.	■	■	■	■	■	■	■	■	■
D5.	■	■	■	■	■	■	■	■	■
D6.	■	■	■	■	■	■	■	■	■

Not practised/not adequate
  Partially adequate
  Largely adequate
  Fully adequate
  Not assessed

**Table 2:** Sector wide *Development* process area capability

## Coordination and Support

This process area covers the day-to-day management and support of e-learning delivery, particularly as they impact on the ability of students to engage effectively with e-learning. The goal of these processes is ensuring the efficient and effective day to day management of e-learning delivery. This means students and teaching staff can focus on the educational aspects of the course rather than peripheral issues. The individual processes are aimed at ensuring students are placed in the best possible way to succeed in their studies using e-learning and are not hindered by lack of information, support or technology.

The variety of processes included in this area is potentially responsible for the observation that no one institution has dominated performance. All have areas of strength and weakness that need addressing. A consistent finding in this process area is that student support in e-learning courses is not as well developed or comprehensive as it needs to be if students are to move away from a face to face mode of learning (processes C5, C8 and C9). As with teaching staff, students need support tailored specifically to the e-learning approaches adopted by institutions if they are to learn efficiently and effectively. Some institutions have been able to extend student IT helpdesk services online, but there is room for significant improvement. Much of what was observed in the sector is built on a presumption that students already have the skills and background necessary to take advantage of e-learning. What support is provided appears to be a consequence of existing face to face support mechanisms having sufficient flexibility to cope with e-learning, but this is by no means a given.

The libraries of the institutions reviewed appear to be addressing the needs of students somewhat more effectively than the rest of the student support services, increasingly providing a full range of services online with help and support information (process C2). What appears to be missing is resources aimed at helping teaching staff support students in acquiring information literacy and research skills effectively. The use of of customised library support pages for all courses at University B appears very useful. Students are provided with a mix of resources pertinent to the course along with support information, and this encourages them to go beyond the material of the course by engaging in self-directed learning and research.

A particular weakness in the sector lies in ensuring that students are able to familiarise themselves with new technology and can practice using it before it affects their grades (processes C6 and C7). As noted in the *Organisation* process area, institutions are not effectively communicating expectations and opportunities to students before courses commence. Little use is being made of the opportunities provided by LMS software to offer guest courses that students can explore while deciding whether and what to study.

Table 3 illustrates the overall findings of the research for this process area. A more detailed discussion of this process area can be found on page 58.

	University A	University B	University C	University D	University E	University F	Polytechnic Z	Polytechnic Y	Polytechnic X
<b>Coordination &amp; Support: Processes around the day-to-day management and support of e-learning delivery</b>									
C1.	Not practised/not adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate
C2.	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate
C3.	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate
C4.	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate
C5.	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate
C6.	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate
C7.	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate
C8.	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate
C9.	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate
C10.	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate
C11.	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate

Not practised/not adequate
  Partially adequate
  Largely adequate
  Fully adequate
  Not assessed

**Table 3:** Sector wide *Coordination and Support* process area capability

## Evaluation

This process area is focused on quality assurance and evaluation processes throughout the entire lifecycle of e-learning design, development and deployment. The goal is encouraging reflective practice informed by evidence from previous success and failure. The individual processes are directed at ensuring the evidence collected is robust and able to provide a reliable base of knowledge for future strategy and sustainable development both of infrastructure and staff skills.

Evaluation of courses is a requirement imposed on all institutions by the Government monitoring agencies and these formal processes have carried across into e-learning courses (processes E1, E2 and E3). However, these are simply the same processes that are applied to traditional teaching. There is a need to develop evaluations that assess particular issues relating to the technology and pedagogies adopted for e-learning (process E4). This is apparent in the observation that the sector shows little capability in assessing the impact on student learning and staff workloads of technologies already in use.

A particular weakness of the sector is the absence of any attempt to formally assess teaching staff skills in e-learning delivery (process E7). The positive impact of assessment, particularly of a formative nature, on student learning is well established. The absence of it as a tool to support the development of teaching staff suggests that training and support is informal and not regarded seriously by the staff or institutions. All of the institutions offer workshops and support to teaching staff but performance by individual staff in these is not assessed and there appear to be few objective assessments of teaching staff skills in this area. The teaching qualifications offered by some institutions offer a potential opportunity for assessing performance and improving staff skills but these tend not to focus on e-learning and are in any case not required for all teaching staff.

Table 4 illustrates the overall findings of the research for this process area. A more detailed discussion of this process area can be found on page 82.

	University A	University B	University C	University D	University E	University F	Polytechnic Z	Polytechnic Y	Polytechnic X
<b>Evaluation: Processes surrounding the evaluation and quality control of e-learning through its entire lifecycle</b>									
E1.	Not practised/not adequate	Partially adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate
E2.	Not practised/not adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate
E3.	Partially adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate
E4.	Partially adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate
E5.	Largely adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate	Largely adequate
E6.	Not practised/not adequate	Not practised/not adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate
E7.	Not practised/not adequate	Not practised/not adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate	Partially adequate

**Table 4:** Sector wide *Evaluation* process area capability

## Organisation

This process area is concerned with the institutional planning and management of e-learning. The goal is ensuring that e-learning usage is well managed and planned to deliver the strategic and operational outcomes required by the institution. The individual processes are directed at ensuring the administrative and organisational aspects of e-learning are high quality, efficient and effective, particularly as institutions transition from face-to-face delivery.

Aspects of this process area are quite strong across the sector as they build on pre-existing processes that apply for all courses irrespective of the use of e-learning technologies and pedagogies. In particular, the processes that relate to communicating essential course information are generally adequate, although inconsistently applied at times (processes O5, O6, O7 and O8).

A notable weakness across the sector is a systematic lack of information provided to students in advance regarding the use of technology in courses (processes O4 and O9). Only one of the institutions (Polytechnic Y) provided specific information in their enrolment packs regarding the use of technology in particular courses, even when this went well beyond standard use of the LMS facilities. As noted in the *Learning* process area, much of the information that is provided to students in course outlines should be freely available before enrolment as it is vital for students. By hiding this information from students they are losing the opportunity to prepare for the courses and to plan for their own particular circumstances.

Also apparent is vulnerability in the sector as growth in LMS use continues. Much of the information in these systems is essential to business continuity and vulnerable to both intentional and unintentional loss or corruption. Formal consideration of the management of student information created and supplied during e-learning coursework appears generally lacking in the sector (process O3). Similarly, few institutions could identify a formal technology plan that guided the choices made in the design and development of e-learning courses (process O2).

Table 5 illustrates the overall findings of the research for this process area. A more detailed discussion of this process area can be found on page 98.

	University A	University B	University C	University D	University E	University F	Polytechnic Z	Polytechnic Y	Polytechnic X
<b>Organisation: Processes associated with institutional planning and management</b>									
O1.	■	■	■	■	■	■	■	■	■
O2.	■	■	■	■	■	■	■	■	■
O3.	■	■	■	■	■	■	■	■	■
O4.	■	■	■	■	■	■	■	■	■
O5.	■	■	■	■	■	■	■	■	■
O6.	■	■	■	■	■	■	■	■	■
O7.	■	■	■	■	■	■	■	■	■
O8.	■	■	■	■	■	■	■	■	■
O9.	■	■	■	■	■	■	■	■	■

Not practised/not adequate
  Partially adequate
  Largely adequate
  Fully adequate
  Not assessed

**Table 5:** Sector wide *Organisation* process area capability

## Future development of the methodology and underlying model

A particular challenge with the approach used in the development of the eMM lies in the identification of the processes used to determine e-learning capability. The processes used here have been derived from two major sets of heuristics (Marshall and Mitchell, 2004) but clearly there are a number of other potential sets which could be used (Lezberg, 2003; Sherry 2003). The problem is distinguishing processes that contribute to effective and sustainable e-learning from other indicators that are more properly practices within the individual processes or descriptions of their outcomes. In the context of the SPICE methodology, El Emam *et al.* (1998) identified questions that should be considered when assessing individual processes in capability maturity models. These can be adapted to the current context:

- Are the processes that were chosen the characteristics that tend to make e-learning more capable?
- Do the processes cover all the relevant capabilities needed for effective e-learning?
- Are the processes defined so as to be independent of each other?
- Is this set of processes sufficient to characterise a range of capabilities?
- Do the processes represent the ‘universal truths’ of e-learning capability?
- Are the processes genuinely applicable to any institutional context?

Applying these tests and examining the results presented in this report, it is clear that the initial set of processes used can be improved. This is not unexpected; the SPICE process set was developed through a number of ‘trials’ conducted over several years and the eMM processes are likely to require considerable refinement. Based on the current work, the following observations can be made:

1. Processes L1, L7 and E5 should be combined into a single process describing the use and maintenance of learning objectives as guides to student learning.
2. Processes C6, O4 and O9 should be combined into a single process describing the need to support student use of technology through advance warning of its use and opportunities to practice and develop confidence prior to engagement in course work.
3. Processes E1, E2, E3 and E4 should be combined into a single process describing effective evaluation of courses in an e-learning context.
4. Processes C5 and C8 should be combined into a single process describing the support available to students in the use of technology while engaged in course work.
5. Process C1 should be moved into the *Development* process area.
6. Processes O6 and O7 should be combined into a single process describing the provision of administrative information to students.

This reduces the current set of forty three processes to thirty four. However, review of the literature suggests that as many as one hundred additional processes could potentially be incorporated. Merging this wider set and evaluating their utility is a focus of ongoing work.

Data collection during the current research also illustrated that the collection of information for analysis is challenging for the institutional staff involved in the individual courses. The use of a detailed questionnaire, while efficient for the researchers, was less useful for the participants. The amount of time needed to complete the questionnaire was commented upon by some and has potentially reduced participation. Future assessments will require simpler initial questionnaires followed with visits in person. The use of a web-based system that would allow for immediate feedback and partial evaluations is also under consideration.

It is also clear that detailed analysis requires the use of technology be examined in the context of actual courses rather than at the more abstract institutional level. In this research, institutions were invited to report on overall projects as well as individual courses and it is clear that responses provided within a course context were easier to interpret and determine capability from. Future assessments will require technology use be evaluated within the context of courses.

	University A	University B	University C	University D	University E	University F	Polytechnic Z	Polytechnic Y	Polytechnic X
<b>Learning: Processes that directly impact on pedagogical aspects of e-learning</b>									
L1. Courses are designed to require students to engage themselves in analysis, synthesis, and evaluation as part of their course and program requirements									
L2. Student interaction with faculty and other students is an essential characteristic and is facilitated through a variety of means									
L3. Teaching staff clearly communicate how communication channels should be used during a course or programme									
L4. Teaching staff manage student expectations over the type and timeliness of responses to student communications									
L5. Feedback to student assignments and questions is constructive and provided in a timely manner									
L6. Students are instructed in the proper methods of effective research, including assessment of the validity of resources									
L7. Learning outcomes for each course are summarized in a clearly written, straightforward statement									
L8. Assessment of students communicates high expectations									
L9. Student work is subject to clearly communicated timeliness and deadlines									
L10. Courses are designed to support a diversity of learning styles and to ensure accessibility									
<b>Development: Processes surrounding the creation and maintenance of e-learning resources</b>									
D1. Guidelines regarding minimum standards are used for course development, design and delivery									
D2. The reliability of the technology delivery system is as reliable as possible									
D3. Learning outcomes, not the availability of existing technology, determine the technology being used to deliver course content									
D4. Technical assistance in course development is available to teaching staff									
D5. Teaching staff are encouraged to use technical assistance when implementing courses									
D6. Teaching staff are assisted in the transition from classroom teaching to online instruction									
<b>Coordination &amp; Support: Processes around the day-to-day management and support of e-learning delivery</b>									
C1. A centralized system provides support for building and maintaining the e-learning infrastructure									
C2. Students have access to sufficient library resources that may include a "virtual library" accessible through the World Wide Web									
C3. Teaching staff and students agree upon expectations regarding times for student assignment completion and staff response									
C4. Students are provided with hands-on training and information to aid them in securing material from a range of sources consistent with the discipline or subject									
C5. Students have convenient access to technical assistance throughout the duration of the course/program									
C6. Students are provided with detailed instructions regarding the electronic media used in a course prior to commencing it									
C7. Students are able to practice with any technologies prior to commencing a course									
C8. Questions directed to student service personnel are answered accurately and quickly									
C9. A structured system is in place to address student complaints									
C10. Teaching staff training and assistance continues through the progression of the entire course									
C11. Teaching staff are provided with support resources to deal with issues arising from student use of electronically-accessed data									
<b>Evaluation: Processes surrounding the evaluation and quality control of e-learning through its entire lifecycle</b>									
E1. The programme's educational effectiveness is formally and summatively assessed with multiple, standards based, and independent evaluations									
E2. The programme's teaching/learning process is formally and summatively assessed with multiple, standards based, and independent evaluations									
E3. Summative data such as enrolment numbers, completion rates, and cost/efficiency is used as a measure of effectiveness within course/programmes									
E4. Success of technology/information used as a measure of effectiveness within course/programmes									
E5. Intended learning outcomes are reviewed regularly to ensure clarity, utility, and appropriateness									
E6. Instructional materials are reviewed periodically to ensure they meet programme standards									
E7. Teaching staff capability in making the transition from classroom to online teaching is formally assessed during training									
<b>Organisation: Processes associated with institutional planning and management</b>									
O1. A documented set of formal criteria are used to determine access to funding and other resources which support course and programme development									
O2. A documented technology plan is in place and operational to ensure quality of delivery standards									
O3. A documented technology plan is in place and operational to ensure the integrity and validity of information gathered, collected and stored									
O4. Programmes are advised of any particular requirements of that programme to ensure they possess the personal and technical skills needed for that programme									
O5. Students are provided with supplemental course information that outlines course objectives, concepts and ideas									
O6. Students are provided with supplemental course information that outlines admission requirements, tuition and fees and other relevant information									
O7. Students are provided with supplemental course information that outlines requirements for additional resources such as books or other materials									
O8. Students are provided with supplemental course information that outlines student support services									
O9. Specific criteria are established to determine the need for any particular technological requirements of that programme to ensure they have access to the minimal technology required by the course design									



Table 6: Sector Comparison of eMM Institutional Capabilities



## 2. Methodology

The assessment of capability in a complex area such as e-learning is difficult and necessarily involves reducing large amounts of detail into a broader overview that supports management decision making and strategic planning. It is inevitable that this approach will fail to single out the subtle nuances and innovative work of individuals that motivate teaching staff to work on individual projects. Institutions and individuals will always have the ability to choose to invest time and other resources in innovative, unique opportunities. The focus of this study, and thus the form in which the data is presented, is aimed at a less lofty goal, that of changing organisational conditions so that e-learning is delivered in a sustainable and high quality fashion to as many students as possible. As noted by Fullan:

“The answer to large-scale reform is not to try to emulate the characteristics of the minority who are getting somewhere *under present conditions* ... Rather, we must change existing conditions so that it is normal and possible for a majority of people to move forward” (Fullan, 2001, page 268)

The framework used in this analysis is based on the Capability Maturity Model (CMM, Paulk *et al.*, 1993) and SPICE (Software Process Improvement and Capability dEtermination, El Emam *et al.*, 1998; SPICE, 2002). The underlying idea is that the ability of an institution to be effective in a particular area of work is dependent on their capability to engage in high quality processes that are reproducible and able to be sustained and built upon. The characteristics of an institution that enable high quality processes are to some extent able to be separated from the details of the actual work undertaken that will vary depending on particular circumstances. This separation means that the analysis can be done independently of the technologies selected and pedagogies applied, thus allowing for a meaningful comparison across the sector.

Capability, in the context of this model, refers to the ability of an institution to ensure that e-learning design, development and deployment is meeting the needs of the students, staff and institution. Capability includes the ability of an institution to sustain e-learning support of teaching as demand grows and staff change.

Building on the SPICE model, the e-Learning Maturity Model (eMM) divides the capability of institutions to sustain and deliver e-learning up into five major categories or process areas (Table 7). The key difference from the original SPICE model is the introduction of the *Learning* area, which replaces the *Customer/Supplier* area used in software engineering.

Process category	Brief description
Learning	Processes that directly impact on pedagogical aspects of e-Learning
Development	Processes surrounding the creation and maintenance of e-Learning resources
Co-ordination	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

**Table 7:** eMM process categories (Marshall and Mitchell, 2003)

Within each of these areas are a number of processes, derived from the research literature on e-learning quality, which contribute to the overall ability of institutions to perform well in the given process area, and thus in e-learning overall. The advantage of this approach is that it breaks down a complex area of institutional work into related sections that can be assessed independently and presented in a comparatively simple overview without losing the underlying detail.

An obvious requirement of this model is that the processes chosen are based on empirical evidence and represent ‘common truths’ about e-learning capability:

“are there common practices or ways of creating e-learning resources and learning environments that are accepted, useful and able to be described in a way that others can adopt them and improve their own e-learning capability?” (Marshall and Mitchell, 2003, page 4)

The processes used in this research were developed from the ‘Seven Principles’ of Chickering and Ehrmann (1996) and ‘Quality on the Line’ benchmarks (IHEP 2000) as outlined in Marshall and Mitchell (2004). These are unlikely to be the best possible set of processes for ensuring e-learning capability development but they have the advantage of being widely accepted as guidelines or benchmarks for e-learning delivery (Sherry, 2003).

For each process in the model, evidence was sought as to the institutional capability as described below, and a ranking made at each of six levels (Table 8) generating a matrix, such as those used above, that summarises capability.

e-Learning Maturity Model: Levels	
Level	Focus
5: Optimised	Continual improvement in all aspects of the e-Learning process
4: Managed	Ensuring the quality of both the e-learning resources and student learning outcomes
3: Defined	Defined process for development and support of e-Learning
2: Planned	Clear and measurable objectives for e-learning projects
1: Initial	Ad-hoc processes
0: Not performed	Not done at all

**Table 8:** eMM capability levels (Marshall and Mitchell, 2003)

*Level 0 (Not performed)* means that the process is not performed at all, which can include a deliberate decision not to engage in a particular process. This level is a special case and a rating at this level means that no evaluation at the other levels of the process capability is undertaken.

*Level 1 (Initial)* is the default, ad-hoc level characterised by individual initiative and rankings at this level relate to how well the process is performed at all. It is important to emphasize that institutions can have extremely effective processes operating at this level, but in the absence of capability at higher levels there is the risk of failure or unsustainable delivery and the likely wasting of resources through needless duplication.






*Level 2 (Planned)* relates to the use of formal objectives and plans in conducting the work of the process. The use of formal plans makes projects more able to be managed effectively and reproduced if successful, but does not automatically result in more effective performance of the process outcomes measured in level 1. Nor does the term ‘formal’ imply the use of institutionally defined process standards as measured in level 3.

*Level 3 (Defined)* is the use of institutionally defined and documented processes including formal standards and documented guidelines. An institution operating effectively at level 3 has clearly defined how a given process should be performed. This does not mean, however, that the staff of the institution follow those guidelines or standards.

*Level 4 (Managed)* examines the use of metrics and quality assurance processes such as formal evaluations. Performance at level 4 is somewhat dependent on defined standards (level 3) but capability at this level reflects an ability to measure and control the outcomes of the process and the way in which the practices of the process are performed by the staff of the institution.

*Level 5 (Optimised)* captures the extent to which an institution is using formal approaches to improve capability measured at the lower levels. Capability at this level reflects a culture of continuous improvement and the explicit consideration of past process performance when designing and promulgating new or updated practices, guidelines or standards for the process area.

At each of these levels, the individual processes are rated for performance from ‘not adequate’ to ‘fully adequate’ (Table 9). The ratings at each level are done on the basis of the evidence collected from the institution and reflect whether the practices that underlie the process area are performed. The ratings are made on the basis of particular characteristics of the practices within the individual process at each level and thus should not be seen as strictly progressive. It is not uncommon, for example, to have a better rating at level 3 than at levels 1 and 2. Level 0 is a special case and is indicated by a completely empty rating in the charts used in this report. In some cases it was not possible to make an assessment of capability for individual processes at particular levels and in this case a ‘not assessed’ indicator is used.

	<b>Not practised/not adequate</b>
	<b>Partially adequate</b>
	<b>Largely adequate</b>
	<b>Fully adequate</b>
	<b>Not assessed</b>

**Table 9:** eMM capability level ratings (based on Marshall and Mitchell, 2003)

In this manner, capability of the institution in performing each of the processes that make up the eMM (Table 11) was assessed by the collection of information on up to three e-learning projects or courses from the participating institutions. This project information was combined with material from institutional web sites and enrolment packs to ensure a comprehensive understanding of how e-learning was being undertaken. The ratings provided for each process were checked and the quality of evidence compared between each participating institution to ensure a consistent rating scale had been used. A proportion of the final results were checked with institutions to confirm the interpretation of the material was correct and complete. A limitation of the current research is that only a single rater has been used and there is no ability to provide external measures of validity. This is an inevitable consequence of the stage of development of the model and the intention is to encourage wider adoption and replication of the current work in order to address these limitations. The original SPICE research was supported by extensive trials over a period of some years (El Emam *et al.* 1998) and the intention is to support a similar undertaking in the area of tertiary e-learning.

Each process was reviewed a second time and best practice elements of performance, policy and guidelines were identified. This material was aggregated into an institutional report that combined a sector comparison with a detailed review of the institutional capability determined. A draft of the institutional report was then provided to five of the nine institutions (three university and two polytechnic) for comment and feedback on any errors or misinterpretations.

It should be noted that experience of applying this type of assessment in the field of software engineering suggests that most, if not all, institutions initially assessed will show a low level of capability for the processes selected (SEI, 2004). This is not surprising as one of the drivers for the model in the first place is the widely held perception that e-learning could be implemented more effectively and efficiently in most institutions.

## Project data collection and analysis

Full human ethics approval to conduct this research was obtained from the VUW Human Ethics Committee (Approval #73/2004).

Invitations to participate in the research were sent to twenty-one New Zealand tertiary organisations including universities, polytechnics, waananga and private providers. This included an information and consent form (Appendix A) and a detailed questionnaire that allowed responses on up to three projects (Appendix B).

Responses provided answers to specific questions and also a wide variety of associated documentation. The initial material was further supplemented by material such as policy and support information provided to students via institutional websites, enrolment packs for new students, and documents supplied by the institutional contact.

## Interpretation of results

The detail sections that follow present each process in a table similar to that below (Table 10). In this example there are five institutions that have different capabilities for the particular process.

Process description					
	1	2	3	4	5
Institution A	Partially adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate
Institution B	Largely adequate	Largely adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate
Institution C	Partially adequate	Partially adequate	Largely adequate	Not practised/not adequate	Not practised/not adequate
Institution D	Fully adequate	Largely adequate	Partially adequate	Not practised/not adequate	Not practised/not adequate
Institution E	Fully adequate	Fully adequate	Largely adequate	Partially adequate	Not practised/not adequate

<input type="checkbox"/>	Not practised/not adequate	<input type="checkbox"/>	Partially adequate	<input type="checkbox"/>	Largely adequate	<input type="checkbox"/>	Fully adequate	<input type="checkbox"/>	Not assessed
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**Table 10:** Example practice result comparing five institutions

Institution A is not performing the process well, with only evidence of some ad-hoc attempts shown by the partially adequate rating supplied for level 1 and the absence of any capability in the other levels.

Institution B is significantly more capable in the process than either A or C with evidence that the process is mostly performed well (the largely adequate rating of level 1) and in a planned fashion (the largely adequate rating of level 2). Note that despite there being evidence at level 2 of planning, this appears to be done without any attempt for consistency within the institution as no capability is shown at level 3.

Institution C on the other hand, while not as capable as B, shows evidence of having defined standards or guidelines for performing the process (level 3). However, these appear not to be having an impact on actual e-learning projects as shown by the lower ratings at level 1 and level 2.

Institution D shows a pattern of very good performance of the process (fully adequate rating at level 1), supported by largely adequate planning (level 2) and an initial set of standards or guidelines (partially adequate rating at level 3). This is perhaps the expected pattern of capability development, building from a base of ad-hoc behaviours that are becoming more standardised as the institution has more experience in e-learning.

Finally, institution E performs the process very well (fully adequate rating at level 1) supported by effective planning (fully adequate rating at level 2), largely adequate standards and guidelines (level 3) and an initial programme of evaluation and measurement of process performance (level 4).

Further analysis of the results in this example suggests that institution C and E will provide potential examples of useful standards, guidelines and policies, while institutions D and E (and to some extent B) will provide individual examples of how to perform the process well. In the sections that follow, this type of analysis is used to identify potentially useful approaches that are successful in the shared New Zealand context and which can be adopted by all institutions seeking to build e-learning capability. Systemic weaknesses, where no good practice can be identified in the sector, present opportunities for potential Government investment or policy direction, as well as collaborative work within the sector.

Finally, comparison across groups of processes provides an institution with the ability to identify areas of related weakness that can be addressed strategically. Priorities can be easily identified by either comparison with the wider sector, or by comparing process ratings within an institution.

<b>Learning: Processes that directly impact on pedagogical aspects of e-learning</b>	
L1.	Courses are designed to require students to engage themselves in analysis, synthesis, and evaluation as part of their course and programme requirements
L2.	Student interaction with teaching staff and other students is an essential characteristic and is facilitated through a variety of ways
L3.	Teaching staff clearly communicate how communication channels should be used during a course or programme
L4.	Teaching staff manage student expectations over the type and timeliness of responses to student communications
L5.	Feedback to student assignments and questions is constructive and provided in a timely manner
L6.	Students are instructed in the proper methods of effective research, including assessment of the validity of resources
L7.	Learning outcomes for each course are summarised in a clearly written, straightforward statement
L8.	Assessment of students communicates high expectations
L9.	Student work is subject to clearly communicated timetables and deadlines
L10.	Courses are designed to support a diversity of learning styles and to ensure accessibility
<b>Development: Processes surrounding the creation and maintenance of e-learning resources</b>	
D1.	Guidelines regarding minimum standards are used for course development, design and delivery
D2.	The reliability of the technology delivery system is as failsafe as possible
D3.	Learning outcomes, not the availability of existing technology, determine the technology being used to deliver content
D4.	Technical assistance in course development is available to teaching staff
D5.	Teaching staff are encouraged to use technical assistance when (re)developing courses
D6.	Teaching staff members are assisted in the transition from classroom teaching to online instruction
<b>Coordination &amp; Support: Processes around the day-to-day management and support of e-learning delivery</b>	
C1.	A centralised system provides support for building and maintaining the e-learning infrastructure
C2.	Students have access to sufficient library resources that may include a 'virtual library' accessible through the WWW
C3.	Teaching staff and students agree upon expectations regarding times for student assignment completion and staff response
C4.	Students are provided with hands-on training and information to aid them in securing material from a range of sources consistent with the discipline or subject.
C5.	Students have convenient access to technical assistance throughout the duration of the course/programme
C6.	Students are provided with detailed instructions regarding the electronic media used in a course prior to commencing it
C7.	Students are able to practice with any technologies prior to commencing a course
C8.	Questions directed to student service personnel are answered accurately and quickly
C9.	A structured system is in place to address student complaints
C10.	Instructor training and assistance continues through the progression of the online course
C11.	Teaching staff are provided support resources to deal with issues arising from student use of electronically-accessed data
<b>Evaluation: Processes surrounding the evaluation and quality control of e-learning through its entire lifecycle.</b>	
E1.	The programme's educational effectiveness is formatively and summatively assessed with multiple, standards based, and independent evaluations
E2.	The programme's teaching/learning process is formatively and summatively assessed with multiple, standards based, and independent evaluations
E3.	Summative data such as enrolment numbers, completion rates, and costing is used as a measure of effectiveness within course/programmes
E4.	Success of technology/innovation used as a measure of effectiveness within course/programmes
E5.	Intended learning outcomes are reviewed regularly to ensure clarity, utility, and appropriateness
E6.	Instructional materials are reviewed periodically to ensure they meet programme standards
E7.	Teaching staff capability in making the transition from classroom to online teaching is formally assessed during training
<b>Organisation: Processes associated with institutional planning and management</b>	
O1.	A documented set of formal criteria are used to determine access to funding and other resources which support course and programme (re)development
O2.	A documented technology plan is in place and operational to ensure quality of delivery standards
O3.	A documented technology plan is in place and operational to ensure the integrity and validity of information delivered, collected and stored
O4.	Before starting a programme, students are advised of any particular requirements of that programme to ensure they possess the personal and technical skills needed for that programme
O5.	Students are provided with supplemental course information that outlines course objectives, concepts and ideas
O6.	Students are provided with supplemental course information that outlines admission requirements, tuition and fees and other relevant administration information
O7.	Students are provided with supplemental course information that outlines requirements for additional resources such as books or other materials
O8.	Students are provided with supplemental course information that outlines student support services.
O9.	Before starting a programme, students are advised of any particular technological requirements of that programme to ensure they have access to the minimal technology required by the course design

**Table 11: E-Learning Maturity Model Processes (Marshall and Mitchell, 2004)**

### **3. Detailed process results**

This final section of the report presents a detailed examination of each process area and the individual processes. This includes a description of the justification for the individual process and the underlying research supporting its inclusion. Sector performance in the processes is discussed, including the best performance at the individual levels and successful practices identified.

## Learning: Processes that directly impact on pedagogical aspects of e-learning

This process area has as its goal the attainment of the highest quality learning outcomes possible for students. The individual processes are directed at preserving the essential aspects of an effective learning environment that apply regardless of the technology, pedagogy and discipline.

The individual processes are listed below, followed by an overview of sector and institutional performance and then a detailed consideration of each process in turn.

<b>Learning: Processes that directly impact on pedagogical aspects of e-learning</b>	
L1.	Courses are designed to require students to engage themselves in analysis, synthesis, and evaluation as part of their course and programme requirements
L2.	Student interaction with teaching staff and other students is an essential characteristic and is facilitated through a variety of ways
L3.	Teaching staff clearly communicate how communication channels should be used during a course or programme
L4.	Teaching staff manage student expectations over the type and timeliness of responses to student communications
L5.	Feedback to student assignments and questions is constructive and provided in a timely manner
L6.	Students are instructed in the proper methods of effective research, including assessment of the validity of resources
L7.	Learning outcomes for each course are summarised in a clearly written, straightforward statement
L8.	Assessment of students communicates high expectations
L9.	Student work is subject to clearly communicated timetables and deadlines
L10.	Courses are designed to support a diversity of learning styles and to ensure accessibility

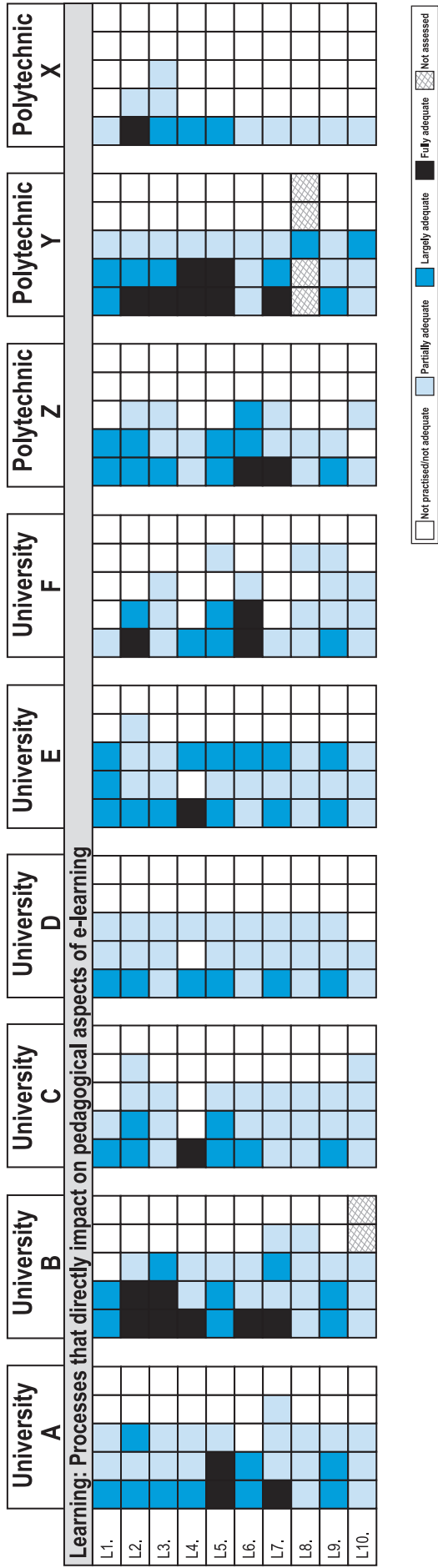
## Sector Performance

The clear message from the sector analysis is that pedagogical practice is dominated by the independence of the individual departments and teaching staff working on courses. This was particularly evident in University A, where very strong practice in one project was not replicated in others.

The ad-hoc nature is particularly evident in process L10, where the requirement that course materials be accessible is very poorly met. Many of these processes can be addressed with standard solutions that apply in many courses, perhaps with some customisation. This approach is apparent in University B where the use of a defined process combined with the reuse of existing materials has greatly strengthened the results. Many of these processes can be effectively addressed once, or in a common way, in an institution and then energies can be devoted to material needed within particular courses rather than re-inventing and re-stating common information.

The common thread is that good policies are provided without guidance or examples as to how to actually comply with them in practice. Similarly, good practice is not being codified as guidelines and templates for reuse to encourage the building of capability. This information typically remains the province of a limited number of specialists or is buried within a single group. All of the institutions assessed need to consider better ways of sharing and promulgating solid solutions to standard problems as well as innovative and effective teaching practice.

More detailed discussion of sector capability for each of the processes in this process area is found below in the discussion for each of the processes.





## Process L1.

Courses are designed to require students to engage themselves in analysis, synthesis, and evaluation as part of their course and programme requirements

### Process Description

Bloom (Bloom *et al.* 1956) is widely cited as providing a clear theoretical basis for understanding the development of learners and the contribution that cognitive objectives can make to their outcomes. In his model *Analysis, Synthesis* and *Evaluation* constitute higher level objectives which go beyond basic objectives of *Knowledge, Comprehension* and *Application*. A range of learning objectives at each level are needed for a well-designed course or programme, but designing for the higher levels will generally ensure that the others are addressed.

This process is one of the course development benchmarks of the Quality on the Line benchmark set (IHEP, 2000) and the ANTA Toolbox characteristics (ANTA, n.d.).

Evidence of capability in this area is seen through the use of formally stated learning objectives that do not simply ask for recall, comprehension and application of information and which are linked explicitly throughout the learning design. Evidence is sought that the elements of the course, such as assessment, are designed to encourage reflection and higher order skills rather than just memorisation of content.

Table L1-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Analysis, synthesis and evaluation skills of graduates have been assessed formally and the results used to determine measures used to monitor the effectiveness of courses and inform pedagogical practices.
<b>4: Managed</b>	Measures of the analysis, synthesis and evaluation skills of students are collected in a standard manner and stored in a common repository. Reports are generated from this data regularly and used to monitor the courses.
<b>3: Defined</b>	Institutions formally express the expectation for all courses that students engage in analysis, synthesis and evaluation. Guidance on effective ways for teaching staff to support students in achieving a range of cognitive outcomes provided through templates, examples and opportunities for staff development.
<b>2: Planned</b>	Courses express requirements for students to engage in analysis, synthesis and evaluation in the learning objectives of the course.
<b>1: Initial</b>	The expectation for students to engage in analysis, synthesis and evaluation is implicit in the course description, outline or assessment programme.
<b>0: Not performed</b>	There is no apparent requirement or expectation expressed in the learning objectives or the course design that students engage in analysis, synthesis and evaluation while working in the course. The focus of the course is information provision.

**Table L1-1:** Descriptions of process practices by capability level

### Sector Performance

The need to encourage student learning beyond recall, comprehension and application of information is clearly one of the motivating reasons for e-learning. Thus it is disappointing to note that sector performance of this process was weak. A number of the projects analysed either listed no formal objectives or aims, or listed objectives that were aimed at recall.

Best practice at levels one and two in this process was found in institutions that had a formal development process for courses and projects (Universities B, E and Polytechnics Y, Z). Institutions performing this process well had clearly considered the range of cognitive outcomes and attempted to design courses focused on the higher levels of student learning. This was expressed to students as a clear set of objectives and learning outcomes and a clear linkage between these and the design.



University E had the best policy support with a range of specific outcomes required for all courses. Even this could be further improved by specific examples of how to achieve particular outcomes. Clearly, the lack of performance at the higher levels (4 and 5) reflects the challenges associated with measuring student learning at the institutional level.

<b>L1: Courses are designed to require students to engage themselves in analysis, synthesis, and evaluation as part of their course and program requirements</b>					
	1	2	3	4	5
University A	Large	Partial	Partial		
University B	Large	Large			
University C	Large	Partial			
University D	Large	Partial	Partial		
University E	Large	Large	Large		
University F	Partial				
Polytechnic X	Partial				
Polytechnic Y	Large	Large	Partial		
Polytechnic Z	Large	Large			

Not practised/not adequate  
  Partially adequate  
  Largely adequate  
  Fully adequate  
  Not assessed

**Table L1-2:** Comparison of process capability across the New Zealand tertiary sector

## Process L2.

*Student interaction with teaching staff and other students is an essential characteristic and is facilitated through a variety of ways*

### Process Description

Interaction is key to effective learning, particularly when not engaged in face to face teaching (Anderson, 2003). A common criticism of e-learning is the isolation students suffer from and the need to provide effective communication channels. Moore (1989) has noted the need for three types of learner interaction to be supported: learner-instructor; learner-learner; and learner-content. The last is regarded as particularly important both in assisting with learning directly and in providing motivation and social support (Palloff and Pratt, 1999; Ragan, 1999; Salmon, 2000). Interaction is associated with student perception of quality in distance and online delivery (for example Shea *et al.*, 2001) although the evidence that it improves actual learning outcomes is less clear (Picciano, 2002). There are a wide variety of tools available to support interaction and communication online (Wolz *et al.*, 1997) and dependence on a single tool is likely to limit the effectiveness of interaction (Moore, 1989).

Two of Chickering and Ehrmann's (1996) seven principles stress the importance of student-teaching staff contact and cooperative work amongst students. Interaction and communication are also stressed in the Quality on the Line Benchmarks (IHEP, 2000), CanRegs (Barker, 2002), ANTA Toolbox characteristics (ANTA, n.d.), and the WCET Guidelines (WCET, 2000) and Principles (WCET, 2003).

In this process area, evidence of the use of a variety of communication modes or channels and encouragement for students to engage with peers and teaching staff is used to determine capability. It is not sufficient that tools be provided, there must also be activities designed to encourage their use and support of effective engagement.

Table L2-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Interaction between students and teaching staff has been measured with the results used to plan and resource particular forms of communication and ensure that staff and students are able to make use of them.
<b>4: Managed</b>	Measures are collected of student and staff use of different forms of interaction and the impact they are having on student learning. These include timeliness as well as effectiveness aspects of the communication.
<b>3: Defined</b>	Formal communication to all teaching staff of institutional expectations that they support student engagement through a mix of different types of interaction. This should be accompanied by guidelines for responsiveness and ways in which different communication channels can be used to support student learning.
<b>2: Planned</b>	Courses provide alternative mechanisms for interaction between students and staff and incorporate these into a formal requirement or expectation that students use them during the course, as well as guidance as to what uses are appropriate for the different channels. Plans for monitoring all of the channels are in place in order to ensure that students are supported and motivated to engage.
<b>1: Initial</b>	Courses provide alternative mechanisms for interaction between staff and students. This can include providing LMS tools such as discussion forums in addition to lectures and tutorials. Email contact information is provided for teaching staff. Limited technical support information provided for communication channels in use.
<b>0: Not performed</b>	There is no apparent facilitation of interaction between students and staff or mechanisms to support such interaction.

**Table L2-1:** Descriptions of process practices by capability level

## Sector Performance

Practice across the sector is dominated by the use of LMS communication tools and institutional email facilities. In general, very little guidance is provided to students about how to make the best use of these facilities or to staff in the support and monitoring of student communications. The presumption appears to be that students will be familiar and confident with the use of the standard tools although the evidence suggests that little measurement of student skills has been undertaken. Similarly, the expectation appears to be that if teaching staff can use email then they are able to effectively support student learning through a variety of communication modes.

Best practice is shown in University B with the provision of explicit information to students on how the various communication channels are to be used during the course. Rather than just providing the technical information (although this is needed and provided) it was structured around how the different forms of communication could assist with the course objectives and student learning. This also included guidance during the course linked to individual assessment exercises encouraging effective use of the supplied communication facilities. The formal design process used included a specific consideration of how students would interact with each other and staff and the impact that this could have on student learning. Polytechnic Y also had strong practice with students being promised a response from teaching staff within a defined period of time. An alternative contact was provided for when no response was received.

Very little in the way of formal standards or guidelines was observed in any of the projects. University A had the clearest policy requirement that courses provide interaction opportunities with staff and other students, but this was not accompanied by any assistance with ensuring it happened in ways consistent with the learning objectives and student needs. University B planned explicitly for interaction between staff, students and course materials when considering the design and workload issues, but similarly did not define what this might mean for teaching staff in individual courses.

<b>L2: Student interaction with teaching staff and other students is an essential characteristic and is facilitated through a variety of ways</b>					
	1	2	3	4	5
University A	Not practised/not adequate	Partially adequate	Largely adequate		
University B	Fully adequate		Partially adequate		
University C	Largely adequate	Partially adequate	Partially adequate		
University D	Largely adequate	Partially adequate	Partially adequate		
University E	Largely adequate	Partially adequate	Partially adequate		
University F	Fully adequate	Largely adequate			
Polytechnic X	Fully adequate	Partially adequate			
Polytechnic Y	Fully adequate	Largely adequate	Partially adequate		
Polytechnic Z	Largely adequate	Largely adequate	Partially adequate		

Not practised/not adequate
  Partially adequate
  Largely adequate
  Fully adequate
  Not assessed

**Table L2-2:** Comparison of process capability across the New Zealand tertiary sector

## Process L3

*Teaching staff clearly communicate how communication channels should be used during a course or programme*

### Process Description

As with a traditional face-to-face class, it is the responsibility of the teaching staff to set the ‘ground rules’ and expectations for the communication undertaken in a particular course (Ramsden, 2003). Particularly while many students are unfamiliar with e-learning, it is necessary for them to get clear information on how to use the communication channels effectively and appropriately (Palloff and Pratt, 2001; Harasim *et al.*, 1995). Communicating expectations early is also essential if staff workloads are to be managed (Waterhouse and Rogers, 2004). The tools used for e-learning communication all have limitations that must be considered carefully during the design and delivery of courses and communicating ways of using the tools effectively ensures that these limitations do not impede student learning (Wolz *et al.* 1997). This process is one of the WCET Guidelines (WCET, 2000).

Evidence of capability in this process is seen through the provision of explicit instructions to students on how to access and use different channels including their purpose and how they will assist in achieving the learning objectives of the course.

Table L3-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	The effectiveness of communication channel use in courses is measured and used to determine availability, support for and training in the use of channels by staff and students.
<b>4: Managed</b>	Measures of the use of channels of communication are collected in a standard manner in a common repository. Reports are generated from this data regularly and used to monitor the channels use and effectiveness.
<b>3: Defined</b>	Standard communication channels are defined for use in all courses offered by the institution as well as expectations about their use by staff and students. This includes conduct and technical aspects, but also covers expectations of timeliness and ways of supporting improved student learning.
<b>2: Planned</b>	Course outlines include expectations about how different communication channels are used by staff and students and provide information to students on how the different channels will support their learning. This information focuses on using the tools to support learning rather than just technical aspects. Channels contain introductory messages or descriptions about how students should use them.
<b>1: Initial</b>	Implicit assumptions about how channels are to be used incorporated in the design of courses and in the materials. Students provided with technical information on the channels only.
<b>0: Not performed</b>	No communication about how channels are to be used by students.

**Table L3-1:** Descriptions of process practices by capability level

### Sector Performance

The channels of communication in use by the sector were dominated by those provided through an institutional LMS. Generally the different channels were provided but not acknowledged formally in course documentation. Typically it was noted that a discussion forum was available but little additional information, such as how to use the forum or how it would assist in achieving the course learning outcomes, was provided. Policy issues and guidelines generally related only to issues of conduct rather than effective educational use of the facilities.

As with process L2, University B illustrated best practice here, with formal sections of the course materials setting out how the channels were to be used by students. Rather than just providing the technical information (although this is needed and provided) it was structured around how the different

forms of communication could assist with the course objectives and student learning. This also included guidance during the course linked to individual assessment exercises encouraging effective use of the supplied communication facilities. The formal design process used included a specific consideration of how students would interact with each other and staff and the impact that this could have on student learning. Polytechnic Y also had strong practice with students automatically being provided with a set of documentation aimed at supporting their effective use of the different channels and clear guidance in the individual course introductions to the individual facilities provided through the institutional LMS.

L3: Teaching staff clearly communicate how communication channels should be used during a course or programme					
	1	2	3	4	5
University A	Large Adequate	Partially Adequate	Partially Adequate		
University B	Fully Adequate	Fully Adequate	Large Adequate		
University C	Partially Adequate	Partially Adequate	Partially Adequate		
University D	Partially Adequate	Partially Adequate	Partially Adequate		
University E	Large Adequate	Partially Adequate	Partially Adequate		
University F	Partially Adequate	Partially Adequate	Partially Adequate		
Polytechnic X	Large Adequate	Partially Adequate	Partially Adequate		
Polytechnic Y	Fully Adequate	Large Adequate	Partially Adequate		
Polytechnic Z	Large Adequate	Partially Adequate	Partially Adequate		

<input type="checkbox"/>	Not practised/not adequate	<input type="checkbox"/>	Partially adequate	<input type="checkbox"/>	Large adequate	<input type="checkbox"/>	Fully adequate	<input type="checkbox"/>	Not assessed
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**Table L3-2:** Comparison of process capability across the New Zealand tertiary sector

## Process L4

*Teaching staff manage student expectations over the type and timeliness of responses to student communications*

### Process Description

As noted above, a key aspect in ensuring student satisfaction with a course is the sense that they have been able to engage with teaching staff. Part of ensuring this is a clear management of expectations of the ability of teaching staff to respond to students in a timely fashion (Fredericksen *et al.*, 1999; Shea *et al.*, 2001; Waterhouse and Rogers, 2004). Particularly when students are isolated, they need to be reassured that they have not been forgotten. Prompt feedback is one of the seven principles (Chickering and Ehrmann, 1996).

Evidence of capability in this process is shown by clear commitments to provide feedback and responses within a designated time period. This may include formal processes for how the different channels are used and a description of how teaching staff will respond on these channels (if at all).

Table L4-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Timeliness of staff responses to students is measured as is student satisfaction to the responses and this is used to determine standards and training for such communication.
<b>4: Managed</b>	Student communications are measured and reports generated about usage of different channels by students and the timeliness and effectiveness of staff responses on those channels.
<b>3: Defined</b>	Institutional expectations of how teaching staff should respond to student communications are defined for each communication channel used along with training and guidance on effective use of the channels for supporting student learning outcomes.
<b>2: Planned</b>	Individual courses state how student communications will be treated for each channel supplied, including what types of communication are appropriate and what type of response students can normally expect. Teaching staff provide virtual 'office hours' to students.
<b>1: Initial</b>	Students are provided with information required to contact teaching staff through a given set of communication channels. Teaching staff response information limited to assessment aspects of courses.
<b>0: Not performed</b>	Contact information and guidance not provided for communication channels in use.

**Table L4-1:** Descriptions of process practices by capability level

### Sector Performance

This process was not well performed across the sector. Basic contact information was usually provided, although not always in a distinct section of the course materials. Very little information was provided to students on how communications were handled, what ways would be best suited for particular issues, or when and in what form they might expect a response. A notable exception was Polytechnic Y, which had a clear statement of the timeliness of response that students could expect and a clear process for dealing with failures to meet that standard by the teaching staff.

One useful aspect of University B's materials was a standard section in each course outline aimed at finding assistance for a wide variety of student needs, both educational and personal. The policy of University E clearly conveyed the need for staff involved in courses to be clear about responsibilities for handling various forms of student communication but this was not supported with clear guidance on conveying this information to students. Clearly the sector is failing to define minimum standards in this area and commit to them with their students, preferring to depend on the abilities of teaching staff to manage expectations informally within courses.

L4: Teaching staff manage student expectations over the type and timeliness of responses to student communications					
	1	2	3	4	5
University A	Partially adequate	Partially adequate	Partially adequate		
University B	Fully adequate	Partially adequate	Partially adequate		
University C					
University D	Partially adequate		Partially adequate		
University E	Fully adequate		Largely adequate		
University F	Partially adequate				
Polytechnic X	Partially adequate				
Polytechnic Y	Fully adequate	Fully adequate	Partially adequate		
Polytechnic Z	Partially adequate	Partially adequate			

Not practised/not adequate  
  Partially adequate  
  Largely adequate  
  Fully adequate  
  Not assessed

**Table L4-2:** Comparison of process capability across the New Zealand tertiary sector



## Process L5.

*Feedback to student assignments and questions is constructive and provided in a timely manner*

### Process Description

Prompt and constructive feedback as a critical component of effective student learning is widely acknowledged (for example Laurillard 2002). To be effective the feedback must be timely and must also assist students in further understanding the material rather than just indicating correctness (Garrison, 1989).

This process is one of the seven principles (Chickering and Ehrmann, 1996) and is also one of the Quality on the Line teaching and learning benchmarks (IHEP, 2000) and CanREGs (Barker, 2002).

Evidence of capability in this process is seen through the use of informal and formal feedback processes such as marking rubrics. Policy should require prompt and useful feedback aimed at improving student capability in related tasks rather than just the immediate goal and teaching staff should be provided with guidelines and assistance in the provision of more effective feedback.

Table L5-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Student satisfaction with feedback and measures of feedback types and quality are used to determine resourcing and training requirements for staff and courses.
<b>4: Managed</b>	Measures are collected of student satisfaction with feedback, the extent to which feedback is delivered in response to student work, and the use of formative assessment techniques. Compliance with institutional expectations enforced on the basis of these measures.
<b>3: Defined</b>	Institutional expectations for the quality and type of staff feedback provided to students in all courses are defined and communicated to staff. Guidelines and training provided to teaching staff on how to use feedback to improve student learning along with support on the use of formative as well as summative assessment.
<b>2: Planned</b>	Individual courses have mechanisms for students to be provided with feedback beyond the marks assigned for assessed work. Marking rubrics with spaces explicitly provided for formative feedback are used and provided to students in advance. Formative assessment processes, or staged assessment with opportunities for feedback and reflection are provided. Discussion forums used to explore assessment outcomes further.
<b>1: Initial</b>	Students are provided with feedback in response to assessed work as marks with minor explanatory notes. Emphasis of feedback is on summative aspects.
<b>0: Not performed</b>	No evidence that feedback is provided beyond marks for assessed work

**Table L5-1:** Descriptions of process practices by capability level

### Sector Performance

Some form of feedback is generally provided to students in all courses and the need for good feedback noted in all institutional policies. What was missing was any sense that the feedback was integrated formally into most assessment programmes and used to enhance student performance during the course. Policies noted the need for feedback and its contribution to student learning but there was little guidance on how to do this effectively.

University A provided best practice at level 1 and 2, with students receiving detailed marking schemes for each piece of assessed work. These schemes included a feedback structure that clearly indicated the type of feedback students could expect and which encouraged the staff marking to provide detailed information in response to student work rather than just individual marks. In one of the projects this also included guidance on how to use the feedback to improve future performance. Similarly, Polytechnic Y provided a strong structure encouraging feedback that supported learning rather than just summative information on performance.

The policy provided by University E strongly encouraged feedback to student work that was aimed at building student skills beyond the immediate task, but this was not supported by guidance on how that might be achieved. Policies also discussed the need for timely feedback, but this did not appear to be communicated to students as specific undertakings in their courses.

L5: Feedback to student assignments and questions is constructive and provided in a timely manner					
	1	2	3	4	5
University A	Fully adequate	Fully adequate	Partially adequate		
University B	Largely adequate	Largely adequate	Partially adequate		
University C	Largely adequate	Largely adequate	Partially adequate		
University D	Largely adequate	Partially adequate	Partially adequate		
University E	Largely adequate	Partially adequate	Largely adequate		
University F	Largely adequate	Largely adequate		Partially adequate	
Polytechnic X	Largely adequate				
Polytechnic Y	Fully adequate	Fully adequate	Partially adequate		
Polytechnic Z	Largely adequate	Largely adequate			

<input type="checkbox"/>	Not practised/not adequate	<input type="checkbox"/>	Partially adequate	<input type="checkbox"/>	Largely adequate	<input type="checkbox"/>	Fully adequate	<input type="checkbox"/>	Not assessed
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**Table L5-2:** Comparison of process capability across the New Zealand tertiary sector

## Process L6.

*Students are instructed in the proper methods of effective research, including assessment of the validity of resources*

### Process Description

In order to build the capability of students, much as with literacy and numeracy, they need to be empowered to go beyond the material supplied by an teacher and develop the skills to acquire, evaluate and use material from a wide range of sources (Goetsch and Kaufman, 1998). Research skills and information literacy need to be developed and built upon throughout courses and students encouraged to learn how to go beyond consumer web search engines. This process is one of the Quality on the Line teaching and learning benchmarks (IHEP, 2000).

Evidence of capability in this process is seen through the provision of resources on conducting research such as links to suitable databases, instructions on where to find suitable books and support materials provided by groups such as libraries on information literacy skills. Development of research skills should also be reflected in the assessment tasks of a course and the associated marking and feedback rubrics. Research skill development should be reflected in the learning objectives either implicitly or explicitly.

Table L6-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Measures of the ability of students to conduct research are collected as part of post-experience questionnaires and are used to determine standards for course design as well as resourcing for support facilities.
<b>4: Managed</b>	Measures of students' abilities to conduct effective research collected and reported on regularly.
<b>3: Defined</b>	Institutionally defined standards for research skills and information literacy available and supported through groups such as the library. Training sessions and support provided to all students. Formal institutional policy that students have course work on conducting research throughout their studies.
<b>2: Planned</b>	Organised sessions provided as part of the course, marking rubrics include aspects that relate to quality of research undertaken by students.
<b>1: Initial</b>	Students provided with instructions on where to get assistance on research methods, tutorials or other material provided in individual courses.
<b>0: Not performed</b>	No information given on how to research and evaluate other information sources for the course.

**Table L6-1:** Descriptions of process practices by capability level

### Sector Performance

The renewed focus on research encouraged by the PBRF does not appear to have yet resulted in the explicit development of student research skills during their courses. While the polytechnic sector can claim that the emphasis on research is not as strong as in the university sector, there is still the need for all students to develop the skills needed to effectively work with information in their field. Despite these two drivers, there was very little support provided by any of the institutions for student research.

Information and services available were often presented in courses in a confusing fashion. This contrasted with the information provided in library web pages by most institutions, which was usually much clearer. Generally, there appears to be a presumption that the students will acquire the necessary skills themselves, perhaps through the services of institutional libraries, and will know when they need to use that service. Many of the projects and courses assessed were presented as self-contained, rather than encouraging the wider use of research and information resources. This included the institutional LMSs, many of which did not provide direct links to library facilities. This self-contained approach would seem to be short-sighted as it is likely to make the supplied course materials harder to maintain and keep up to date.

University B provided through their library a very useful set of pages for each course containing a customised set of starting points for further research and investigation by students along with direct links to support resources and library staff who could assist the students either on-line or in person. Rather than just providing links to reading material, this clearly enabled the students to engage in self-directed research into the course material while also making assistance readily available. University F was able to demonstrate effective practice by their requirement that all students attend a mandatory library training session that ensured that students were familiar with the research tools provided, although it is less clear that ongoing use was explicitly encouraged in all courses. University A provided strong practice in this process with some projects providing sessions organised specifically to address wider information use. Linkages within assessment and other tasks were done to encourage students to go beyond the immediately supplied materials. Despite research being a lower priority in polytechnics, the materials provided by Polytechnic Z were very clear in encouraging students to make effective use of materials from a range of sources beyond the course resources supplied.

The policies of University E clearly encouraged staff to incorporate opportunities for research of different types into courses but did not provide guidance on how this might be achieved in practice. It is clear that performance across the sector has significant room for improvement. Institutions cannot assume that telling students about facilities such as the library is sufficient. Courses and teaching staff need to encourage their use and demonstrate how they will improve student learning outcomes.

<b>L6: Students are instructed in the proper methods of effective research, including assessment of the validity of resources</b>					
	1	2	3	4	5
University A	Fully adequate	Largely adequate			
University B	Not practised/not adequate	Partially adequate	Partially adequate		
University C	Largely adequate	Partially adequate	Partially adequate		
University D	Partially adequate	Partially adequate			
University E	Partially adequate	Partially adequate	Largely adequate		
University F	Fully adequate	Fully adequate	Partially adequate		
Polytechnic X	Partially adequate				
Polytechnic Y	Partially adequate	Partially adequate	Partially adequate		
Polytechnic Z	Fully adequate	Largely adequate	Largely adequate		

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**Table L6-2:** Comparison of process capability across the New Zealand tertiary sector

## Process L7.

*Learning outcomes for each course are summarised in a clearly written, straightforward statement*

### Process Description

Clear, challenging, and complete learning outcomes or objectives are essential for guiding and supporting students engaged in e-learning (Laurillard, 2002; Ramsden, 2003). These should cover the range of cognitive levels (Bloom *et al.*, 1956) and should be seen as a tool to assist both teaching staff in the design and development of courses and students in their learning (Hillesheim, G., 1998; Ragan, 1999; Ramsden, 2003). This process is one of the Quality on the Line course support benchmarks (IHEP, 2000).

Evidence of capability in this process is seen through clear lists of objectives covering a range of cognitive and practical outcomes that are explicitly used to design elements of courses and are communicated to students in a consistent fashion throughout the course. Objectives should be referenced explicitly when describing the aims of assessed work and other activities and should be apparent in the marking and feedback criteria. Templates and guidelines should be provided that assist in the development, maintenance and use of these lists by staff and students, and staff should be provided with training and development opportunities to assist them in their use of learning objectives in courses.

Table L7-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Information on success of courses as measured by the stated learning outcomes is used to inform and support the design and (re)development of courses. Strategic planning of teaching and learning across the institution is used to determine new or modified outcomes that are promulgated to courses and programmes.
<b>4: Managed</b>	Information is collected on the extent to which courses are providing learning outcomes that address the full range of cognitive outcomes appropriate to the course and students, and how courses are incorporating those learning outcomes in their design and delivery. Performance of students against the outcomes measured using a variety of qualitative and quantitative metrics. Regular reviews of course learning objectives undertaken to ensure currency and effectiveness.
<b>3: Defined</b>	Institutional standards for learning objectives are provided and a formal statement of these is a required part of course documentation provided to students. Teaching staff are provided with training and guidelines on developing learning objectives that address the full range of cognitive outcomes appropriate to the course and students. Training, templates and guidelines are also provided on how to use learning objectives explicitly in the design and delivery of courses in order to assist student learning. Overall graduate attributes are used to inform the process of course learning outcome development and maintenance.
<b>2: Planned</b>	Outcomes are described formally and linked explicitly throughout learning and assessment activities using consistent language.
<b>1: Initial</b>	Outcomes are provided in an informal or disorganised way and are not referred to in the context of learning and assessment activities.
<b>0: Not performed</b>	No learning outcomes provided.

**Table L7-1:** Descriptions of process practices by capability level

### Sector Performance

Despite a general sector requirement that courses have learning objectives, these were not as clearly communicated as might be expected. Rather than a clear list of objectives that could be read as a set and referred to throughout the course, many institutions chose to provide this information as poorly set out paragraphs of information that were not then used again in courses. Even where clear lists of objectives were provided, it was not uncommon to see different wording used elsewhere in the course to convey the same outcome. Unfortunately it appears that many courses regard the learning objectives as simply a bureaucratic requirement, and not a tool for enhancing learning. This was also apparent in that outcomes were usually not available to students until after they had enrolled in the course.



One project from University A easily had the best practice in this process. The learning objectives were provided as numbered bullet points early in the course outline along with supporting material explaining them. These same objectives were then cross-referenced throughout the course timetables and assessment descriptions making the underlying logic and plan of the course clearly apparent to the students.

Polytechnic Y, however, was the only institution that provided the learning outcomes in a clear statement that students could review before enrolling in a course. This information was presented to students along with a range of other core information such as the assessment programme and technology requirements of students and was easily the best practice seen in the institutions assessed. Importantly, all of this was available freely without any need to contact the institution.

Policies in both University B and E emphasize the importance of learning objectives in assisting students with understanding what they are going to achieve in a course and where to focus their energies. It is clear from the projects and courses assessed however, that many institutions assume that students are able by themselves to convert these rather abstract statements into useful guides to study and expectations for the course.

L7: Learning outcomes for each course are summarized in a clearly written, straightforward statement					
	1	2	3	4	5
University A	Fully adequate	Partially adequate	Partially adequate	Partially adequate	
University B	Fully adequate		Largely adequate	Partially adequate	
University C	Partially adequate	Partially adequate	Partially adequate		
University D	Largely adequate	Partially adequate	Partially adequate		
University E	Largely adequate	Partially adequate	Largely adequate		
University F	Partially adequate				
Polytechnic X	Partially adequate				
Polytechnic Y	Fully adequate	Largely adequate	Partially adequate		
Polytechnic Z	Fully adequate	Partially adequate	Partially adequate		

Not practised/not adequate  
  Partially adequate  
  Largely adequate  
  Fully adequate  
  Not assessed

**Table L7-2:** Comparison of process capability across the New Zealand tertiary sector

## Process L8

*Assessment of students communicates high expectations*

### Process Description

As noted by Laurillard (2002, page 204) “Given that students orient their study towards their perception of the assessment, the solution offered is to find more challenging forms of assessment.” One of the major criticisms of early use of computers in learning is that the approaches for assessment were repetitive and limited to basic approaches such as multiple-choice questions. Assessment has both summative and formative aspects, and ideally needs to mix these in a way that builds student capability over the course rather than just certifying performance at the end (Ramsden, 2003).

This process is one of the seven principles (Chickering and Ehrmann, 1996) and also one of the CanREGs (Barker, 2002).

Evidence of capability in this process is seen through the use of assessment programmes designed to support students in achieving the learning objectives and which build capability progressively with opportunities for feedback and reflection. Policy and guidelines should encourage the use of a mix of assessment techniques throughout the course and encourage the use of challenging tasks to motivate performance and learning.

Table L8-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	A formal process of communicating expectations to students is used and monitored, student workload information is collected and used to ensure that standards are maintained in all programmes.
<b>4: Managed</b>	Measurements are collected on student performance in assessments that are used to ensure high expectations are maintained. Compliance with institutional assessment requirements regularly reviewed.
<b>3: Defined</b>	Standards exist for assessment requirements that are used to sustain high expectations through linked assessments. Teaching staff are encouraged to design assessment programmes with a mix of formative and summative aspects and sufficient time for feedback from staff and reflection by students to meaningfully occur. Templates and examples are provided, along with staff development, to support teaching staff designing more effective assessment programmes in their courses.
<b>2: Planned</b>	The assessment programme is designed to build on student skills and experience attained in previous work and there is an explicit relationship between the individual assessments and also with other timetabled activities.
<b>1: Initial</b>	Assessments are described in terms of their own individual outcomes and requirements. Linkages between assessments are incidental or absent.
<b>0: Not performed</b>	No context provided for assessment activities.

**Table L8-1:** Descriptions of process practices by capability level

### Sector Performance

The assessment tasks presented across the projects from all institutions failed to convey any sense that students would be progressively challenged and expected to excel. Generally the assessment tasks were described in isolation to the material being covered in the course and the overall learning objectives (if any). In most cases the tasks were presented as ends in themselves and the students were expected to work out independently why a particular task would contribute to the goals of the course. Policies generally talked about the value of formative assessment and feedback but there was little evidence of templates or guidelines encouraging better practice by staff or any formal review of assessment programmes in detail and attempts to enforce policies in this area.

One particular project from University A provided the best practice in this area, clearly linking the assessment tasks to each other and the overall objectives, thus documenting clearly how the tasks built on each other to improve student capabilities and achievement of the course outcomes. Sadly, this good practice did not appear to be standard, rather reflecting the skills of a particular academic.

L8: Assessment of students communicates high expectations					
	1	2	3	4	5
University A	Partially adequate	Partially adequate	Partially adequate		
University B	Partially adequate	Partially adequate	Partially adequate	Partially adequate	
University C	Partially adequate	Partially adequate	Partially adequate		
University D	Partially adequate	Partially adequate	Partially adequate		
University E	Partially adequate	Partially adequate	Partially adequate		
University F	Partially adequate	Partially adequate		Partially adequate	
Polytechnic X	Partially adequate				
Polytechnic Y	Not assessed	Not assessed	Largely adequate	Not assessed	Not assessed
Polytechnic Z	Partially adequate	Partially adequate			

<input type="checkbox"/>	Not practised/not adequate	<input type="checkbox"/>	Partially adequate	<input type="checkbox"/>	Largely adequate	<input type="checkbox"/>	Fully adequate	<input type="checkbox"/>	Not assessed
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**Table L8-2:** Comparison of process capability across the New Zealand tertiary sector



## Process L9

*Student work is subject to clearly communicated timetables and deadlines*

### Process Description

Particularly in an online environment, students need clear guidance as to the timing of activities and the need to plan their work to meet specified deadlines (Laurillard 2002). By relating the activities and elements of a course in a clear timetable students are encouraged to use their time effectively – maintaining a clear emphasis on ‘time on task’ (Chickering and Ehrmann, 1996). This process is also part of the CanREGs (Barker, 2002).

Evidence of capability in this process is seen by the provision of a clear timetable that relates all of the elements of a course together and communicates the logic underlying the design of the various activities. Particularly in online courses, there should be frequent pointers and reminders to students as to where they should be focusing their energies and the upcoming deadlines that they should be aware of. During the design of materials, explicit consideration should be given to student and staff workload expectations and the impact that this has on the timing of elements of the course.

Table L9-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Student workloads and work clashes are monitored and used to inform the timing of work in individual courses and programmes by teaching staff.
<b>4: Managed</b>	Timetables for work are monitored across courses and used to inform when particular activities occur in individual courses. Compliance with institutional guidelines for workload and timetabling regularly reviewed.
<b>3: Defined</b>	Standards for timetabling of work applied, including workload and the need to convey explicit relationships between course elements. Teaching staff provided with templates and examples along with professional development to support timetabling aspects of course delivery.
<b>2: Planned</b>	Clear communication of deadlines and timetable for all aspects of the course with an explicit chronological relationship between the learning activities and the expectations on the students. The relationships between activities such as assessment and other course elements are explicit and logical. Timing information repeated throughout course materials as necessary.
<b>1: Initial</b>	Deadline and timing information provided only as part of individual assessments or activities.
<b>0: Not performed</b>	No timetable or deadlines provided with course materials.

**Table L9-1:** Descriptions of process practices by capability level

### Sector Performance

All of the courses assessed provided some information about the timing of key events such as assessment deadlines and sections of course materials. While the information was usually clear, most courses did not do a good job of conveying the logic and relationship between the different elements and their timing. Many listed assessment deadlines entirely separately to other timetables such as lectures or online sessions.

University B provided the clearest set of information to students on course timing along with a detailed plan during the design of courses that explicitly considered student workload when assigning deadlines. Students were provided with a single table that outlined the progression of the course and the relationships between the different elements and their timing. Also useful was the approach adopted by Polytechnic Y, where students were provided with a course study guide that described what would happen throughout the course and the expectations on students during the different weeks.

University E provided the best policy in this area, stating the need for clear communication of timing and workload expectations but no guidance was provided as to how to do this effectively.

L9: Student work is subject to clearly communicated timetables and deadlines					
	1	2	3	4	5
University A	Largely adequate	Largely adequate	Partially adequate		
University B	Largely adequate	Largely adequate	Partially adequate		
University C	Largely adequate	Partially adequate	Partially adequate		
University D	Largely adequate	Partially adequate	Partially adequate		
University E	Largely adequate	Partially adequate	Largely adequate		
University F	Largely adequate	Partially adequate	Partially adequate	Partially adequate	
Polytechnic X	Partially adequate				
Polytechnic Y	Largely adequate	Partially adequate	Partially adequate		
Polytechnic Z	Largely adequate	Partially adequate			

Not practised/not adequate  
  Partially adequate  
  Largely adequate  
  Fully adequate  
  Not assessed

**Table L9-2:** Comparison of process capability across the New Zealand tertiary sector

## Process L10

*Courses are designed to support a diversity of learning styles and to ensure accessibility*

### Process Description

An increasing diversity of students needs are now required to be supported by all courses and this includes students with a variety of learning styles (Kolb, 1984; Ragan, 1999) and capabilities, including disabilities. Supporting different styles can be done through the use of a variety of tools and elements that do not make common assumptions (Palloff and Pratt, 2003). Ensuring that materials are accessible to students with disabilities requires careful design and consideration of accessibility issues throughout the creation of materials, as well as the use of development tools to support student use of assistive technologies (Witt and McDermott, 2004).

Respect of diverse talents and ways of learning is one of the seven principles (Chickering and Ehrmann, 1996). Similar requirements are part of the CanREGs (Barker, 2002), ANTA Toolbox guidelines (ANTA, n.d.), WCET guidelines (WCET, 2000), ADEC guiding principles (ADEC, 2002) and are also a Quality on the Line course development benchmark (IHEP, 2000).

Evidence of capability in this area is seen through design and implementation practices that use a variety of complementary approaches to support student learning, including a variety of media. Accessibility should be explicitly considered during the design process and standards such as those provided by the W3C (<http://www.w3c.org/WAI/>) used to ensure compliance.

Table L10-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Effectiveness of attempts to provide accessibility and diversity is measured and used to inform development of new techniques which are then formally promulgated. Accessibility requirements applied during the selection and implementation of new technologies for e-learning.
<b>4: Managed</b>	Compliance with standards for diversity and accessibility is monitored and mandated prior to and during delivery of all courses. Course materials regularly reviewed to ensure that accessibility measures are implemented where possible and appropriate. Students regularly provided with opportunities to provide feedback on accessibility issues.
<b>3: Defined</b>	Standards for accessibility and diversity are provided. Staff provided with templates and guidelines that illustrate how to make courses accessible to students. Staff development provided to ensure that all staff are aware of the need to ensure accessibility and how they can provide alternatives for students. Students are provided with a clear set of standard support services available in all courses.
<b>2: Planned</b>	Consistent use of variety in teaching and learning activities throughout the course. Formal design and development approaches used to ensure accessibility of activities where possible. Students told of measures undertaken to support accessibility and diversity and encouraged to make use of alternatives.
<b>1: Initial</b>	Limited or inconsistent use of a variety of teaching and learning methods and accessible design and development approaches. Dependence on features of LMSs to provide a default level of accessibility.
<b>0: Not performed</b>	Inaccessible or single teaching approach used in courses.

**Table L10-1:** Descriptions of process practices by capability level

### Sector Performance

Sector performance in this area was very poor. Almost no projects or courses appeared to consider the needs of students with accessibility issues despite the legal and institutional requirements that they do so. For the most part support for accessibility was provided through the institutional LMS features but this did not take into account the content provided such as media or documents. Only one of the projects

reviewed had explicit consideration of accessibility issues beyond technical interoperability. When media such as Flash was used there was no evidence that the accessibility features built into the Flash product were being used. Similarly, text equivalents to other media such as images were not often provided.

All of the institutions had clear policies in support of accessibility as required by law, but in practice there is little evidence of this affecting the design and development decisions. In most cases support for accessibility depended on a post-facto remediation undertaken when a student encountered difficulties, something that could be very problematic in the more elaborate designs and a significant risk for all the institutions given the legal requirement to be accessible. Polytechnic Y was the clear standout in this area, with the requirement that all courses provide materials in a wide range of formats and very clear instructions provided to students on how they could get access to alternative materials and assistance with their learning.

L10: Courses are designed to support a diversity of learning styles and to ensure accessibility					
	1	2	3	4	5
University A	Partially adequate	Partially adequate	Partially adequate		
University B	Partially adequate	Partially adequate	Partially adequate	Not assessed	Not assessed
University C	Partially adequate	Partially adequate	Partially adequate	Partially adequate	
University D	Partially adequate	Partially adequate	Partially adequate		
University E	Partially adequate	Partially adequate	Partially adequate		
University F	Partially adequate	Partially adequate	Partially adequate		
Polytechnic X	Partially adequate				
Polytechnic Y	Partially adequate	Partially adequate	Largely adequate		
Polytechnic Z	Partially adequate		Partially adequate		

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**Table L10-2:** Comparison of process capability across the New Zealand tertiary sector

## Development: Processes surrounding the creation and maintenance of e-learning resources

The goal of this process area is efficient and effective use of resources in the creation and maintenance of e-learning materials and courses. The individual processes are directed at informing the development of resources and ensuring that this is done in a way that builds capability based on experience and success of e-learning deployment in the institution.

The individual processes are listed below, followed by an overview of sector and institutional performance and then a detailed consideration of each process in turn.

<b>Development: <i>Processes surrounding the creation and maintenance of e-learning resources</i></b>	
D1.	Guidelines regarding minimum standards are used for course development, design and delivery
D2.	The reliability of the technology delivery system is as failsafe as possible
D3.	Learning outcomes, not the availability of existing technology, determine the technology being used to deliver course content
D4.	Technical assistance in course development is available to teaching staff
D5.	Teaching staff are encouraged to use technical assistance when (re)developing courses
D6.	Teaching staff members are assisted in the transition from classroom teaching to online instruction

### Sector Performance

Capability in this process area is particularly dependent on the existence of formal procedures and support within an institution. Universities A, B and E all have staff appointed explicitly to support e-learning development and not unexpectedly they have much stronger capability in the area of development. Universities C and D on the other hand have comparatively little invested in supporting e-learning development and consequently show a weaker, ad-hoc, capability. Within the polytechnics there are clearly fewer resources available and a thus a greater dependence on the skills of the teaching staff. This is somewhat offset by a more standardised approach within the institutions.

It is important to note that investment in e-learning development does not automatically imply a centralised team, University A is pursuing a largely devolved model of support that is working well with comparatively strong policies and management oversight. University B on the other hand is using a centralised model and has very strong development processes combined with a clear process for how projects are accepted and supported. In order to build on these strong foundations, both approaches need to have some way of identifying and promulgating standards, guidelines and templates out to the wider university population. The decentralised approach has the risk of pockets of excellence developing, while the centralised approach has the risk of building dependence on a limited number of specialists rather than building capability on a broader front.

More detailed discussion of sector capability for each of the processes in this process area is found below in the discussion for each of the processes.

		University A	University B	University C	University D	University E	University F	Polytechnic Z	Polytechnic Y	Polytechnic X
<b>Development: Processes surrounding the creation and maintenance of e-learning resources</b>										
D1.		Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate
D2.		Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate
D3.		Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate
D4.		Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate
D5.		Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate
D6.		Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate



## Process D1.

*Guidelines regarding minimum standards are used for course development, design and delivery*

### Process Description

Ad-hoc development of resources has resulted in the proliferation of a wide variety of materials designed to support student learning. Many of these are developed without consideration of how they appear to students moving from course to course, how they can be reused over time, or how to learn from the experience of others in developing effective materials. Standards and guidelines can support more effective practice (Marshall, 2004) and their use can result in cheaper, more useful materials to support student learning.

This process is one of the Quality on the Line course development benchmarks (IHEP, 2000) and is also part of the CanREGs (Barker, 2002), ANTA Toolbox guidelines (ANTA, n.d.) and WCET guidelines (WCET, 2000).

Evidence of capability in this area is seen through the use of consistent, documented practice that reuses previous experience within the institution to build capability. Formal standards are used where available to inform and guide practice and ensure quality and reusability of materials. These standards and guidelines are communicated widely within the institution to encourage wider adoption by teaching staff.

Table D1-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	The effectiveness of institutional standards in influencing student outcomes and efficiency of courses is measured and this information used to maintain and introduce standards for use.
<b>4: Managed</b>	Compliance with defined institutional standards is measured and enforced through regular review and redesign.
<b>3: Defined</b>	Institutional standards for design and delivery of courses are provided and/or referenced and used to inform and constrain pedagogical and technological decisions within courses. Standards are explicitly referenced in templates and throughout staff development activities and are used to inform staff about effective e-learning approaches.
<b>2: Planned</b>	Design and delivery decisions are planned and coherent throughout individual courses. Reference is made to institutional or external standards and guidelines when making course decisions.
<b>1: Initial</b>	Decisions about design and delivery of individual courses are made on a case-by-case basis without reference to institutional or external standards, other than high level external quality assurance such as NZQA. Consistency with other courses, or parts of individual courses, is not formally considered when designing course materials. Apparent consistency in the use of technology in course materials a consequence of inflexibility in the tools used rather than planning for student learning outcomes.
<b>0: Not performed</b>	No structured design and delivery approach used.

**Table D1-1:** Descriptions of process practices by capability level

### Sector Performance

The difference between the institutions with formal processes for project development and support (Universities A, B, E and Polytechnics Y and Z) and those that use ad-hoc approaches is clearly apparent. It is important to note that that rating does not imply that the projects were poorly developed or managed, but rather that limited strategic consideration was given to the design choices and there was little referencing of standard approaches which have proven successful in the particular institution.

A consequence of this ad-hoc design and development approach is that the resulting materials are usually quite different in appearance and technology choices and thus harder to maintain, support and reuse in different settings. There is generally little review and evaluation of the design decisions made in the ad-hoc projects, so there is little building of wider capability in the institution; new projects will solve

the same problems from scratch. Finally, the dependence on individuals in the weaker institutions was clearly apparent and there is a significant risk that much of the knowledge and capability for e-learning development is undocumented and will be lost when those staff leave.

University B had the best practice in this area at levels one and two, with a formal project selection and development process documented and supported by policy and strategy documents that provided direction and guidance for how projects should be developed. The design process used was outlined, along with standard questions for consideration when developing projects. University E had a strong policy that, among other things, required the transfer of expertise back to the wider academic staff of the university. This goal was weakened by the absence of templates or additional resources to support this happening. University A had one of the few examples of supporting effective practice through a guidelines document suggesting what and how aspects of e-learning should be addressed in the local context. In the decentralised teaching environment that prevails in most universities it is vital that teaching staff not only be told what issues need addressing but also how to start addressing them in their own situation. By comparison, the strong result for Polytechnics Y and Z reflected to some extent the stronger central control of teaching development and support at polytechnics compared to universities.

D1: Guidelines regarding minimum standards are used for course development, design and delivery					
	1	2	3	4	5
University A	Fully adequate	Largely adequate	Largely adequate	Partially adequate	
University B	Fully adequate	Fully adequate	Partially adequate		
University C	Partially adequate				
University D	Partially adequate				
University E	Fully adequate	Largely adequate	Partially adequate	Partially adequate	
University F	Partially adequate				
Polytechnic X	Partially adequate				
Polytechnic Y	Fully adequate	Largely adequate	Partially adequate		
Polytechnic Z	Fully adequate	Largely adequate	Partially adequate	Partially adequate	

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**Table D1-2:** Comparison of process capability across the New Zealand tertiary sector



## Process D2.

*The reliability of the technology delivery system is as failsafe as possible*

### Process Description

As noted by Chizmar and Williams (2001) “Faculty desire a network and technical infrastructure that never calls attention to itself, one that doesn’t create barriers to entry for wary teaching staff and students because of its complexity. The infrastructure should be transparent, much as the utility infrastructure that powers our lights and our computers.” The ultimate goal of technology should be that it supports the activities of learning while not dominating the process, becoming essentially ‘invisible’ (Norman, 1999). Technology that is unreliable will rapidly destroy the confidence of students, will disrupt the process of building effective engagement and act as a significant barrier to the use of technology by staff (Butler and Sellborn, 2002).

This process is one of the Quality on the Line instructional support benchmarks (IHEP, 2000) and is also part of the CanREGs (Barker, 2002) and the WCET guidelines (WCET, 2000). It is also one of the seven principles (Chickering and Ehrmann, 1996).

Evidence of capability in this process is seen through the use of design processes that include explicit consideration of reliability aspects when choosing technology and the basing of this decision on evidence of reliability collected in the institutional context whenever possible. Designs include consideration of alternatives to be used by teaching staff when technology fails and ensuring there are support procedures in place to deal with potential failures. Standards and guidelines are used to communicate which technologies have been proven reliable and regular monitoring and reporting is used to prove and sustain reliability.

Table D2-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Information on technology reliability and compliance with service level agreements used to make decisions about new technologies being made available and whether to allow the ongoing use of existing technology. Service level agreements and standards regularly revised as student learning needs and technology use evolve.
<b>4: Managed</b>	Detailed information on the reliability of technology collected during the delivery of courses and regularly reported upon. Compliance with service level agreements regularly reported upon.
<b>3: Defined</b>	Standards for reliability and support of delivery technologies in place and used when selecting technologies for courses. Templates for service level agreements exist and are used to define standard support of all new technologies. Systems, either institutionally provided or outsourced, are subject to regularly revised service level agreements that explicitly consider the impact of technology on student learning.
<b>2: Planned</b>	Explicit consideration of reliability used in the process of selecting technologies for delivery within individual projects. Service level agreements used to ensure that centrally or externally provided services are reliable.
<b>1: Initial</b>	No explicit consideration of reliability in the establishment or maintenance of technologies used. Dependence on the inherent reliability of commercial systems and the services of institutional technology groups without service level agreements.
<b>0: Not performed</b>	Systems are unreliable.

**Table D2-1:** Descriptions of process practices by capability level

### Sector Performance

Capability in this process was dominated by the dependence on the standard services provided by central IS groups in the different institutions. As well as maintenance of the central LMS this also included related systems and facilities such as networks, specialist servers for video and similar technology. Unfortunately the growth in usage of the LMS and other systems as a core infrastructure appears to have taken institutions

almost by surprise and there is a general need for explicit consideration of issues of redundancy and reliability now that these systems are the public faces of teaching. It is important to note that none of the systems appeared badly managed or unreliable, rather reliability of delivery was not evident in planning and policy in other than general terms.

Two different approaches were evident in the sector: central provision of a standard suite of technologies from a mix of vendors, or the use of an outsourced technology provider subject to commercial contracts and service level agreements.

Among the institutions providing support internally, University A had the strongest performance in this process with regular reporting on system availability and technical issues being processed through a register that was overseen outside of the IT group in order to ensure strong business alignment. University E's strength came from the consistent use of a subset of centrally supplied technologies that had been tested under local conditions, what is currently missing is a formalisation of that process and a methodology for ongoing measurement and testing. Performance across all of the institutions could be improved by being more explicit with recommendations and guidelines for the entire institution supported by evidence of use in that institution.

Polytechnics X and Y both outsourced their e-learning infrastructure, differing in the extent to which external support was used and the use of commercial versus open-source software in the systems. In both cases this reduced reliability concerns to an explicit use of contracts and service level agreements. Outsourcing does have the advantage of making this information explicit but with the need to continually monitor contract compliance and review the range of services provided. In both cases it is not yet apparent how strong monitoring will be put in place in order to ensure ongoing reliability and quality service.

D2: The reliability of the technology delivery system is as failsafe as possible					
	1	2	3	4	5
University A	Fully adequate	Fully adequate	Partially adequate	Partially adequate	
University B	Largely adequate	Partially adequate	Partially adequate		
University C	Largely adequate	Partially adequate			
University D	Largely adequate				
University E	Fully adequate	Largely adequate			
University F	Largely adequate				
Polytechnic X	Fully adequate	Fully adequate	Partially adequate		
Polytechnic Y	Fully adequate	Largely adequate	Partially adequate		
Polytechnic Z	Largely adequate	Largely adequate	Partially adequate		

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**Table D2-2:** Comparison of process capability across the New Zealand tertiary sector

## Process D3.

*Learning outcomes, not the availability of existing technology, determine the technology being used to deliver course content*

D3

### Process Description

The importance of learning outcomes or objectives has already been discussed in L7. It is clear that the use of these as a tool to guide the selection of technologies is important as a means of ensuring that appropriate technologies are used in a way that has a desired outcome (Ragan, 1999).

This process is one of the Quality on the Line course development benchmarks (IHEP, 2000) and is also part of the CanREGs (Barker, 2002) and the WCET guidelines (WCET, 2000).

Evidence of capability in this area is seen with the use of explicit design processes and plans that link technology decisions with defined student learning outcomes and graduate attributes. This should also include making the underlying design rationale and pedagogy apparent to students when they are introduced to how the technology will be used in the particular course. Teaching staff are provided with templates, examples, training and support in using the range of technologies available to support student learning.

Table D3-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Ability to support learning outcomes used to determine the needs for new technology and whether and how use of existing technology is maintained. Changes in graduate attributes or guidance in developing learning outcomes reflected in technology planning processes.
<b>4: Managed</b>	Ability of technologies to support learning outcomes is measured and reported on to users of the technologies.
<b>3: Defined</b>	Technology use supported and encouraged in a way that links individual technologies to specific learning outcomes. Templates and guidelines provided for individual technologies that convey what types of cognitive outcomes can be supported by the technologies. Staff development provided to give staff the necessary skills.
<b>2: Planned</b>	Explicit plan relating the learning outcomes to technology decisions used to guide the design and delivery of the course.
<b>1: Initial</b>	Technology use justified by requirements other than learning outcomes. For example, the use of a standard LMS or facilitation of administrative and operational aspects of courses including communication with students.
<b>0: Not performed</b>	No explicit justification for any technology use within courses.

**Table D3-1:** Descriptions of process practices by capability level

### Sector Performance

Technology decisions in most courses assessed were made on the basis of the available institutional facilities, particularly the central LMS. Even in those institutions with formal design processes, the decisions tended to reflect a normal practice rather than an explicit analysis of the learning objectives and the implications of these for the technologies chosen. In many cases technology use was justified on the basis that it enabled communication with students. Communication by itself is not, however, an automatic guarantee of improved student learning, an explicit pedagogical approach enabled by the communication tools must be used.

The lack of linkage to student learning outcomes may reflect the observations made in process L7 that learning objectives appear to be seen as pro-forma lists rather than tools for supporting the learning and teaching process. Exceptions to the rule were usually a consequence of the learning objective having a technology-based outcome.

University E benefited in this area from their formal process requiring staff consider how the technology choices will directly contribute to the learning outcomes. This consideration resulted in strong practice but little was provided in the way of examples or guidelines to assist teaching staff in thinking through options and opportunities. Similar policy requirements at Polytechnic Y also contributed to comparatively stronger capability in this process.

Formal processes transferring expertise from specialists to teaching staff in the selection of technology that supports learning outcomes will improve performance in all of the institutions assessed. This transfer should be supported by evidence and examples of the use of technology to achieve particular learning outcomes specific to that institution and incorporated into formal staff development programmes. Improvements in this process would also likely improve capability in related areas such as process L10 for accessibility support.

<b>D3: Learning outcomes, not the availability of existing technology, determine the technology being used to deliver course content</b>					
	1	2	3	4	5
University A	Largely adequate	Partially adequate	Largely adequate		
University B	Largely adequate	Partially adequate	Partially adequate		
University C	Largely adequate	Partially adequate			
University D	Partially adequate	Partially adequate			
University E	Fully adequate	Largely adequate	Partially adequate		
University F	Largely adequate				
Polytechnic X	Largely adequate				
Polytechnic Y	Largely adequate	Largely adequate	Partially adequate		
Polytechnic Z	Largely adequate	Partially adequate			

Not practised/not adequate  
  Partially adequate  
  Largely adequate  
  Fully adequate  
  Not assessed

**Table D3-2:** Comparison of process capability across the New Zealand tertiary sector

## Process D4.

*Technical assistance in course development is available to teaching staff*

### Process Description

Teaching staff are generally not familiar with the extensive literature and techniques of course design and development available to improve student learning outcomes. Support provided to teaching staff in effective learning design is vital if courses are to develop pedagogical approaches that reflect the state of current understanding, as opposed to traditional approaches (Ragan, 1999). By working with pedagogical experts teaching staff can be encouraged to consider pedagogies that may make more effective use of available technology or, alternatively, technologies that enable particularly effective pedagogical approaches that they may not have considered (Wingard, 2004).

This process is one of the Quality on the Line faculty support benchmarks (IHEP, 2000) and is also part of the WCET guidelines (WCET, 2000).

Evidence of capability in this area is seen through the use of expert assistance in the design of the pedagogical approaches for courses. Access to this support is managed by the institution to ensure efficient and equitable use of time and the achievement of strategic goals as well as short term requirements. Effective approaches in the institutional context are communicated through examples, case studies, standards and guidelines customized for the institution and these are used in training programmes for teaching staff.

Table D4-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Information on the effectiveness of assistance provided to teaching staff and the outcomes of courses is used to inform resourcing for ongoing and new assistance, and guides the nature and type of assistance are provided.
<b>4: Managed</b>	Effectiveness of course development assistance is formally evaluated in quantitative and qualitative terms and the allocation of the assistance resources are undertaken in a planned and formal way reflecting strategic goals rather than individual staff priorities or relationships.
<b>3: Defined</b>	How assistance in course development is to be used is defined formally by the institution and is part of the course development process. Standards for course development are available and are used by the staff providing assistance. Formal criteria for prioritising access to limited development resources are defined. Teaching staff are provided with templates, examples, training and support in using the range of technologies available to support student learning.
<b>2: Planned</b>	Assistance in course development is available on request but without the need for scheduling or planning availability throughout the process of course design and development.
<b>1: Initial</b>	Technical assistance in course development depends on short term or informal arrangements or the skill of colleagues engaged in non-technical support roles incidental to the course.
<b>0: Not performed</b>	No assistance available in course development.

**Table D4-1:** Descriptions of process practices by capability level

### Sector Performance

Unsurprisingly, performance in this area was dominated by the existence of centrally supplied resources and formal support for e-learning development. Universities B and E and Polytechnic Z particularly benefited from having staff centrally supplied for the purpose of e-learning development and a formal process for determining how these resources would be made available. University A, by comparison, adopted a more decentralised approach which made additional resources available but in a less formal way. The other institutions generally had fewer resources allocated and little ability to support projects in depth. Projects in these institutions generally depended much more on the skills of individual teaching staff and the resources available in their school.

The formal design and development approach adopted by University B was the strongest in this area. Access to support and development resources were controlled through a competitive process that involved clear criteria, independent assessment of proposals, and an overall strategic focus. The design process used was outlined along with standard questions for consideration when developing projects. University E was also strong but provided less information and guidance to staff on the criteria used and there was less explicit consideration of department and faculty strategies in the selection process. In both cases, these could be further strengthened by the use of formal reporting and evaluation processes that make the outcomes of the work widely available within the institution for ongoing reflection and reuse. Polytechnic Z benefited from strong central control of teaching staff workload and a central support team aligned with that control.

Regardless of the support model chosen, demonstrating the impact that allocated resources are having on overall institutional and student outcomes is likely to become more important, particularly as use of e-learning and the resources allocated for it continue to grow.

D4: Technical assistance in course development is available to teaching staff					
	1	2	3	4	5
University A	Fully adequate	Largely adequate	Partially adequate		
University B	Fully adequate	Fully adequate	Largely adequate	Partially adequate	
University C	Largely adequate	Partially adequate			
University D	Largely adequate	Partially adequate			
University E	Fully adequate	Fully adequate	Fully adequate	Partially adequate	
University F	Partially adequate	Partially adequate			
Polytechnic X	Largely adequate	Partially adequate			
Polytechnic Y	Partially adequate	Partially adequate	Partially adequate		
Polytechnic Z	Fully adequate	Fully adequate	Partially adequate		

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**Table D4-2:** Comparison of process capability across the New Zealand tertiary sector

## Process D5.

*Teaching staff are encouraged to use technical assistance when (re)developing courses*

### Process Description

The proliferation of technologies used in modern e-learning mean that it is almost impossible for any one person to be expert in all of them, particularly when they are employed to be expert in something entirely different. Provision of expert technical assistance is vital if institutions are to move away from ad-hoc developments and encourage the effective use of technology by staff (Butler and Sellborn, 2002). Use of experts greatly increases the likelihood that materials will be developed to support standards and will be designed for maintenance and reuse. Experts are also more likely to ensure that materials are designed with accessibility and flexibility in mind (see process L10).

This process is one of the Quality on the Line faculty support benchmarks (IHEP, 2000) and is also part of the WCET guidelines (WCET, 2000).

Evidence of capability in this process is seen in the availability of technical assistance and staff development for the full range of technologies that are provided as standard in the institution. Access to this support is managed to ensure efficient and equitable use of time and the achievement of strategic goals as well as short term requirements. Effective approaches in the institutional context are communicated through examples, case studies, standards and guidelines customized for the institution as well as during training for teaching staff.

Table D5-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Type and availability of technical assistance is determined in response to measures of use and other determinants of available technology, as well as the assessed skills of the teaching staff working with particular technologies.
<b>4: Managed</b>	Use of technical assistance by teaching staff is measured and reported on as to its effectiveness and impact on the final course design and implementation.
<b>3: Defined</b>	Institutional standards for availability of technical assistance exist and are provided to teaching staff. The processes for course (re)development explicitly consider the allocation and use of technical assistance. Teaching staff are provided with templates, examples, training and support in using the range of technologies available to support student learning.
<b>2: Planned</b>	Technical assistance organised formally as part of course (re)development by teaching staff.
<b>1: Initial</b>	Access to technical support depends on informal contacts and the initiative of individual teaching staff.
<b>0: Not performed</b>	Technical aspects of courses depend on individual teaching staff skills and development of these is not supported.

**Table D5-1:** Descriptions of process practices by capability level

### Sector Performance

Performance in this process was very similar to that of process D4 with the existence of a formal process and dedicated staff dominating the results. A key aspect of performance in this process is the existence of control over the evolution of courses as illustrated particularly by the polytechnics. By adopting a more formal approach to consideration of technology choices, institutions are able to ensure a more considered use over extended periods of time, rather than significant changes occurring as the staff responsible for courses change. At least one project assessed was abandoned after development when the teaching staff changed without any formal process or attempt to make ongoing use of the resources developed.

As with process D4, University B provided the best practice with strong design and development support to those projects that were selected. Similarly, the formal approach used by University E was very helpful to the selected projects. In both cases it was much less clear that teaching staff whose projects were not selected for preferential support received similar support and encouragement. Few templates and examples were provided in either institution to assist a transfer and wider uptake of standard solutions. The large number of courses at a typical institution suggests that unless both direct and indirect technical support is provided, most courses will never get the opportunities to engage effectively with e-learning beyond basic use of LMS facilities.

Polytechnic Z provided one possible solution with a clear checklist and quality assurance process that could be used by teaching staff and then checked centrally to ensure that individual courses had used e-learning technology and pedagogy effectively. Combined with regular summary reporting that identified systemic problems and the sharing of successful case studies as models for training and reuse, this would seem to be a very efficient way of improving capability across an entire institution.

D5: Teaching staff are encouraged to use technical assistance when (re)developing courses					
	1	2	3	4	5
University A	Fully adequate	Fully adequate	Largely adequate	Partially adequate	Not practised/not adequate
University B	Fully adequate	Fully adequate	Fully adequate	Partially adequate	Not practised/not adequate
University C	Largely adequate	Partially adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate
University D	Largely adequate	Partially adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate
University E	Fully adequate	Fully adequate	Largely adequate	Not practised/not adequate	Not practised/not adequate
University F	Partially adequate	Partially adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate
Polytechnic X	Partially adequate	Partially adequate	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate
Polytechnic Y	Fully adequate	Partially adequate	Partially adequate	Not practised/not adequate	Not practised/not adequate
Polytechnic Z	Fully adequate	Fully adequate	Partially adequate	Not practised/not adequate	Not practised/not adequate

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**Table D5-2:** Comparison of process capability across the New Zealand tertiary sector



## Process D6.

*Teaching staff members are assisted in the transition from classroom teaching to online instruction*

### Process Description

As noted in process D5, teaching staff are generally more familiar with traditional approaches than with those enabled by e-learning technology and thus need training and support if they are to be effective with new technologies and the associated pedagogies (Buckley, 2002). Experience has shown that old approaches rarely make good use of technology (as demonstrated, for example, by the initially poor results from the use of classroom feedback systems without changes in classroom practice, Judson and Sawada, 2002).

This process is one of the Quality on the Line faculty support benchmarks (IHEP, 2000) and is also part of the WCET guidelines (WCET, 2000).

Evidence of capability in this area includes formal provision of pedagogical assistance and support for teaching staff and a policy expectation that this be used when engaging in (re)development of courses. Design and development processes should explicitly include pedagogical experts as well as technology experts and teaching staff. Teaching staff are provided with templates, examples, training and support in using the range of technologies available to support student learning.

Table D6-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Type and availability of pedagogical assistance is determined in response to measures of effectiveness of different technologies and associated pedagogies. Pedagogical support implications explicitly addressed when introducing new technologies to the institution.
<b>4: Managed</b>	Use of pedagogical assistance by teaching staff is measured and reported on. Measures collected of the effectiveness of pedagogical approaches adopted for particular technologies.
<b>3: Defined</b>	Institutional standards for extent and type of assistance are used to define the assistance available to teaching staff (re)developing courses. Processes for course (re)development explicitly include consideration of pedagogical issues. Guidelines for pedagogical changes that result from technology use are provided for new and existing technologies along with staff development opportunities.
<b>2: Planned</b>	Assistance in changing pedagogies explicitly included in the process of (re)developing individual courses.
<b>1: Initial</b>	Pedagogical changes are made by teaching staff without assistance and support to address issues specific to their own courses or their student's requirements. Training of teaching staff limited to technical aspects of e-learning only.
<b>0: Not performed</b>	No assistance provided to teaching staff in changing pedagogies as a result of technology use.

**Table D6-1:** Descriptions of process practices by capability level

### Sector Performance

Pedagogical support for teaching staff is generally more widely available than technical support throughout the sector. This generally reflects the existence of dedicated units within each institution with a responsibility to provide teaching staff with pedagogical support and development as required by external quality control reviews. All institutions provide teaching staff with access to general workshops on pedagogical issues as well as a range of one-on-one services. What is apparent is that this has not uniformly translated into a consideration of pedagogical issues arising from e-learning. The institutions with a formal design and development process have again tended to do better (Universities A, B and E, and Polytechnics Y and Z) than those who do not have this support. Polytechnics Y and Z have particularly benefited in this process from technology adoption being centrally controlled and the introduction being undertaken in a planned fashion that explicitly considered the impact on teaching staff.

University B again has very strong practices in this area as their design process explicitly involves the academic staff in a consideration of pedagogical issues. The design and development proposals used to gain support explicitly consider the implications of technologies being used on students and staff. For staff, this includes a consideration of the impact on overall workload as well as the pattern of work and the pedagogies they need to adopt to ensure successful student learning outcomes. A particular strength, that is also apparent in process L3, is the explicit consideration of how the interaction between staff, students and materials is affected by the technology and the resulting pedagogical implications.

The sector as a whole would benefit from more evidence-based examples of how technology has positively influenced pedagogical approaches and also how different pedagogies result in more effective use of existing technologies such as central LMS facilities.

D6: Teaching staff are assisted in the transition from classroom teaching to online instruction					
	1	2	3	4	5
University A	Fully adequate	Fully adequate	Largely adequate	Partially adequate	
University B	Fully adequate	Fully adequate	Fully adequate	Partially adequate	
University C	Largely adequate	Largely adequate	Partially adequate		
University D	Largely adequate	Partially adequate			
University E	Fully adequate	Largely adequate	Largely adequate		
University F	Partially adequate	Partially adequate			
Polytechnic X	Partially adequate	Partially adequate			
Polytechnic Y	Largely adequate	Partially adequate			
Polytechnic Z	Fully adequate	Partially adequate			

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**Table D6-2:** Comparison of process capability across the New Zealand tertiary sector

## Coordination and Support: Processes around the day-to-day management and support of e-learning delivery

The goal of this process area is ensuring the efficient and effective day to day management of e-learning delivery so that students and teaching staff can focus on the educational aspects of the course rather than peripheral issues. The individual processes are aimed at ensuring that students are best placed to succeed in their studies using e-learning and are not hindered by lack of information, support or technology.

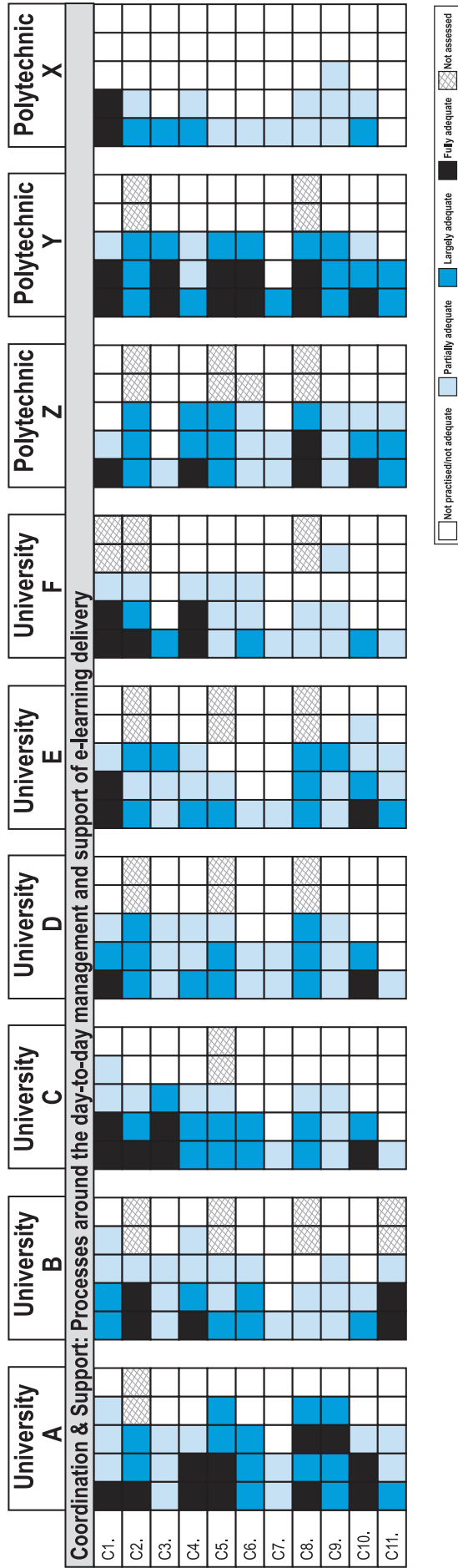
The individual processes are listed below, followed by an overview of sector and institutional performance and then a detailed consideration of each process in turn.

<b>Coordination &amp; Support: <i>Processes around the day-to-day management and support of e-learning delivery</i></b>	
C1.	A centralised system provides support for building and maintaining the e-learning infrastructure
C2.	Students have access to sufficient library resources that may include a 'virtual library' accessible through the World Wide Web
C3.	Teaching staff and students agree upon expectations regarding times for student assignment completion and staff response
C4.	Students are provided with hands-on training and information to aid them in securing material from a range of sources consistent with the discipline or subject
C5.	Students have convenient access to technical assistance throughout the duration of the course/ programme
C6.	Students are provided with detailed instructions regarding the electronic media used in a course prior to commencing it
C7.	Students are able to practice with any technologies prior to commencing a course
C8.	Questions directed to student service personnel are answered accurately and quickly
C9.	A structured system is in place to address student complaints
C10.	Instructor training and assistance continues throughout the online course
C11.	Teaching staff are provided with support resources to deal with issues arising from student use of electronically-accessed data

### Sector Performance

A consistent finding in this process area is that student support is not as well developed or comprehensive as it needs to be if students are to move away from a face to face mode of learning. As with teaching staff, students need support tailored specifically to the e-learning approaches adopted by institutions if they are to learn efficiently and effectively. Much of what was observed in the sector is built on a presumption that students already have the skills and background necessary to take advantage of e-learning. What support is provided to students appears to be a consequence of existing face to face support mechanisms having sufficient flexibility to cope with e-learning, but this is by no means universally true. The libraries of the institutions reviewed appear to be addressing the needs of students somewhat more effectively than the rest of the student support services, increasingly providing a full range of services online with help and support information. What appears to be missing is resources to help teaching staff support students in acquiring information literacy and research skills effectively. Some institutions have been able to extend student IT helpdesk services online but there is still room for significant improvement. A particular weakness lies in ensuring that students are able to familiarise themselves with new technology and can practice using it before it affects their grades.

More discussion of sector capability is found below in the discussion for each of the processes.



## Process C1.

*A centralised system provides support for building and maintaining the e-learning infrastructure*

### Process Description

A Learning Management System or LMS is now almost ubiquitous in tertiary institutions engaged in e-learning, with many different systems, both commercial and open-source, available for use. A centralised infrastructure offers significant benefits to students by simplifying access to e-learning resources and providing consistency, while freeing teaching staff to concentrate on learning and teaching aspects (Katz, 2003). The significant resources expended by the ADL Consortium in developing the SCORM framework (<http://www.adlnet.org/index.cfm?fuseaction=scormabt>) clearly show that ad-hoc initiatives are unlikely to achieve the integration of technologies needed for future e-learning implementations.

This process is one of the Quality on the Line instructional support benchmarks (IHEP, 2000).

Evidence of capability in this process area is seen in the use of an integrated infrastructure with facilities able to be easily accessed by staff and students. The selection of new technologies is done with reference to formal standards and the ability for them to be integrated within the existing infrastructure.

Table C1-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Measures of performance of e-learning infrastructure and existing interoperability are used to develop characteristics and standards that determine the selection of new elements and the retention of existing technology.
<b>4: Managed</b>	Performance of infrastructure in creating, supporting and maintaining courses is measured and reported on, including regular review of the processes used and the need for manual intervention.
<b>3: Defined</b>	Institutional decisions to add new e-learning infrastructure elements are informed by defined standards for interoperability and explicit consideration is given to interoperability with existing elements when designing and planning additions or modifications to the e-learning infrastructure.
<b>2: Planned</b>	Institutional decisions to add new e-learning infrastructure elements are informed by the ability of the new technology to integrate with other pre-existing infrastructure.
<b>1: Initial</b>	Institutional e-learning infrastructure is constructed from independently established and maintained systems. Individual courses or units maintain separate facilities with limited or manual interoperability with institutional facilities.
<b>0: Not performed</b>	No e-learning infrastructure.

**Table C1-1:** Descriptions of process practices by capability level

### Sector Performance

The use of a centralised LMS appears to be accepted as a standard and appropriate way for institutions to provide a core set of e-learning services to students and teaching staff. Whether commercial or open source, these systems have largely replaced standard web servers and stand-alone tools for basic e-learning services. Early adoption was driven by operational needs and it is now clear that a wider consideration of interoperability and standards concerns is happening at most institutions.

The full and total integration of e-learning systems with other core business systems has not yet happened at any institution and some institutions are supporting more than one LMS simultaneously for historical or political reasons. The need for robust monitoring and reporting on the performance of the LMS is an area where capability could be significantly improved across the sector.

The likely direction now is standards-based development and integration that will allow for more seamless reuse of course materials and tighter integration of services. Content and document management systems are likely to dominate infrastructure development as these will allow for substantially improved management of materials and integration with library resources. Copyright licensing issues are likely to also drive the need for detailed reporting of course content usage by staff and students.

C1 A centralized system provides support for building and maintaining the e-learning infrastructure					
	1	2	3	4	5
University A	Fully adequate	Partially adequate	Partially adequate	Partially adequate	
University B	Largely adequate	Largely adequate	Partially adequate	Partially adequate	
University C	Fully adequate		Partially adequate	Partially adequate	
University D	Fully adequate	Largely adequate	Partially adequate		
University E	Fully adequate		Partially adequate		
University F	Fully adequate	Fully adequate	Partially adequate	Not assessed	Not assessed
Polytechnic X	Fully adequate	Fully adequate			
Polytechnic Y	Fully adequate		Partially adequate		
Polytechnic Z	Fully adequate	Partially adequate			

<input type="checkbox"/>	Not practised/not adequate	<input type="checkbox"/>	Partially adequate	<input type="checkbox"/>	Largely adequate	<input type="checkbox"/>	Fully adequate	<input type="checkbox"/>	Not assessed
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**Table C1-2:** Comparison of process capability across the New Zealand tertiary sector

## Process C2.

*Students have access to sufficient library resources that may include a 'virtual library' accessible through the World Wide Web*

### Process Description

One of the significant benefits of campus-based learning is access to library and research facilities. Regardless of the mode of delivery, if students are to achieve the full benefit of their courses they need similar access (Lebowitz, 1997), particularly if they are to engage in research (process L6). The American Library Association guidelines for distance learning clearly state "Access to adequate library services and resources is essential for the attainment of superior academic skills in post-secondary education" (ALA, 2004).

This process is one of the Quality on the Line course support benchmarks (IHEP, 2000) and is also part of the WCET guidelines (WCET, 2000) and ADEC guiding principles (ADEC, 2002).

Evidence of capability in this process is seen through the provision of a full range of library facilities and associated support and training information to assist students with their use. Information on using these services is provided both through the central library website as well as directly within courses where it is customized to reflect the needs of the particular discipline and learning outcomes.

Table C2-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	The range and type of library services provided is maintained in response to the information collected on student usage and satisfaction. Strategic changes to e-learning pedagogy and technology are integrated with the planning and support of library services.
<b>4: Managed</b>	Student use of distance/e-learning library services is monitored and satisfaction assessed and regularly reported upon.
<b>3: Defined</b>	Library services specific to distance/e-learning access by students are specified and provided along with support and instructions. A defined process is used to communicate services available to students in individual courses. Standard templates for library resource pages listing useful databases, journals etc. are provided along with training for teaching staff in their use to support student learning.
<b>2: Planned</b>	A standard service is available through an institutional library, including web access to databases and other support resources by students. Students are given clear information on how to access the full range of library services to support their learning. Links to library services are provided in multiple places throughout course materials as appropriate.
<b>1: Initial</b>	Access to library resources depends on student initiative or on informal arrangements, no/limited instructions provided to students on the use of wider content resources within courses.
<b>0: Not performed</b>	No Library provided.

**Table C2-1:** Descriptions of process practices by capability level

### Sector Performance

The library profession has been aware of the potential opportunities that e-learning has to offer for some time. Discussions about how library services can change in response to evolving information usage by staff and students have been underway for some years. Generally, the services provided by institutional libraries are comprehensive and include help and support designed for students. The weakness apparent in the sector is that individual courses are not guiding and assisting students in making use of the library services. There is a presumption that students know how to access the library and will know when to do so.

University B provided a very useful set of pages through their library for each course. These pages contain a customized set of starting points for further research and investigation by students along with direct links to support resources and library staff who could assist the students either on-line or in person. Rather than just providing links to reading material, this clearly enabled the students to engage in self-directed research into the course material while also ensuring that assistance was readily available to them.

Across the sector, teaching staff need to work with discipline librarians to ensure that students are encouraged to go beyond course reading materials and engage with a range of tools for research beyond consumer search engines. This will take more than policy. University A, for example, provided a clear policy that students in all courses have access to a complete set of library services and support but, as with other institutions, failed to provide templates for this purpose.

C2: Students have access to sufficient library resources that may include a “virtual library” accessible through the World Wide Web					
	1	2	3	4	5
University A	Fully adequate	Largely adequate	Partially adequate	Not practised/not adequate	Not assessed
University B	Fully adequate	Not assessed	Partially adequate	Not assessed	Not assessed
University C	Fully adequate	Largely adequate	Partially adequate	Not assessed	Not assessed
University D	Largely adequate	Largely adequate	Largely adequate	Not assessed	Not assessed
University E	Largely adequate	Partially adequate	Largely adequate	Not assessed	Not assessed
University F	Fully adequate	Largely adequate	Partially adequate	Not assessed	Not assessed
Polytechnic X	Largely adequate	Partially adequate	Not assessed	Not assessed	Not assessed
Polytechnic Y	Largely adequate	Largely adequate	Largely adequate	Not assessed	Not assessed
Polytechnic Z	Largely adequate	Largely adequate	Largely adequate	Not assessed	Not assessed

<input type="checkbox"/>	Not practised/not adequate	<input type="checkbox"/>	Partially adequate	<input type="checkbox"/>	Largely adequate	<input type="checkbox"/>	Fully adequate	<input type="checkbox"/>	Not assessed
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**Table C2-2:** Comparison of process capability across the New Zealand tertiary sector



## Process C3.

*Teaching staff and students agree upon expectations regarding times for student assignment completion and staff response*

### Process Description

As noted in process L9, students benefit from clear timing and deadlines in their learning (Laurillard 2002). In common with other communications in courses (processes L4 and L5) there is a need to ensure that the response from staff is timely. The flexibility of e-learning provides the opportunity for flexibility in the ordering and timing of course elements and this should allow for negotiation and the consideration of individual student needs in the selection of deadlines. This is balanced by the need to ensure that teaching staff workloads are also properly managed.

This process is one of the Quality on the Line course support benchmarks (IHEP, 2000) and is also part of the CanREGs (Barker, 2002).

Evidence of capability in this process is shown by clear and consistent processes communicated within individual courses, bounded by institutional standards and guidelines. These must balance flexibility for students with the learning objectives and the realities of course administration and delivery, including staff and student workloads. Teaching staff are provided with templates, examples, training and support in using assessment and feedback to support student learning.

Table C3-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Measures of compliance and satisfaction are used to define new processes and standards for workload negotiation, management, and student feedback. Staff resource allocation within individual courses informed by measures and standards.
<b>4: Managed</b>	Compliance with institutional standards measured and course feedback is subject to regular review. Student satisfaction with the type and timeliness of feedback measured and reported upon.
<b>3: Defined</b>	Standards for workload negotiation and variance of deadlines defined at the institutional level. Standards and examples for the quality and type of feedback provided by staff to students defined along with opportunities for staff development. Templates for marking rubrics provided that encourage formative feedback from staff.
<b>2: Planned</b>	Consistent approach within courses for communication of deadlines and timetables. Procedures for varying stated deadlines in particular circumstances provided to students. Marking rubrics supplied within courses setting out the range of feedback that students can expect.
<b>1: Initial</b>	No consistent approach used within courses to determine student deadlines or variance from announced deadlines.
<b>0: Not performed</b>	No assignments or deadlines provided to students.

**Table C3-1:** Descriptions of process practices by capability level

### Sector Performance

Practice in this process is dominated by fixed assessment timetables that are defined in advance but not provided to students until the course has commenced and they are enrolled. Despite some institutions having a policy that encourages learner autonomy and responsibility, as well as offering opportunities for flexibility via e-learning, the sector remains uninterested in students negotiating flexibility in the timing of course elements such as assessment. At best, there is a defined set of deadlines and a logical timetable supported by clear policies for exceptions. However many courses did not list a standard process for exceptions introducing a risk of unfair or inconsistent practice.

University C and Polytechnic Y had examples of best practice in this area with unambiguous processes for varying course deadlines and a policy that made explicit the concerns of flexibility and equity.

It is likely that for most institutions significant improvement in this area is dependent on changes to pedagogy as discussed in process D6. Until teaching staff are provided with the opportunity to develop e-learning skills themselves, they are unlikely to take advantage of the potential for student flexibility and autonomy offered by e-learning. Some immediate improvement is possible by providing standard templates for courses to use when communicating deadlines and the negotiation of exceptions. Institutions should consider assessment policies enabling patterns of assessment that allow negotiation and flexibility of timing.



C3: Teaching staff and students agree upon expectations regarding times for student assignment completion and staff response					
	1	2	3	4	5
University A	Partially adequate	Partially adequate	Partially adequate		
University B	Partially adequate	Partially adequate	Partially adequate		
University C	Fully adequate	Fully adequate	Largely adequate		
University D	Partially adequate	Partially adequate	Partially adequate		
University E	Partially adequate	Partially adequate	Largely adequate		
University F	Largely adequate				
Polytechnic X	Largely adequate				
Polytechnic Y	Fully adequate	Fully adequate	Largely adequate		
Polytechnic Z	Partially adequate				

Not practised/not adequate  
  Partially adequate  
  Largely adequate  
  Fully adequate  
  Not assessed

**Table C3-2:** Comparison of process capability across the New Zealand tertiary sector

## Process C4.

*Students are provided with hands-on training and information to aid them in securing material from a range of sources consistent with the discipline or subject*

### Process Description

It is not sufficient to provide students with access to facilities for research and wider study (process C2). Students must also be assisted in acquiring the necessary skills to make effective use of these resources (ALA, 2004). As noted in process L6, the ability to effectively conduct research is an important learning outcome and this needs to be met in a way that builds student capability through a range of tasks and supports.

This process is one of the Quality on the Line course support benchmarks (IHEP, 2000) and is also part of the WCET guidelines (WCET, 2000) as well as the American Library Association guidelines (ALA, 2004).

Evidence of capability in this process is seen through the provision to students of resources on finding content and other information via links to suitable databases, instructions on where to find suitable books, and support materials provided by groups such as libraries on information literacy skills. Development of skills in identifying useful materials should also be reflected in the assessment tasks of a course and the associated marking and feedback rubrics. Information literacy should be reflected in the learning objectives, either implicitly or explicitly. Teaching staff are provided with templates, examples, training and support in using the range of information resources available to support student learning.

Table C4-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Student ability to access content resources is assessed as part of post-experience questionnaires and used to determine standards for course design as well as resourcing for support facilities in groups such as the library.
<b>4: Managed</b>	Measures of student ability to access content resources effectively are collected and reported on regularly.
<b>3: Defined</b>	Standards for how course content and resources are stored and made available to students with consistent methods of access and support. Templates and examples provided that illustrate how to link learning outcomes to the range of materials provided, along with training for teaching staff in their use to support student learning. Standard instructions provided for use in course outlines and materials for the range of technologies used.
<b>2: Planned</b>	Organised sessions provided as part of the course on where to find materials to assist student learning. Detailed instructions are provided to students on the range of information sources available, and how they should be used to assist in attaining the learning outcomes.
<b>1: Initial</b>	Students are provided with general or inconsistent instructions on where and how to access course content and resources.
<b>0: Not performed</b>	No information given to students on how to access course content and resources.

**Table C4-1:** Descriptions of process practices by capability level

### Sector Performance

A risk with e-learning course material development is the temptation to make resources that are isolated from other sources of information. This is particularly the case when designing materials for delivery by CD or at a distance online. As with process C2, many of the projects examined assumed students would know when and how to seek wider sources of information. Few provided any formal sessions or information aimed at assisting students using material from other sources. There was little evidence of designing or planning activities aimed at encouraging students to develop these skills.

University B provided a very useful set of pages for each course via their library. These contain a customized set of starting points for further research and investigation by students, along with direct links to support resources and library staff who could assist either on-line or in person. Rather than just providing links to reading material, this enabled the students to engage in self-directed research into the course material while also making assistance readily available.

University F demonstrated effective practice by their requirement that all students attend a mandatory library training session which ensured students were familiar with the research tools provided, although it is less clear that ongoing use was encouraged in all courses explicitly. University A illustrated strong practice in this process, with some projects providing sessions organized specifically to address wider information use and linkages within assessment and other tasks aimed at encouraging students to go beyond the immediately supplied materials. Policy and other guidelines in this area were generally weak and unhelpful.

<b>C4: Students are provided with hands-on training and information to aid them in securing material from a range of sources consistent with the discipline or subject.</b>					
	1	2	3	4	5
University A	Fully adequate	Fully adequate	Partially adequate		
University B	Fully adequate	Largely adequate	Partially adequate	Partially adequate	
University C	Largely adequate	Largely adequate	Partially adequate		
University D	Largely adequate	Partially adequate	Partially adequate		
University E	Largely adequate	Partially adequate	Partially adequate		
University F	Fully adequate	Fully adequate	Partially adequate		
Polytechnic X	Largely adequate	Partially adequate			
Polytechnic Y	Largely adequate	Partially adequate	Partially adequate		
Polytechnic Z	Fully adequate	Largely adequate	Largely adequate		

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**Table C4-2:** Comparison of process capability across the New Zealand tertiary sector

## Process C5.

*Students have convenient access to technical assistance throughout the duration of the course/ programme*

### Process Description

The dependence of e-learning on technology means that students must be able to receive support to ensure they can make effective use of that technology whenever they choose to study (Ragan, 1999; Salmon, 2000; Laurillard, 2002). Access to support facilities has been shown to correlate with improved learning outcomes (Fredericksen *et al.*, 1999).

This process is one of the Quality on the Line course support benchmarks (IHEP, 2000) and is also part of the WCET guidelines (WCET, 2000), ADEC guiding principles (ADEC, 2002) and CanREGs (Barker, 2002).

Evidence of capability in this process is seen by the provision of information on how to get assistance with technology. This should consist of contact information for both telephone and email support as well as self-help facilities such as web pages and documentation. Course specific information should be supplied when non-standard technologies are used. Policies and guidelines should communicate the extent of support available and the timeframes within which support is provided.

Table C5-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Data on technical support performance and student satisfaction is used to determine the nature and extent of the support provided. When new technologies are introduced, the support needs of students are taken into account during technology selection and deployment.
<b>4: Managed</b>	Measures of the demand for and effectiveness of the technical support provided to students are collected and reported upon regularly.
<b>3: Defined</b>	Institutional standards for student technical support are defined and clear, consistent instructions are available to all students on how they can access support and what they can expect from the institution. The distribution of responsibility for student support between the teaching staff and institutional support services is explicit and communicated clearly to students.
<b>2: Planned</b>	Courses have a defined set of procedures for students to access technical support, including a variety of contact methods and a process for storing the information supplied. Information on accessing support is provided throughout course materials and institutional websites to ensure students are aware of whom to visit.
<b>1: Initial</b>	Technical assistance depends on the initiative and resources of individual courses and the skills of the particular teaching staff involved.
<b>0: Not performed</b>	No technical assistance provided to students.

**Table C5-1:** Descriptions of process practices by capability level

### Sector Performance

Support of student use of technology is generally poor throughout the sector and dependent primarily on the teaching staff delivering courses. What support there is available is generally built upon a service designed to support on-campus facilities such as computing laboratories (see also process C8). This is exacerbated by the lack of information provided to students in advance setting out the technology access (process O9) and skills (process O4) required of them.

Best practice in this area was provided by University A and Polytechnic Y, both of whom provided a single point of contact through email, telephone and face to face for the extended hours that the institution was open. This service handles any question a student might have, not just those regarding technology, providing clarity of service and simplifying the process of communicating to students where to find help.

Providing a first point of contact in one place for all student support requests, including technology, enrolment and other services, has obvious benefits, particularly when extending hours. A common weakness in the sector is the presumption that student needs for support can be dealt with effectively during normal 8.00am to 6.00pm business hours or that students are able to navigate between a diverse set of web pages and institutional groups to find the particular support they require.

C5: Students have convenient access to technical assistance throughout the duration of the course/program					
	1	2	3	4	5
University A	Fully adequate	Largely adequate	Largely adequate	Partially adequate	Not practised/not adequate
University B	Largely adequate	Partially adequate	Partially adequate	Not assessed	Not assessed
University C	Largely adequate	Largely adequate	Partially adequate	Not assessed	Not assessed
University D	Largely adequate	Largely adequate	Partially adequate	Not assessed	Not assessed
University E	Largely adequate	Partially adequate	Not assessed	Not assessed	Not assessed
University F	Partially adequate	Partially adequate	Partially adequate	Not assessed	Not assessed
Polytechnic X	Partially adequate	Not assessed	Not assessed	Not assessed	Not assessed
Polytechnic Y	Fully adequate	Largely adequate	Largely adequate	Not assessed	Not assessed
Polytechnic Z	Largely adequate	Largely adequate	Largely adequate	Not assessed	Not assessed

<input type="checkbox"/> Not practised/not adequate	<input type="checkbox"/> Partially adequate	<input type="checkbox"/> Largely adequate	<input type="checkbox"/> Fully adequate	<input type="checkbox"/> Not assessed
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**Table C5-2:** Comparison of process capability across the New Zealand tertiary sector

## Process C6.

*Students are provided with detailed instructions regarding the electronic media used in a course prior to commencing it*

### Process Description

The use of e-learning is sufficiently unfamiliar to many students, and the range of possibilities so diverse, that it is important to warn students and provide them with opportunities to familiarise themselves with what to expect (Hillesheim, 1998). Many students will need to make particular arrangements so they get the most benefit from e-learning and supplying them with the information in advance ensures that they will not be forced to withdraw at a later date, or struggle to raise their technology skills while trying to learn the course content (Ragan, 1999).

This process is one of the Quality on the Line student support benchmarks (IHEP, 2000) and is also one of the ADEC guiding principles (ADEC, 2002).

Evidence of capability in this process is seen with the publishing of clear statements describing the use of various media and technologies and the requirements this will impose on students. This description should also provide access to any support information or documentation. All of this information should be provided for students in public course listings or catalogues prior to enrolment and also in enrolment packs. Policy should require that this information be provided and maintained. Institutional guidelines should set in place how teaching and administrative staff communicate standard technologies and media used in courses. Instructions for use, minimum requirements, and support of standard technologies should be provided and maintained through a central repository linked to the course requirements statement.

Table C6-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Measures of compliance with and effectiveness of institutional standards for providing students with instructions and requirements regarding electronic media are used to maintain and update the standards and the requirements for courses generally. Student preparedness taken into account prior to new technology introduction and communication plans incorporated into any new technology rollout.
<b>4: Managed</b>	Measurements of student ability to comply with the standards are collected, as are student satisfaction and problems with media that are not addressed in the provided course descriptions.
<b>3: Defined</b>	Standards for collecting and displaying the instructions and requirements regarding electronic media are defined and are used in all courses and the associated publicity and enrolment information. All course-related information is subject to regular review to ensure consistency, accuracy and completeness.
<b>2: Planned</b>	Instructions and requirements are listed in a formal and complete statement in the course and promotional materials available prior to enrolment.
<b>1: Initial</b>	Instructions and information provided is informal and not all media are covered.
<b>0: Not performed</b>	No instructions provided

**Table C6-1:** Descriptions of process practices by capability level

### Sector Performance

Practice in this area is dominated by the perception that all students expect to encounter the use of the WWW and standard LMS facilities as a normal part of their studies. Beyond this, projects that made use of additional technology such as video or specialist software made few efforts to clearly communicate this to students in advance (see also processes C7, O4 and O9). Some projects communicated the use of technology over and above the LMS in their website but mostly the information was only available after the course had commenced.

It was particularly notable that only one institution provided details of technologies incorporated into course delivery in their enrolment materials and packs, even when these went well beyond standard LMS facilities and were required in order to complete the course. Polytechnic Y provided a clear statement in a consistent format on technology use and requirements on students that was available through their website to all interested students prior to enrolment. Similar information was provided in the enrolment materials along with minimum requirements for access to computers and specifications for equipment when appropriate. Also useful was a short skills assessment that guided students as to whether they possessed the minimum skills required and suggestions for what to do to improve skills prior to enrolment.

C6: Students are provided with detailed instructions regarding the electronic media used in a course prior to commencing it					
	1	2	3	4	5
University A	Large blue	Large blue	Large blue		
University B	Large blue	Large blue	Light blue		
University C	Large blue	Large blue			
University D	Light blue	Light blue			
University E	Light blue				
University F	Large blue	Light blue	Light blue		
Polytechnic X	Light blue				
Polytechnic Y	Black	Black	Large blue		
Polytechnic Z	Light blue	Light blue	Light blue	Not assessed	

Not practised/not adequate  
  Partially adequate  
  Largely adequate  
  Fully adequate  
  Not assessed

**Table C6-2:** Comparison of process capability across the New Zealand tertiary sector

University A also illustrated good practice in this area, with clear information provided at the beginning of courses setting out what technology was being used, how students should use it and what contribution to the learning outcomes the technology was making. This could be further improved if the information was duplicated on the public web pages available to students before they enroll in the course.

Across the sector there needs to be a significant improvement in the use of enrolment and informational materials to prepare students for the technology expectations that will apply in courses, particularly as use becomes more common but not yet standardised. This information needs to cover general requirements of all courses as well as exceptions or additional requirements of individual courses.



## Process C7.

*Students are able to practice with any technologies prior to commencing a course*

### Process Description

The use of e-learning is sufficiently unfamiliar to many students and the range of possibilities so diverse that it is important to warn students and provide them with opportunities to familiarise themselves with what to expect (Hillesheim, 1998). Many students will need to make particular arrangements so that they get the most benefit from e-learning. Supplying them with the information in advance ensures that they will not be forced to withdraw at a later date, or struggle to raise their technology skills while trying to learn the course content (Ragan, 1999).

This process is one of the Quality on the Line student support benchmarks (IHEP, 2000).

Evidence of capability in this process is seen with the publishing of clear statements describing the use of various media and technologies and the requirements this will impose on students. This description should also provide access to any support information or documentation. All of this information should be provided for students in course listings or catalogues prior to enrolment and also in enrolment packs. Policy should require that this information be provided and maintained. Institutional guidelines should set in place how teaching and administrative staff communicate standard technologies and media used in courses. Instructions for use, minimum requirements, and support of standard technologies should be provided and maintained through a central repository linked to the course requirements statement.

Table C7-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Measures of compliance with and effectiveness of institutional standards for providing students with preparation and practice are used to maintain and update the standards and the requirements for courses generally. Student preparedness taken into account prior to new technology introduction and opportunities for practice incorporated into any new technology rollout.
<b>4: Managed</b>	Compliance with institutional standards for providing students with preparation and practice opportunities is measured as is student satisfaction and preparedness to use technologies in use by the institution.
<b>3: Defined</b>	Institutional standards for providing students with preparation and practice opportunities for all standard technologies are defined along with templates and examples for teaching staff to use in course materials. Teaching staff provided with training and materials to assist in supporting student's acquisition of skills in the use of particular technologies.
<b>2: Planned</b>	Opportunities for students to practice and prepare for technology use are explicitly identified in the course materials available prior to commencement of the course.
<b>1: Initial</b>	Ability of students to practice and prepare for the use of particular technologies in courses is incidental to provision of materials or systems.
<b>0: Not performed</b>	No information or access provided.

**Table C7-1:** Descriptions of process practices by capability level

### Sector Performance

Related to process C6 (as well as processes O4 and O9) is the lack of opportunity that students have to practice with technologies in advance of enrolling in a course. Even when they may be able to organize opportunities themselves, the lack of advance information on what technology is going to be used means that they are unable to do so effectively. At best, the use of central LMS facilities by institutions means that some opportunity exists for practice in earlier courses, but could already be too late for weaker students who may not progress beyond their first course.

Central LMS facilities mean that all institutions could easily provide a sample course for prospective students, perhaps aimed at supporting aspects of study such as academic integrity. This would require some resourcing as it would need careful design and experienced support, but it would provide significant downstream benefits by early identification of issues and problems. Other potential benefits include encouraging students from minority groups who may have concerns about whether they can succeed at university. Interestingly, a number of institutions assessed provided such a guest access course but these were frequently incomplete or provided little information of value.

C7: Students are able to practice with any technologies prior to commencing a course					
	1	2	3	4	5
University A	Partially adequate	Partially adequate			
University B	Partially adequate				
University C	Partially adequate				
University D	Partially adequate	Partially adequate			
University E	Partially adequate				
University F	Partially adequate				
Polytechnic X	Partially adequate				
Polytechnic Y	Largely adequate				
Polytechnic Z	Partially adequate	Partially adequate			

Not practised/not adequate  
  Partially adequate  
  Largely adequate  
  Fully adequate  
  Not assessed

**Table C7-2:** Comparison of process capability across the New Zealand tertiary sector

## Process C8.

*Questions directed to student service personnel are answered accurately and quickly*

### Process Description

The dependence of e-learning on technology inevitably means students must be able to receive support to ensure they can make effective use of that technology whenever they choose to study (Ragan, 1999; Salmon, 2000; Laurillard, 2002). Access to support facilities has been shown to correlate with improved learning outcomes (Fredericksen *et al.*, 1999) but this is obviously predicated on students getting a professional and timely service.

This process is one of the Quality on the Line student support benchmarks (IHEP, 2000).

Evidence of capability in this process is seen in the provision of information on how to get assistance with technology. This should consist of contact information for both telephone and email support as well as self-help facilities such as web pages and documentation. It should convey how student requests will be treated and the timeframe within which they can expect assistance. Policies and guidelines should communicate the extent of support available and the timeframes within which support is provided. Support staff are provided with templates, examples, training and support in using the range of resources available to assist students.

Table C8-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Measures of support performance used to determine resources provided to support students. The types and content of student requests are used to influence technologies introduced and supported, and to manage the process of introducing new technologies. Measurements of when students access e-learning services are used to plan and resource the hours of operation of support.
<b>4: Managed</b>	Measures of student support response times and effectiveness collected and reported regularly.
<b>3: Defined</b>	Institutional standards for student support are defined. Clear, consistent instructions are available to all students on how they can access support and what they can expect from the institution. The distribution of responsibility for student support between the teaching staff and institutional support services is explicit and communicated clearly to students.
<b>2: Planned</b>	Courses have a defined set of procedures for students to access support, including a variety of contact methods and a process for storing the information supplied. Information on accessing support is provided throughout course materials and institutional websites to ensure students are aware of whom to contact.
<b>1: Initial</b>	Student support provided informally by the staff involved in individual courses. Technology support is linked to on-campus computer laboratories and associated support, and administration aspects such as usercodes and passwords.
<b>0: Not performed</b>	No student support provided.

**Table C8-1:** Descriptions of process practices by capability level

### Sector Performance

Within the limits of such services (see process C5) student helpdesks appear to be operated in a professional manner and provide students with at least some support. It is also clear that this service needs to be linked to e-learning development within the institution in a way that ensures that support grows as the requirements upon students grow. Increasing dependence on e-learning to deliver core elements of courses mean that institutions are more and more responsible for ensuring students are able to effectively use technology, even when not physically at the university.

Best practice in this area was illustrated by University A who provided a single point of contact through email, telephone and face to face for the extended hours that the institution was open. Expectations of when

a response might be expected were also clear. This service handled any question that the student might have, not just technology ones, providing clarity of service and simplifying the process of communicating to the students where to find help. Similarly strong performance was apparent from two of the polytechnics, reflecting a focus on student support in a variety of materials given to students.

Providing a first point of contact for all student support in one place including technology, enrolment and other services, has obvious benefits, particularly when extending hours. A common weakness in the sector is the presumption that everything can be dealt with effectively during normal 8.00am to 6.00pm business hours.



C8: Questions directed to student service personnel are answered accurately and quickly					
	1	2	3	4	5
University A	Fully adequate	Largely adequate	Partially adequate	Largely adequate	Not assessed
University B	Partially adequate	Partially adequate	Not assessed	Not assessed	Not assessed
University C	Largely adequate	Largely adequate	Partially adequate	Not assessed	Not assessed
University D	Largely adequate	Largely adequate	Largely adequate	Not assessed	Not assessed
University E	Largely adequate	Largely adequate	Largely adequate	Not assessed	Not assessed
University F	Partially adequate	Partially adequate	Not assessed	Not assessed	Not assessed
Polytechnic X	Partially adequate	Partially adequate	Not assessed	Not assessed	Not assessed
Polytechnic Y	Fully adequate	Fully adequate	Largely adequate	Not assessed	Not assessed
Polytechnic Z	Fully adequate	Fully adequate	Largely adequate	Not assessed	Not assessed

Not practised/not adequate  
  Partially adequate  
  Largely adequate  
  Fully adequate  
  Not assessed

**Table C8-2:** Comparison of process capability across the New Zealand tertiary sector

## Process C9.

*A structured system is in place to address student complaints*

### Process Description

As well as assistance with the use of technology (processes C5 and C8), students need the ability to raise concerns about other aspects of their e-learning experience. While all institutions will have formal processes for student grievances, there are many other day-to-day concerns that need to be resolved quickly and professionally if they are to not to impair learning outcomes for students.

This process is one of the Quality on the Line student support benchmarks (IHEP, 2000).

Evidence of capability in this process is seen in the provision of instructions to students in all courses on where to communicate any concerns they might have about any aspect of their learning. This should either be a single student help desk or a clear list that provides alternatives and indicates how these are to be used, such as particular contacts for technical issues and others for learning concerns or complaints. Policy should require the provision of this information in some standard way and guidelines should be provided on how student communications are to be handled, including timeframes and record-keeping. Teaching and support staff are provided with templates, examples, training and support in handling student complaints.

Table C9-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Student complaint reports are used to inform technical and pedagogical support processes and resourcing for existing technology and courses. Complaints are also incorporated into the process of evaluating and selecting new technologies and pedagogies.
<b>4: Managed</b>	Information on the type of student complaints are aggregated and reported regularly along with resolutions.
<b>3: Defined</b>	Standards for the handling of student complaints are defined along with a repository for collecting complaints. Formal processes for making complaints and how they will be resolved are communicated to students. Teaching and support staff are provided with templates, examples, training and support in handling student complaints.
<b>2: Planned</b>	A complaints mechanism is provided explicitly in the course infrastructure and a formal process for making complaints and having them heard is communicated to students. Records of complaints and the resolution of them are retained by the teaching staff of the course.
<b>1: Initial</b>	Complaints are handled informally by teaching staff associated with the course as part of their overall teaching and administrative duties. No specific responsibility for handling student complaints noted in teaching staff responsibilities.
<b>0: Not performed</b>	No explicit complaints mechanism.

**Table C9-1:** Descriptions of process practices by capability level

### Sector Performance

As with processes C5 and C8, the move to online delivery means that traditional mechanisms for interacting with students are starting to prove inadequate. Few of the projects considered that students might have the need to raise issues with the staff or the institution that require formal treatment and tracking. Most did not provide students with information on who to contact in regard to specific issues. All of the institutions have formal grievance procedures, but these would often be excessive or inappropriate and generally do not consider the implications of e-learning approaches, particularly the possibility that the students might never attend the physical campus.

Best practice in this area was provided by University A. A single point of contact was provided to students to collect and resolve complaints that arose during courses. Similarly, Polytechnic Y communicated a clear process and contact details to all students, but it was not clear that student communications were formally tracked other than by teaching staff.

A central facility for handling student complaints and other issues is able to easily ensure that all essential information is collected and that the complaint is tracked and handled professionally. The informal approaches adopted across the sector in this regard must constitute potential business risks if complaints are poorly handled or lost. The use of formal tracking systems needs to be balanced with the need for students to interact effectively with teaching staff (process L2) and potential resource implications.

C9: A structured system is in place to address student complaints					
	1	2	3	4	5
University A	Largely adequate	Partially adequate	Fully adequate	Largely adequate	
University B	Partially adequate	Partially adequate	Partially adequate		
University C	Partially adequate	Partially adequate	Partially adequate		
University D	Partially adequate	Partially adequate	Partially adequate		
University E	Partially adequate	Partially adequate	Largely adequate		
University F	Partially adequate	Partially adequate		Partially adequate	
Polytechnic X	Partially adequate	Partially adequate	Partially adequate		
Polytechnic Y	Largely adequate	Largely adequate	Largely adequate		
Polytechnic Z	Partially adequate	Partially adequate	Partially adequate		

<input type="checkbox"/> Not practised/not adequate	<input type="checkbox"/> Partially adequate	<input type="checkbox"/> Largely adequate	<input type="checkbox"/> Fully adequate	<input type="checkbox"/> Not assessed
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**Table C9-2:** Comparison of process capability across the New Zealand tertiary sector

## Process C10.

*Instructor training and assistance continues through the progression of the online course*

### Process Description

When a formal process is used to (re)develop courses or materials, it is very important to ensure that teaching staff are supported as they use the new materials or pedagogies. This is a complex area and teaching staff need to be able to access a range of professional supports as they encounter issues during their work (Harasim *et al.* 1995).

This process is one of the Quality on the Line faculty support benchmarks (IHEP, 2000) and is also part of the WCET guidelines (WCET, 2000) and ADEC guiding principles (ADEC, 2002).

Evidence of capability in this process is seen in design and development plans which include formal processes for ongoing support of teaching staff and courses. Policy and standards should define the type of support provided and the use of this support should inform ongoing and future development of all courses.

Table C10-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Reports on the effectiveness and use of technological and pedagogical support are used to determine resourcing and the type of support and assistance provided. Reports are used to inform the process of resourcing teaching projects, selecting new technologies and pedagogies and the provision of support when technologies are deployed.
<b>4: Managed</b>	Measures of the use and effectiveness of support and assistance provided to teaching staff collected and regularly reported on.
<b>3: Defined</b>	Institutional standards for ongoing pedagogical and technological support and assistance during the delivery of courses defined. A formal process for resourcing and planning for support is in place and communicated to teaching staff.
<b>2: Planned</b>	Formal arrangements are made in individual courses for ongoing support and assistance addressing potential technological or pedagogical issues.
<b>1: Initial</b>	Assistance is informal and in response to requests from teaching and other staff regarding particular problems with technology or associated pedagogies.
<b>0: Not performed</b>	No assistance provided to teaching staff.

**Table C10-1:** Descriptions of process practices by capability level

### Sector Performance

Generally, teaching staff involved in e-learning projects or courses are supported to some extent during delivery, although the degree of formality varies across the sector. University A and E in particular include this as a formal part of their development processes, with University E including formal review and evaluation aspects as well. Much of the support depends on the standard pedagogical and e-learning support provided to teaching staff as part of services such as the central LMS and general professional development services.

The approach used in University E is explicitly aimed at transferring skills and responsibility to teaching staff. This has the benefit of building capability and is well supported by clear policy direction but is not currently supported with templates or guidelines. It is also worth noting that the comparative weakness of University B in this process reflects the emphasis on the design and development aspects of e-learning in the projects assessed (for example process D6) and it is expected that as these are deployed, capability in this process will improve.

The sector as a whole would benefit from more evidence-based examples of how technology has positively influenced pedagogical approaches and how different pedagogies result in more effective use of existing technologies such as central LMS facilities.

C10: Teaching staff training and assistance continues through the progression of the online course					
	1	2	3	4	5
University A	Fully adequate	Fully adequate	Partially adequate		
University B	Largely adequate	Partially adequate			
University C	Fully adequate	Largely adequate			
University D	Fully adequate	Largely adequate			
University E	Largely adequate	Largely adequate	Partially adequate	Partially adequate	
University F	Largely adequate				
Polytechnic X	Largely adequate	Partially adequate			
Polytechnic Y	Fully adequate	Largely adequate	Partially adequate		
Polytechnic Z	Fully adequate	Largely adequate	Partially adequate		

Not practised/not adequate  
  Partially adequate  
  Largely adequate  
  Fully adequate  
  Not assessed

**Table C10-2:** Comparison of process capability across the New Zealand tertiary sector



## Process C11.

*Teaching staff are provided with support resources to deal with issues arising from student use of electronically-accessed data*

### Process Description

Provision of facilities to access a wide array of materials, both within the course (process C1) and more widely (process C2) is essential for successful e-learning but teaching staff need to be supported in ensuring their students can make the best possible use of the available resources. This includes facilities for providing pre-defined materials as well as assistance in developing the skills of students in finding and using additional materials.

This process is one of the Quality on the Line faculty support benchmarks (IHEP, 2000) and is also part of the WCET guidelines (WCET, 2000).

Evidence of capability in this process is seen with the provision of facilities and support during the design and development of projects, including documentation and training for staff as well as templates and other materials for use with students. Policy and guidelines should require and support this. Student attainment of skills in this area should be part of the overall learning objectives in line with their acquisition of research (process L6) and information literacy skills (process C2).

Table C11-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Reports on effectiveness and student use of support resources for electronically accessed information determine resourcing and the type of support and assistance provided. Reports are used to inform the process of selecting new technologies for accessing and using content electronically.
<b>4: Managed</b>	Measures of the effectiveness and student uses of support resources for electronically accessed information are collected and reported on regularly.
<b>3: Defined</b>	Institutional support standards for the use of electronically accessed information and associated resources are defined and complied with when (re)developing courses. Teaching staff are provided formal opportunities for staff development in how to assist students in developing appropriate skills and in handling electronically produced materials for assessment.
<b>2: Planned</b>	Support in the use of electronically accessed information and associated resources is allocated as part of planning for (re)development of individual courses and professional development of the teaching staff.
<b>1: Initial</b>	Support in the use of electronically accessed information depends on individual teaching staff skills within courses and other informal arrangements.
<b>0: Not performed</b>	No support resources provided to teaching staff.

**Table C11-1:** Descriptions of process practices by capability level

### Sector Performance

Libraries have clearly taken up the challenge of digital information resources (for example also see process C2) but it is apparent that this has not translated into support of teaching staff in working with their students in this area. Most projects did not explicitly consider the implications of accessing wider information sources (processes C2 and C4). Also missing across the sector is staff development and support in the handling of materials produced and delivered electronically by students for assessment. Marking and feedback strategies remain dominated by the use of paper and annotations rather than standardised feedback forms.

University B clearly had the best practice in this area with the use of library resource pages and support from discipline librarians. As well as providing links to facilities such as databases and online journals, this included contact information for the librarians supporting the course and discipline. Information literacy is a core graduate outcome and clearly there is room for significant improvement across the sector.

C11: Teaching staff are provided with support resources to deal with issues arising from student use of electronically-accessed data					
	1	2	3	4	5
University A	Partially adequate	Partially adequate	Partially adequate		
University B	Fully adequate	Fully adequate	Partially adequate	Not assessed	Not assessed
University C	Partially adequate				
University D	Partially adequate				
University E	Largely adequate	Partially adequate	Partially adequate		
University F	Partially adequate				
Polytechnic X					
Polytechnic Y	Largely adequate	Largely adequate			
Polytechnic Z	Largely adequate	Largely adequate	Partially adequate		

Not practised/not adequate  
  Partially adequate  
  Largely adequate  
  Fully adequate  
  Not assessed

**Table C11-2:** Comparison of process capability across the New Zealand tertiary sector

## Evaluation: Processes surrounding the evaluation and quality control of e-learning through its entire lifecycle

This process area has as its goal the encouragement of reflection and the building of capability to deliver e-learning informed by evidence from previous success and failure. The individual processes are directed at ensuring the evidence collected is robust and able to provide a reliable base of knowledge for future strategy and development.

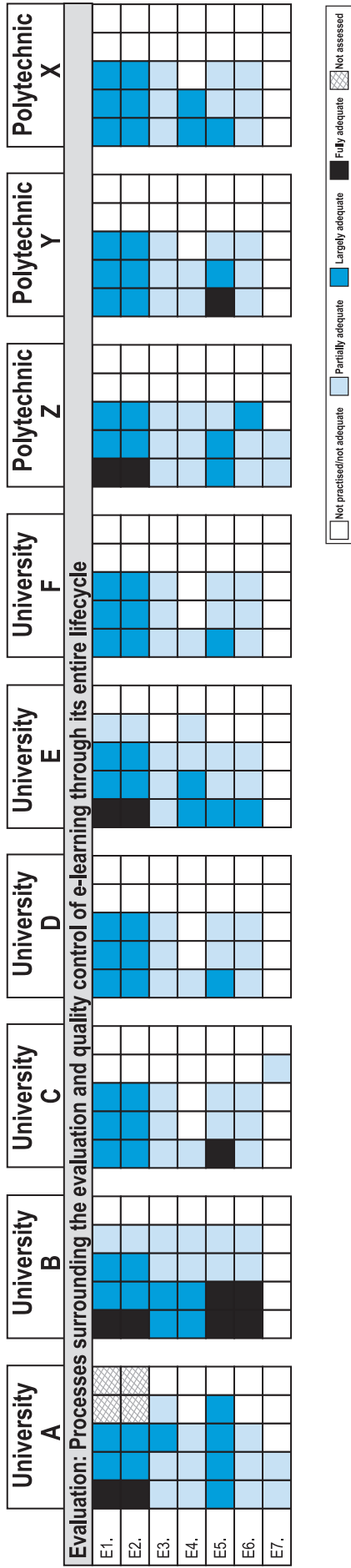
The individual processes are listed below, followed by an overview of sector and institutional performance and then a detailed consideration of each process in turn.

<b>Evaluation: <i>Processes surrounding the evaluation and quality control of e-learning through its entire lifecycle.</i></b>	
E1.	The programme's educational effectiveness is formatively and summatively assessed with multiple, standards based, and independent evaluations
E2.	The programme's teaching/learning process is formatively and summatively assessed with multiple, standards based, and independent evaluations
E3.	Summative data such as enrolment numbers, completion rates, and costing is used as a measure of effectiveness within course/programmes
E4.	Success of technology/innovation used as a measure of effectiveness within course/programmes
E5.	Intended learning outcomes are reviewed regularly to ensure clarity, utility, and appropriateness
E6.	Instructional materials are reviewed periodically to ensure they meet programme standards
E7.	Teaching staff capability in making the transition from classroom to online teaching is formally assessed during training

### Sector Performance

Evaluation of courses is a requirement imposed on all institutions by the Government monitoring agencies and these formal processes have carried across into e-learning courses. In general, these are simply the same processes that are applied to traditional teaching and thus there is a need to develop evaluations that assess particular issues relating to the technology and pedagogies adopted for e-learning. This is apparent in the results for process E4 where the sector shows little capability in assessing the impact of technologies in use and especially in process E7 where almost no attempt is being made to formally assess teaching staff skills in e-learning across the sector.

More discussion of sector capability is found below in the discussion for each of the processes.



## Process E1.

*The programme's educational effectiveness is formatively and summatively assessed with multiple, standards based, and independent evaluations*

### Process Description

The need for institutions and teachers to solicit and analyse student feedback that is formative, summative, and based on multiple independent and standard evaluations is well acknowledged (Kirkpatrick, 1977; Forsyth *et al.*, 1999; Arrelola, 2000; Sherry, 2003; Thompson and Irele, 2003; Brennan and Williams, 2004).

This process is one of the Quality on the Line evaluation and assessment benchmarks (IHEP, 2000) and is also part of the WCET guidelines (WCET, 2000) and CanREGs (Barker, 2002).

Evidence of capability in this process is seen in the inclusion of a formal evaluation plan in the design and development of projects and courses. This plan should include conducting multiple formal evaluations, both summative and formative, in a standard way that allows for comparison of results between projects and over time. Policy and guidelines should require these evaluations to be independently conducted and provide standard forms that they should take. The results of the evaluations should be used to inform ongoing and new development, and to support resources and strategy. Teaching staff are provided with templates, examples, training and support in using the range of evaluation resources available to support student learning.

Table E1-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Results of evaluations are used to determine what pedagogical and technological changes are sustained and how current offerings and teaching staff are supported. All new technologies or pedagogies are accompanied with an evaluation programme when introduced.
<b>4: Managed</b>	Evaluation results are collected across all courses and reported regularly in a manner that allows for comparison of the educational effectiveness of similar courses.
<b>3: Defined</b>	Institutional standards for evaluations of educational effectiveness are defined including the tempo and content of the evaluations. Actual evaluations are performed by independent assessors according to a standard timetable or defined process. Teaching staff are provided with templates, examples, training and support in using the range of evaluation resources available to support student learning.
<b>2: Planned</b>	Formal evaluations conducted of the educational effectiveness of individual courses.
<b>1: Initial</b>	Informal and/or incomplete evaluations of the educational effectiveness of individual courses performed.
<b>0: Not performed</b>	No evaluation of effectiveness performed.

**Table E1-1:** Descriptions of process practices by capability level

### Sector Performance

As with process E2, performance of evaluations of educational effectiveness was generally strong, building on existing formal evaluation and review processes mandated in all institutions. These are not, however, usually customized to reflect the use of e-learning pedagogies or technologies so it is not clear that significant conclusions can be drawn by institutions from their results. When these evaluation processes are updated to reflect standard e-learning approaches these should assist with improvements across many process areas. A particular challenge is found when conducting formative evaluations with students engaged in e-learning at a distance and it is likely that institutional evaluation and review processes will need to be modified to take advantage of e-learning approaches themselves if they are to be representative of the student population.

University E had comparatively stronger practice in this area as a result of their formal development process requiring follow-up reports from the teaching staff initiating projects and involved in their delivery. While providing some useful information and reflection, these were somewhat anecdotal in nature and need to be supported by more empirical evidence rather than just the opinions of the staff involved. Similar, but more formal review processes, have been proposed by University B and Polytechnic Y, but these have not yet been implemented.

<b>E1: The programme's educational effectiveness is formatively and summatively assessed with multiple, standards based, and independent evaluations</b>					
	1	2	3	4	5
University A	Fully adequate	Largely adequate	Largely adequate	Not assessed	Not assessed
University B	Not practised/not adequate	Largely adequate	Largely adequate	Partially adequate	Not assessed
University C	Largely adequate	Largely adequate	Largely adequate	Not assessed	Not assessed
University D	Largely adequate	Largely adequate	Largely adequate	Not assessed	Not assessed
University E	Fully adequate	Largely adequate	Largely adequate	Partially adequate	Not assessed
University F	Largely adequate	Largely adequate	Largely adequate	Not assessed	Not assessed
Polytechnic X	Largely adequate	Largely adequate	Largely adequate	Not assessed	Not assessed
Polytechnic Y	Largely adequate	Largely adequate	Largely adequate	Not assessed	Not assessed
Polytechnic Z	Fully adequate	Largely adequate	Largely adequate	Not assessed	Not assessed

Not practised/not adequate  
  Partially adequate  
  Largely adequate  
  Fully adequate  
  Not assessed

**Table E1-2:** Comparison of process capability across the New Zealand tertiary sector

## Process E2.

*The programme's teaching/learning process is formatively and summatively assessed with multiple, standards based, and independent evaluations*

### Process Description

The need for institutions and teachers to solicit and analyse student feedback that is formative, summative, and based on multiple independent and standard evaluations is well acknowledged (Kirkpatrick, 1977; Forsyth *et al.*, 1999; Arrelola, 2000; Sherry, 2003; Thompson and Irele, 2003; Brennan and Williams, 2004).

This process is one of the Quality on the Line evaluation and assessment benchmarks (IHEP, 2000) and is also part of the WCET guidelines (WCET, 2000) and CanREGs (Barker, 2002).

Evidence of capability in this process is seen in the inclusion of a formal evaluation plan in the design and development of projects and courses. This plan should include conducting multiple formal evaluations, both summative and formative, in a standard way that allows for comparison of results between projects and over time. Policy and guidelines should require these evaluations to be independently conducted and provide standard forms that they should take. The results of the evaluations should be used to inform ongoing and new development, and to support resources and strategy. Teaching staff are provided with templates, examples, training and support in using the range of evaluation resources available to support student learning.

Table E2-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Results of evaluations are used to determine what pedagogical and technological changes are sustained and how current offerings and teaching staff are supported. All new technologies or pedagogies are accompanied with an evaluation programme when introduced.
<b>4: Managed</b>	Evaluation results are collected across all courses and reported regularly in a manner that allows for comparison of the course processes.
<b>3: Defined</b>	Institutional standards for evaluations of course processes are defined including the tempo and content of the evaluations. Actual evaluations are performed by independent assessors according to a standard timetable or defined process. Teaching staff are provided with templates, examples, training and support in using the range of evaluation resources available to support student learning.
<b>2: Planned</b>	Formal evaluations conducted of the individual course processes.
<b>1: Initial</b>	Informal and/or incomplete evaluations of the course processes performed.
<b>0: Not performed</b>	No evaluation of course processes performed.

**Table E2-1:** Descriptions of process practices by capability level

### Sector Performance

As with process E1, performance of evaluations of course teaching and learning processes was generally strong, building on existing formal evaluation and review processes mandated in all institutions. These are not, however, usually customized to reflect the use of e-learning pedagogies or technologies so it is not clear that significant conclusions can be drawn by institutions from their results. When these evaluation processes are updated to reflect standard e-learning approaches these should assist with improvements across many process areas. A particular challenge is found when conducting formative evaluations with students engaged in e-learning at a distance and it is likely that institutional evaluation and review processes will need to be modified to take advantage of e-learning approaches themselves if they are to be representative of the student population.

University E had comparatively stronger practice in this area as a result of their formal development process requiring follow-up reports from the teaching staff initiating projects and involved in their delivery. While providing some useful information and reflection, these were somewhat anecdotal in nature and need to be supported by more empirical evidence rather than just the opinions of the staff involved. Similar, but more formal review processes, have been proposed by University B and Polytechnic Y, but these have not yet been implemented.

E2: The programme's teaching/learning process is formatively and summatively assessed with multiple, standards based, and independent evaluations					
	1	2	3	4	5
University A	Fully adequate	Largely adequate	Largely adequate	Partially adequate	Not assessed
University B	Partially adequate	Largely adequate	Largely adequate	Partially adequate	Not assessed
University C	Largely adequate	Largely adequate	Largely adequate	Not assessed	Not assessed
University D	Largely adequate	Largely adequate	Largely adequate	Not assessed	Not assessed
University E	Fully adequate	Largely adequate	Largely adequate	Partially adequate	Not assessed
University F	Largely adequate	Largely adequate	Largely adequate	Not assessed	Not assessed
Polytechnic X	Largely adequate	Largely adequate	Largely adequate	Not assessed	Not assessed
Polytechnic Y	Largely adequate	Largely adequate	Largely adequate	Not assessed	Not assessed
Polytechnic Z	Fully adequate	Largely adequate	Largely adequate	Not assessed	Not assessed

Not practised/not adequate  
  Partially adequate  
  Largely adequate  
  Fully adequate  
  Not assessed

**Table E2-2:** Comparison of process capability across the New Zealand tertiary sector



## Process E3.

*Summative data such as enrolment numbers, completion rates, and costing is used as a measure of effectiveness within course/programmes*

### Process Description

As well as the evaluations of projects and courses (processes E1 and E2), there is a range of other data available through the standard technologies in use, such as LMSs (process C1), that can be effectively used to assess the impact a given use of technology is having on students. This data, while limited in some respects, has the advantage of being comparatively easy to collect, empirical in nature and independent of many aspects of opinion and bias that can complicate other evaluations (Bates and Poole, 2003). Similarly, while it can be challenging to do so accurately, costings and comparisons with alternative delivery approaches are essential for effective management of e-learning (Inglis, 2003; Jung, 2003).

This process is one of the Quality on the Line evaluation and assessment benchmarks (IHEP, 2000) and is also part of the WCET guidelines (WCET, 2000).

Evidence of capability in this process is seen through the use of formal data collection processes that are incorporated into design and development and which allow for regular reporting and analysis of student use of technology and materials. These processes should be standards based and designed to support comparisons over time and between courses and projects. Policy should require the collection and reporting of this information and the results used to inform ongoing and new development and support resources and strategy.

Table E3-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Summative data reports used to inform the support and resourcing of courses and used to inform the process of (re)developing courses. Staff are provided with training in support in the analysis and use of the report information in improving course delivery and student outcomes.
<b>4: Managed</b>	Summative data are collected and reported upon in a manner that allows for comparison of similar courses. Regular reports summarizing results produced.
<b>3: Defined</b>	Institutional standards for the collection of summative data from all courses defined and implemented.
<b>2: Planned</b>	A formal process of summative data collection is a part of the process of delivering the course. Data are not stored in a common repository and are reported on by courses independently.
<b>1: Initial</b>	Summative data collected informally or incompletely and only from some courses and at the initiative of individual staff. Central information collection limited to aspects related to financial outcomes for the institution.
<b>0: Not performed</b>	No data collected.

**Table E3-1:** Descriptions of process practices by capability level

### Sector Performance

The prevalence of informal measures and anecdotes in measuring the effectiveness of e-learning and the absence of detailed analysis is clearly apparent in the capability assessed for this process across the sector. There is very little evidence of cost-benefit analysis or the use of readily available summative data from the central LMS facilities and similar tools in formally assessing the effectiveness of individual projects and courses.

University B has some evidence collection built into their standard development and review process and University A clearly indicates that such data should be collected so as to ensure efficient and effective delivery. What appears to be missing across the sector is the use of standard monitoring and reporting templates and metrics obtained from systems such as the central LMS facilities. At least part of the issue

may be the historical limitations of LMS reporting facilities and the absence of content or document management systems. An advantage of the latter is the generation of analyses of material usage by students.

<b>E3: Summative data such as enrolment numbers, completion rates, and costing is used as a measure of effectiveness within course/programmes</b>					
	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

<input type="checkbox"/> Not practised/not adequate	<input type="checkbox"/> Partially adequate	<input type="checkbox"/> Largely adequate	<input type="checkbox"/> Fully adequate	<input type="checkbox"/> Not assessed
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**Table E3-2:** Comparison of process capability across the New Zealand tertiary sector

## Process E4.

*Success of technology/innovation used as a measure of effectiveness within course/programmes*

### Process Description

The dependence of e-learning on the use of an appropriate pedagogy and well-designed technology means that when assessing the success of courses and projects it is very important to ensure that the effectiveness of the technology is also formally measured. Evidence of success or limitations in the local context is an important factor in ensuring the efficient design and development of existing and new courses and projects.

This process is one of the Quality on the Line evaluation and assessment benchmarks (IHEP, 2000).

Evidence of capability in this process is seen through the use of formal data collection processes that are incorporated into design and development and which allow for regular reporting and analysis of the effectiveness of the technologies used. These processes should be standards based and designed to support comparisons over time and between courses and projects. Policy should require the collection and reporting of this information and the results used to inform ongoing and new development and support resources and strategy. An important factor to be conscious of in this area is that the impact of technology on student satisfaction and student learning need to be separately evaluated as they are linked but distinct. Similarly, staff satisfaction may not be related to the effectiveness of the technologies or innovations deployed. Teaching staff are provided with templates, examples, training and support in using the range of technology resources available to support student learning.

Table E4-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Collected results of success or failure of new technologies/innovations are used to determine ongoing support and resourcing of their use, as well as associated staff development. Results are used to assist in the planning of new technology/innovation introductions.
<b>4: Managed</b>	Measures of the success of new technologies/innovations collected and reported on in a manner that allows for comparison of similar courses and analysis of the factors impacting on the successful adoption of the new technology/innovation.
<b>3: Defined</b>	Institutional standards for assessing the success of new technologies/innovations defined and applied to all courses. Teaching staff are provided with templates, examples, training and support in using the range of technology resources available to support student learning.
<b>2: Planned</b>	Formal plan for assessing the success of new technologies/innovations explicit within the delivery of individual courses.
<b>1: Initial</b>	Success of new technologies/innovations assessed informally or in an incomplete fashion and on a course by course basis.
<b>0: Not performed</b>	No analysis of success or failure of technologies undertaken.

**Table E4-1:** Descriptions of process practices by capability level

### Sector Performance

Capability in this process was very weak across the sector, possibly reflecting the lack of data and analysis of e-learning discussed in earlier processes in this area. The use of a formal design and development process for e-learning by Universities B and E is having some impact on their assessed capability, as is the formal approach adopted by Polytechnic X for the deployment of new technology. There is room for significant improvement across the sector. Another contributing reason for this poor result could be the culture of ad-hoc development that still dominates e-learning, individual teaching staff pursuing their own agendas are unlikely to generate empirical evidence of success or failure as they are usually focused on particular local concerns.

Capability improvement in this process is linked to that of process E3 in that clear summative data and metrics need to be identified and collected before the impact of technology, positive or otherwise, can be formally assessed by institutions. It is apparent that formal development processes with explicit review and evaluation phases will also improve performance.

E4: Success of technology/innovation used as a measure of effectiveness within courses/programmes					
	1	2	3	4	5
University A	Partially adequate	Partially adequate	Partially adequate		
University B	Largely adequate	Largely adequate	Partially adequate		
University C	Partially adequate				
University D	Partially adequate				
University E	Largely adequate	Largely adequate	Partially adequate	Partially adequate	
University F	Partially adequate				
Polytechnic X	Largely adequate	Largely adequate			
Polytechnic Y	Partially adequate	Partially adequate			
Polytechnic Z	Partially adequate	Partially adequate	Partially adequate		

Not practised/not adequate  
  Partially adequate  
  Largely adequate  
  Fully adequate  
  Not assessed

**Table E4-2:** Comparison of process capability across the New Zealand tertiary sector

## Process E5.

*Intended learning outcomes are reviewed regularly to ensure clarity, utility, and appropriateness*

### Process Description

As noted in process L7, clear, challenging, and complete learning outcomes or objectives are essential for guiding and supporting students engaged in e-learning (Laurillard, 2002). These should cover the range of cognitive levels (Bloom *et al.*, 1956) and should be seen as a tool to assist teaching staff in the design and development of courses and students in their learning (Hillesheim, G., 1998). Maintaining these statements as effective tools for students must include the regular review and updating of the objectives, particularly as the pedagogy and technology are updated (Sherry, 2003).

This process is one of the Quality on the Line evaluation and assessment benchmarks (IHEP, 2000) and is also part of the WCET guidelines (WCET, 2000) and CanREGs (Barker, 2002).

Evidence of capability in this process is seen through the use of clear and regularly updated lists of objectives covering a range of cognitive and practical outcomes that are explicitly used to design elements of courses and are communicated to students in a consistent fashion throughout the course. The rationale for these should be made explicit through the design and development process and formal plans for review and updating should be part of the development and review processes. Policy should require regular review and set standards for how often this occurs and for assessing the quality of learning objectives. Templates and guidelines should be provided that assist in the development, maintenance and use of these lists by staff and students. Staff should be provided with training and development opportunities to assist them in their use of learning objectives in courses.

Table E5-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Changing learning outcomes are used to inform the process of supporting and resourcing existing courses and incorporated into plans for new courses. Strategic planning of teaching and learning across the institution is used to determine new or modified outcomes that are promulgated to courses and programmes.
<b>4: Managed</b>	Outcomes of review processes are collected and reports detailing the changes and the reasons generated regularly.
<b>3: Defined</b>	Institutional standards for learning outcomes are defined, including the requirement for regular review and updating by teaching staff. Training and development opportunities are provided for teaching staff in how to design and use learning objectives to support student learning.
<b>2: Planned</b>	Learning outcomes expressed formally and updated by teaching staff as the course materials are maintained and changed.
<b>1: Initial</b>	Learning outcomes are created and maintained informally by the teaching staff.
<b>0: Not performed</b>	No explicit learning outcomes.

**Table E5-1:** Descriptions of process practices by capability level

### Sector Performance

Performance in this area is related in some extent to the formality with which learning objectives are considered and the way they are used in courses (see also processes L1 and L7). The results are consistent with the perception that learning objectives are a pro-forma exercise of bureaucratic institutional control rather than a useful tool for assisting student learning.

University B has the strongest practice with the adoption of a formal development and review process that includes consideration of student learning objectives. University A has better linkage of the learning objectives throughout some of its courses and this makes the benefits of reviewing and updating more

obvious. Practice across the sector would be enhanced, in this area and others (processes L1 and L7 in particular), if more templates and examples modeling effective use of learning objectives were available. If there was more active consideration of how a given learning objective relates to particular course elements, such as assessment, then it is likely that the quality of both would be significantly enhanced.

<b>E5: Intended learning outcomes are reviewed regularly to ensure clarity, utility, and appropriateness</b>					
	1	2	3	4	5
University A	Largely adequate	Largely adequate	Largely adequate	Largely adequate	Not practised/not adequate
University B	Fully adequate	Fully adequate	Partially adequate	Partially adequate	Not practised/not adequate
University C	Fully adequate	Partially adequate	Partially adequate	Partially adequate	Not practised/not adequate
University D	Largely adequate	Partially adequate	Partially adequate	Partially adequate	Not practised/not adequate
University E	Largely adequate	Partially adequate	Partially adequate	Partially adequate	Not practised/not adequate
University F	Largely adequate	Partially adequate	Partially adequate	Partially adequate	Not practised/not adequate
Polytechnic X	Largely adequate	Partially adequate	Partially adequate	Partially adequate	Not practised/not adequate
Polytechnic Y	Fully adequate	Largely adequate	Partially adequate	Partially adequate	Not practised/not adequate
Polytechnic Z	Largely adequate	Largely adequate	Partially adequate	Partially adequate	Not practised/not adequate

Not practised/not adequate  
  Partially adequate  
  Largely adequate  
  Fully adequate  
  Not assessed

**Table E5-2:** Comparison of process capability across the New Zealand tertiary sector

## Process E6.

*Instructional materials are reviewed periodically to ensure they meet programme standards*

### Process Description

As part of the need for review and evaluation of the effectiveness of courses and projects it is important to ensure that they meet the needs of the institution and its programmes. Review of the materials regularly ensures that they continue to meet the objectives of the students, the course and the wider programme context as well as ensuring that the online materials referenced are still appropriate and available.

This process is one of the Quality on the Line course support benchmarks (IHEP, 2000) and is also part of the CanREGs (Barker, 2002).

Evidence of capability in this process is seen through the inclusion of a formal content and materials review plan in the design and development of projects and courses. Policy and guidelines should require these reviews be conducted formally and provide guidance on what aspects require checking. Teaching staff are provided with templates, examples, training and support in using course materials to support student learning.

Table E6-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Results of course reviews are used to determine support and resourcing for existing courses and used to plan the (re)development of courses. Programme standards and staff development requirements are reevaluated when new technologies/innovations are introduced.
<b>4: Managed</b>	Results of course reviews are collected and reports of compliance generated regularly.
<b>3: Defined</b>	Institutional standards for programme materials defined along with processes for regular review of all courses. Templates and examples are provided along with opportunities for staff development.
<b>2: Planned</b>	Courses have planned review of materials that extends beyond high level, infrequent reviews.
<b>1: Initial</b>	Reviews of course materials are infrequent, informal, incomplete or undertaken at a high level.
<b>0: Not performed</b>	No programme standards.

**Table E6-1:** Descriptions of process practices by capability level

### Sector Performance

The lack of formal development approaches in most institutions is clearly apparent with the absence of review processes specifically designed to consider e-learning issues and the ability of materials to support student learning. In general there is a lack of policy or guidance motivating anything other than high-level reviews that fail to consider the impact that e-learning may have on student use of and needs for course materials.

The formal review process of University B is clearly the best practice, being integrated into the design and development of e-learning projects. As noted earlier, an important aspect of any course review is that it be independent. The commonly adopted approach of requiring a post-project report by an involved member of the teaching staff (such as used by University E) is unlikely to provide more than a superficial overview of the project and its impact and may not address particular limitations that may be present (see also process E2). If teaching staff are involved in the review process, they should be provided with examples and staff development opportunities to assist them in being effective, particularly when the review is stimulated by changes in technology and pedagogy.

E6: Instructional materials are reviewed periodically to ensure they meet programme standards					
	1	2	3	4	5
University A	Partially adequate	Partially adequate	Partially adequate		
University B	Fully adequate	Fully adequate	Partially adequate	Partially adequate	
University C	Partially adequate	Partially adequate	Partially adequate		
University D	Partially adequate	Partially adequate	Partially adequate		
University E	Largely adequate	Partially adequate	Partially adequate		
University F	Partially adequate	Partially adequate	Partially adequate		
Polytechnic X	Partially adequate	Partially adequate	Partially adequate		
Polytechnic Y	Partially adequate	Partially adequate	Partially adequate		
Polytechnic Z	Partially adequate	Partially adequate	Largely adequate		

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**Table E6-2:** Comparison of process capability across the New Zealand tertiary sector



## Process E7.

*Teaching staff capability in making the transition from classroom to online teaching is formally assessed during training*

### Process Description

As noted in process D6, teaching staff need training and support if they are to be effective with new technologies and the associated pedagogies. Just as students benefit from the use of formative and summative assessment, teaching staff can also benefit from formal assessments of their capability that can be used to guide ongoing training and support as well as informing strategy and policy on resourcing for staff development.

This process is one of the Quality on the Line faculty support benchmarks (IHEP, 2000).

Evidence of capability in this process is seen through the use of formal capability assessments during training and as part of the design and development process for courses and projects. Evidence from these assessments should be used to determine additional support and training allocations. Policy and guidelines should mandate these assessments and require their use in ongoing staff development. Regular overview reports of capability should inform strategies for ongoing resourcing and development of e-learning.

Table E7-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Measures of teaching staff capability to use e-learning technology and pedagogies effectively are used to determine support and resourcing for training and are used to plan for (re)development of courses.
<b>4: Managed</b>	Measures of teaching staff capability to use e-learning technology and pedagogies effectively are collected and reported on regularly.
<b>3: Defined</b>	Institutional standards for assessing teaching staff capability to use e-learning technology and pedagogies effectively are defined and applied throughout training and (re)development processes.
<b>2: Planned</b>	Assessment of teaching staff capability to use e-learning technology and pedagogies effectively is done as required within individual courses and e-learning projects and resources allocated to address any shortcomings included in (re)development plans.
<b>1: Initial</b>	Assessment of teaching staff capability to use e-learning technology and pedagogies effectively is informal and is not used to inform training programmes or access to support.
<b>0: Not performed</b>	No training or assessments of teaching staff capability to use e-learning technology and pedagogies effectively undertaken.

**Table E7-1:** Descriptions of process practices by capability level

### Sector Performance

Easily the worst result for the sector of any process assessed, this clearly illustrates the informal and ad-hoc approach taken to teaching staff development in e-learning prevalent in the sector. All of the institutions offer workshops and support to teaching staff but performance by individual staff in these is not assessed and there appear to be few objective assessments of teaching staff skills in this area. The teaching qualifications offered by some institutions offer a potential opportunity for assessing performance and improving staff skills but these tend not to focus on e-learning and are in any case not required for all teaching staff.

Improvement of capability in this process is challenging and will likely only start once formal requirements for teaching qualifications and performance assessments are introduced, particularly in the university sector. University A and Polytechnic Z have made some progress by mandating attendance at training prior to allowing access to the LMS but in the absence of assessment this is of limited value.

E7: Teaching staff capability in making the transition from classroom to online teaching is formally assessed during training					
	1	2	3	4	5
University A	Partially adequate	Partially adequate			
University B					
University C				Partially adequate	
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z	Partially adequate	Partially adequate			

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**Table E7-2:** Comparison of process capability across the New Zealand tertiary sector

## Organisation: Processes associated with institutional planning and management

This process area has as its goal the maintenance of organisational processes that ensure e-learning is well managed and planned to deliver the strategic and operational outcomes required by the institution. The individual processes are directed at ensuring the administrative and organisational aspects of e-learning are high quality, efficient and effective as they transition from face-to-face processes.

The individual processes are listed below, followed by an overview of sector and institutional performance and then a detailed consideration of each process in turn.

<b>Organisation: Processes associated with institutional planning and management</b>	
O1.	A documented set of formal criteria are used to determine access to funding and other resources which support course and programme (re)development
O2.	A documented technology plan is in place and operational to ensure quality of delivery standards
O3.	A documented technology plan is in place and operational to ensure the integrity and validity of information delivered, collected and stored
O4.	Before starting a programme, students are advised of any particular requirements of that programme to ensure they possess the personal and technical skills needed for that programme
O5.	Students are provided with supplemental course information that outlines course objectives, concepts and ideas
O6.	Students are provided with supplemental course information that outlines admission requirements, tuition and fees and other relevant administration information
O7.	Students are provided with supplemental course information that outlines requirements for additional resources such as books or other materials
O8.	Students are provided with supplemental course information that outlines student support services.
O9.	Before starting a programme, students are advised of any particular technological requirements of that programme to ensure they have access to the minimal technology required by the course design

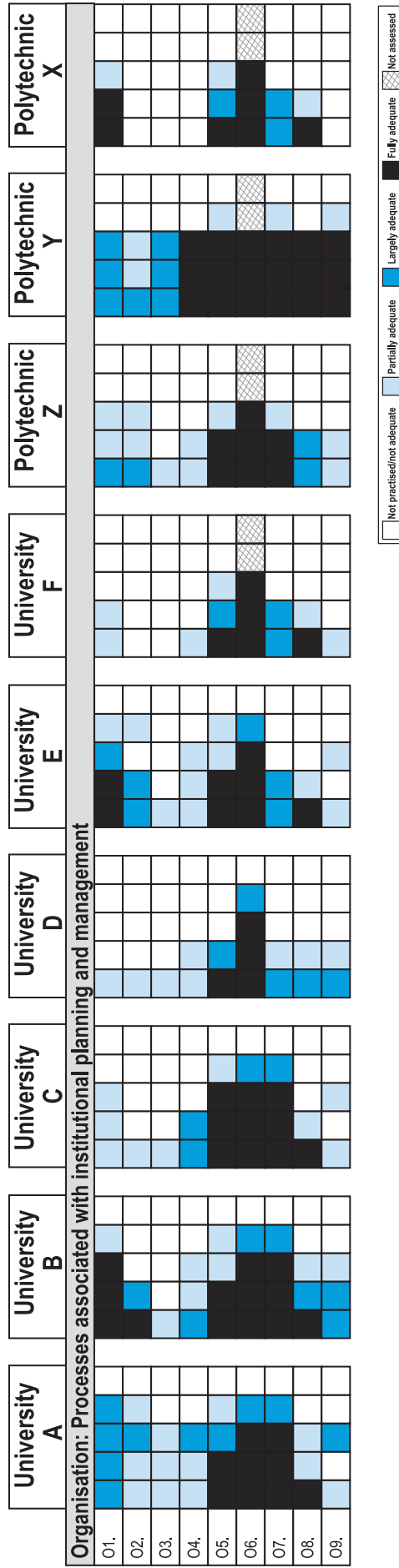
## Sector Performance

Aspects of this process area are quite strong as they build on pre-existing processes that apply for all courses irrespective of e-learning. In particular, the processes that relate to communicating essential course information (processes O5-O8) are generally adequate, if somewhat inconsistent in places.

A notable weakness across the sector is apparent in both processes O3 and O9. The weakness in process O3 represents a vulnerability in the sector as growth in LMS use continues. Much of the information in these systems is essential to the business and vulnerable to both intentional and unintentional loss or corruption. As also observed in processes C6, C7 and O4, there is a systematic lack of information provided to students in advance regarding the use of technology in courses at almost all institutions (process O9). Only one institution provided specific information in their enrolment packs regarding the use of technology in particular courses, even when this went well beyond standard use of the LMS facilities.

Polytechnic Y easily had the best communication of e-learning requirements to students seen in the sector with a clear statement on technology use and requirements in a consistent format that was available through their website prior to enrolment. Similar information was provided in the enrolment materials along with minimum requirements for access to computers and specifications for equipment when appropriate. Also useful was a short skills assessment that guided students in whether they possessed the minimum skills required and suggestions for what to do to improve skills prior to enrolment.

More discussion of sector capability is found below in the discussion for each of the processes.



## Process O1

*A documented set of formal criteria are used to determine access to funding and other resources which support course and programme (re)development*

### Process Description

Provision of expert technical and pedagogical assistance is vital if institutions are to move away from ad-hoc developments in e-learning (processes D4 and D5). Like any other scarce resource, expertise in e-learning development within an institution must be managed in a way that ensures efficient and effective use. Formal criteria which align the use of these resources with defined outcomes for the institution are essential in this process (Hagner, 2000).

This process is one of the Quality on the Line course development benchmarks (IHEP, 2000) and is also part of the CanREGs (Barker, 2002).

Evidence of capability in this process is seen in the provision of formal criteria and guidelines, mandated by policy, which provide consistency and clarity in the allocation of resources. Access to support is managed by these criteria to ensure efficient and equitable use of time and the achievement of strategic goals as well as short term requirements. Effective approaches in the local context are communicated through examples, case studies, standards and guidelines, customised for the institution, that demonstrates the benefits of the criteria used.

Table O1-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	All applications against the institutional criteria for selecting how resources and funding for e-learning technologies and projects are analysed. The information used to plan allocation of support and resourcing across all courses and programmes using similar technology or pedagogies.
<b>4: Managed</b>	Measures are collected of the success or failure of projects supported and this information reported on regularly.
<b>3: Defined</b>	Institutional criteria are defined and used for selecting how resources and funding for e-learning technologies and projects are allocated. Templates and examples are used to communicate the criteria for selection and reports of how resources were allocated are done regularly.
<b>2: Planned</b>	Resources and funding for e-learning technologies and projects are allocated but criteria for support varies on a case by case basis.
<b>1: Initial</b>	Resources and funding for e-learning technologies and projects are acquired informally or as the result of other initiatives such as research programmes.
<b>0: Not performed</b>	No formal criteria used for resourcing e-learning technologies and projects.

**Table O1-1:** Descriptions of process practices by capability level

### Sector Performance

As with process D4, performance in this area was dominated by the existence of centrally supplied resources and formal support for e-learning development. Universities B and E and Polytechnic Z particularly benefited from having staff centrally supplied for the purpose of e-learning development and a formal process for determining how these resources would be made available. University A, by comparison, adopted a more decentralised approach which made additional resources available but in a less formal way. The other institutions generally had fewer resources allocated and little ability to support projects in depth. Projects in these institutions depended much more on the skills of individual teaching staff and the resources available in their school.

The formal design and development approach adopted by University B was the strongest in this area. Access to support and development resources were controlled through a competitive process that involved clear criteria, independent assessment of proposals and an overall strategic focus. The design process

used was outlined along with standard questions for consideration when developing projects. University E was also strong but provided less information and guidance to staff on the criteria used and there was less explicit consideration of department and faculty strategies in the selection process. In both cases, these could be further strengthened by the use of formal reporting and evaluation processes to make the outcomes of the work widely available within the institution for ongoing reflection and reuse. Polytechnic Z benefited from strong central control of teaching staff workload and a central support team aligned with that control.

Regardless of the support model chosen, demonstrating the impact allocated resources are having on overall institutional and student outcomes is likely to become more important as use of e-learning and the resources allocated to it continue to grow.

<b>O1: A documented set of formal criteria are used to determine access to funding and other resources which support course and programme (re)development</b>					
	1	2	3	4	5
University A	Partially adequate	Partially adequate	Largely adequate	Largely adequate	
University B	Not practised/not adequate	Not practised/not adequate	Not practised/not adequate	Partially adequate	
University C	Partially adequate	Partially adequate	Partially adequate		
University D	Partially adequate				
University E	Not practised/not adequate	Not practised/not adequate	Largely adequate	Partially adequate	
University F	Partially adequate	Partially adequate			
Polytechnic X	Not practised/not adequate	Not practised/not adequate	Partially adequate		
Polytechnic Y	Largely adequate	Largely adequate	Largely adequate		
Polytechnic Z	Largely adequate	Partially adequate	Partially adequate		

Not practised/not adequate  
  Partially adequate  
  Largely adequate  
  Fully adequate  
  Not assessed

**Table O1-2:** Comparison of process capability across the New Zealand tertiary sector

## Process O2.

*A documented technology plan is in place and operational to ensure quality of delivery standards*

### Process Description

A risk of using technology to support learning is that poor quality technology can seriously compromise the learning outcomes (process D2) and the diversity of available technologies can encourage a range of ad-hoc and disconnected approaches that fail to build on institutional experience and success (process D1). A technology plan combines a strategic focus on the selection of technology with practical experience based on previous work in the institution to ensure that technological resources are chosen in ways that build capability rather than dilute it.

This process is one of the Quality on the Line institutional support benchmarks (IHEP, 2000) and is also part of the CanREGs (Barker, 2002) and the ADEC guiding principles (ADEC, 2002).

Evidence of capability in this process is seen in the use of a formally documented technology plan that is used to guide the selection of technologies appropriate to the local context. Formal institutional standards are used where available to inform and guide the plan. This should include existing technologies that are defined as standard by the institution and for which there is clear evidence of effectiveness and ability to be supported. The plan, along with the associated standards and guidelines, is communicated widely to encourage wider adoption and compliance throughout the institution. Policy should mandate compliance with the technology plan and explicit reference to it should be made in processes for the resourcing and development of e-learning resources.

Table O2-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Information on compliance with the technology plan is used to determine support and resourcing for existing courses and used to plan the (re)development of courses. The technology plan is re-evaluated using a formal process when new technologies/innovations are considered.
<b>4: Managed</b>	Compliance with the technology plan is measured and reported on regularly along with information on how the plan has assisted or hindered the development of e-learning projects.
<b>3: Defined</b>	An institutional technology plan is in place and compliance is required of all courses and programmes being (re)developed. Staff are provided with templates, examples and professional development to assist with using the technology plan to guide e-learning decisions. Resources for development and support are allocated with reference to the plan.
<b>2: Planned</b>	A formal institutional plan is followed for adoption of technology within individual courses and programmes.
<b>1: Initial</b>	Decisions about the technology used in individual courses are made informally without reference to any external factors or plan.
<b>0: Not performed</b>	No technology plan used to guide e-learning decisions.

**Table O2-1:** Descriptions of process practices by capability level

### Sector Performance

Only one institution in the sector (Polytechnic Y) identified a technology plan aimed at supporting e-learning and ensuring that delivery standards were maintained (see also process O3). At best, other institutions had a defined set of standard technologies that were used by a central group to support e-learning development but the processes used to select these were not documented and there was no evidence of formal standards or guidelines for wider use by the teaching staff of the institutions.

There is some evidence of higher level technology planning which may yet translate into detailed technology plans at University A and similar work is underway at other institutions, but institutional

O2

guidance of e-learning quality and technology is likely to remain difficult until formal evaluation processes measure e-learning aspects as well as traditional concerns. As with process E4, capability improvement in this process is linked to that of process E3. Clear summative data and metrics need to be identified and collected before the impact of technology, positive or otherwise, can be formally assessed by institutions and appropriate plans implemented.

<b>O2: A documented technology plan is in place and operational to ensure quality of delivery standards</b>					
	1	2	3	4	5
University A	Partially adequate	Partially adequate	Largely adequate	Partially adequate	
University B	Fully adequate	Largely adequate			
University C	Partially adequate				
University D	Partially adequate				
University E	Largely adequate	Largely adequate		Partially adequate	
University F					
Polytechnic X					
Polytechnic Y	Largely adequate				
Polytechnic Z	Largely adequate	Partially adequate	Partially adequate		

<input type="checkbox"/> Not practised/not adequate	<input type="checkbox"/> Partially adequate	<input type="checkbox"/> Largely adequate	<input type="checkbox"/> Fully adequate	<input type="checkbox"/> Not assessed
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**Table O2-2:** Comparison of process capability across the New Zealand tertiary sector



## Process O3.

*A documented technology plan is in place and operational to ensure the integrity and validity of information delivered, collected and stored*

### Process Description

In addition to being reliable and failsafe (process D2) the technology infrastructure used to support e-learning should also ensure that, as much as possible, the information within systems is protected from corruption and loss. A technology plan considering aspects of information integrity can combine a strategic view of institutional e-learning directions with practical consideration of risks and the integration with other systems within the institution.

This process is one of the Quality on the Line institutional support benchmarks (IHEP, 2000).

Evidence of capability in this process is seen in the use of a formally documented technology plan considering information integrity and reliability. This should include assessments of the security of information from intentional and unintentional loss, versioning and consistency with other systems such as student records or enrolments. Information provided by the institution, teaching staff and students should be included, as well as explicit consideration of copyright implications and reporting required by licences. There should be policy and procedures in place to deal with potential failures or compromises. Standards and guidelines should be used to communicate which technologies have been proven reliable and regular monitoring and reporting used to prove reliability and identify potential problems. Teaching staff are provided with templates, examples, training and support in maintaining course information to ensure its validity and reliability.

Table O3-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Compliance information is used to determine support and resourcing for existing technology and used to support the (re)development of courses. The institutional plan for ensuring the integrity and validity of information is reevaluated using a formal process when new technologies/innovations are considered.
<b>4: Managed</b>	Compliance with the institutional plan for ensuring the integrity and validity of information is measured and reported on regularly.
<b>3: Defined</b>	The institutional plan for ensuring the integrity and validity of information delivered, collected and stored is in place and operational.
<b>2: Planned</b>	Integrity and validity of information delivered, collected and stored is assessed and maintained formally within individual courses.
<b>1: Initial</b>	Integrity and validity of information delivered, collected and stored is assessed and maintained informally or incompletely within individual courses and without reference to any external factors or plan.
<b>0: Not performed</b>	No plan in place to ensure the integrity and validity of information delivered, collected and stored.

**Table O3-1:** Descriptions of process practices by capability level

### Sector Performance

Across the sector, capability in this process was one of the weakest assessed. Despite the adoption of LMSs and their use as repositories for large amounts of teaching information and student work, there is little formal consideration of information integrity. The weakness in process O3 represents vulnerability in the sector as growth in institutional LMS use continues. Much of the information in these systems is essential to the business and vulnerable to both intentional and unintentional loss or corruption.

Despite the low capability assessed, it is important to note that institutional LMS facilities are generally managed in a way consistent with other institutional systems but, as noted in process D2, in many cases growth in usage appears to have overtaken policy aspects. Polytechnic Y had the strongest capability by

virtue of a formal outsourcing arrangement that included assurance of information integrity. As with O2, there is an absence of detailed technology plans across the sector informing the ongoing development of aspects of the e-learning projects and infrastructure. This is not to say that the individual choices are poor, but rather that the overall technical rationale is not explicitly communicated and used as a tool to inform the design and development processes. Such a formal plan would make the strategic and operational utility of tools such as content management systems more apparent than when only single projects are considered.

Significant improvement in performance in this process across the sector is unlikely until content management facilities are integrated with LMSs, providing versioning and other features to ensure the integrity of the information delivered, collected and stored.

<b>O3: A documented technology plan is in place and operational to ensure the integrity and validity of information delivered, collected and stored</b>					
	1	2	3	4	5
University A	Partially adequate	Partially adequate	Partially adequate		
University B	Partially adequate				
University C	Partially adequate				
University D	Partially adequate				
University E	Partially adequate				
University F					
Polytechnic X					
Polytechnic Y	Largely adequate	Largely adequate	Largely adequate		
Polytechnic Z	Partially adequate				

Not practised/not adequate  
  Partially adequate  
  Largely adequate  
  Fully adequate  
  Not assessed

**Table O3-2:** Comparison of process capability across the New Zealand tertiary sector

## Process O4.

*Before starting a programme, students are advised of any particular requirements of that programme to ensure they possess the personal and technical skills needed for that programme*

### Process Description

As noted in processes C6, C7 and O9, the use of e-learning technologies and pedagogies is sufficiently unfamiliar to many students, and the range of possibilities so diverse, that it is important to warn students and provide them with opportunities to familiarise themselves with what to expect (Hillesheim, 1998). Many students will need to make particular arrangements to ensure that they get the most benefit from e-learning and supplying them with the information in advance ensures that they are not forced to withdraw at a later date or to struggle to raise their skills (Fredericksen *et al.*, 1999).

This process is one of the Quality on the Line course support benchmarks (IHEP, 2000) and is also part of the the WCET guidelines (WCET, 2000).

Evidence of capability in this process is seen in the incorporation of clear statements describing the use of various media and technologies and the requirements that this will impose on students. This description should also provide access to any support information or documentation. All of this should be provided publicly for students prior to enrolment and preferably also in enrolment packs. Policy should require that this information be provided and maintained along with guidelines that demonstrate how to communicate information on the standard technologies and media used in courses. Instructions for the use and support of standard technologies should be provided and maintained through a central repository.

Table O4-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Compliance information on the abilities of the student population to meet required technology skill levels used to determine the support and resourcing for courses and programmes and also for services that support the students independently of the courses and programmes.
<b>4: Managed</b>	Compliance with standards for advising students of technological requirements collected and reported on regularly along with the abilities of the student population to meet those requirements.
<b>3: Defined</b>	Institutional standards for advising students of technological requirements are defined and operational.
<b>2: Planned</b>	Formal plan for informing students of the technologies in use is in place within individual courses.
<b>1: Initial</b>	Information on technologies used in courses is supplied to students informally or is incomplete.
<b>0: Not performed</b>	No information supplied to students in advance about technologies used in courses.

**Table O4-1:** Descriptions of process practices by capability level

### Sector Performance

As noted in processes C6, C7 and also process O9, students are provided with very little information in advance on technology and other requirements for the projects and courses assessed. In most cases, students are given basic information about LMS facilities and requirements. Only Polytechnic Y listed specific requirements with the courses in their enrolment packs and catalogues.

As with process C6, the type of information needed by students is like that provided by University A once they are enrolled, such as what technology is being used, how students should use it and what contribution to the learning outcomes the technology is making (process L7). Students also need information on how communication facilities and library resources can be used, like that provided by University B (process C4).

Polytechnic Y provided a clear statement in a consistent format on technology use and requirements on students that was available through their website to all interested students prior to enrolment. Similar information was provided in the enrolment materials along with minimum requirements for access to

computers and specifications for equipment when appropriate. Also useful was a short skills assessment that guided students in whether they possessed the minimum skills required and provided suggestions for what to do to improve skills prior to enrolment.

The use of standard templates and examples that combine all of these elements, along with staff development, would significantly improve performance of this process in the sector, but the critical element remains making the information available prior to enrolment.

<b>O4: Before starting a programme, students are advised of any particular requirements of that programme to ensure they possess the personal and technical skills needed for that programme</b>					
	1	2	3	4	5
University A	Partially adequate	Partially adequate	Largely adequate		
University B	Largely adequate	Partially adequate	Partially adequate		
University C	Largely adequate	Largely adequate			
University D	Partially adequate	Partially adequate			
University E	Partially adequate	Partially adequate	Partially adequate		
University F	Partially adequate				
Polytechnic X					
Polytechnic Y	Fully adequate	Fully adequate	Fully adequate		
Polytechnic Z	Partially adequate	Partially adequate			

Not practised/not adequate  
  Partially adequate  
  Largely adequate  
  Fully adequate  
  Not assessed

**Table O4-2:** Comparison of process capability across the New Zealand tertiary sector

## Process O5.

*Students are provided with supplemental course information that outlines course objectives, concepts and ideas*

### Process Description

The importance of providing students with formal objectives for courses to assist with their learning has already been noted (processes L1 and L7). This information also needs to cover the concepts and ideas of the course to ensure that students are clear on the focus and can ensure that they are properly prepared for study (Waterhouse and Rogers, 2004).

This process is one of the Quality on the Line course support benchmarks (IHEP, 2000) and is also part of the ADEC guiding principles (ADEC, 2002) and the WCET guidelines (WCET, 2000).

Evidence of capability in the process is seen in clear documentation, complying with a consistent institutional template, setting out the course learning objectives, concepts and ideas. This information should be integrated with details of assessments and with the underlying logic clearly apparent (processes L7 and L9). Policy should require that this information be accurate, regularly reviewed and provided to students in advance of enrolment. Templates should be provided to ensure a consistent organisation and content. Elements that are standard to all courses should use wording prescribed by policy.

Table O5-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Review information used to inform allocation of resources for services that support the students independently of the courses and programmes.
<b>4: Managed</b>	Materials regularly reviewed and feedback collected from students on the clarity and utility of the supplied information.
<b>3: Defined</b>	Institutional standards are defined and operational for how students are to be advised of supplemental course information on course objectives and concepts. Standard templates and examples are provided along with staff development to support their creation and maintenance.
<b>2: Planned</b>	Formal plan for informing students of course objectives and concepts in place within individual courses.
<b>1: Initial</b>	Information on course objectives and concepts supplied to students informally or is incomplete.
<b>0: Not performed</b>	No information supplied to students on course objectives and concepts.

**Table O5-1:** Descriptions of process practices by capability level

### Sector Performance

With the proviso that course objectives are generally not documented or communicated as well as they could be (processes L1 and L7), most institutions provide clear access to this information in the course outlines or websites. These generally build on the existing processes although it was notable that University C appears to be the only university reviewed that mandates a single standard template for all courses, unlike the more controlled practices of the three polytechnics. It is unclear why more standard and consistent templates are not in wider use as course outlines mostly consist of standard information and there is a significant legal risk if the details are inaccurate.

Improvements in this area, and in related ones such as processes L7, L9 and O7, can be achieved through standard templates and examples that model effective use of information such as learning objectives and timetables. As noted in process O4, much of this information should also be provided through public websites, rather than restricted to students enrolled in the courses, as it can assist them with planning their programme of study and preparing for particular classes.

O5: Students are provided with supplemental course information that outlines course objectives, concepts and ideas					
	1	2	3	4	5
University A	Fully adequate	Fully adequate	Largely adequate	Partially adequate	Not practised/not adequate
University B	Fully adequate	Fully adequate	Partially adequate	Partially adequate	Not practised/not adequate
University C	Fully adequate	Fully adequate	Partially adequate	Partially adequate	Not practised/not adequate
University D	Fully adequate	Largely adequate	Partially adequate	Partially adequate	Not practised/not adequate
University E	Fully adequate	Fully adequate	Partially adequate	Partially adequate	Not practised/not adequate
University F	Fully adequate	Largely adequate	Partially adequate	Partially adequate	Not practised/not adequate
Polytechnic X	Fully adequate	Largely adequate	Partially adequate	Partially adequate	Not practised/not adequate
Polytechnic Y	Fully adequate	Fully adequate	Partially adequate	Partially adequate	Not practised/not adequate
Polytechnic Z	Fully adequate	Fully adequate	Partially adequate	Partially adequate	Not practised/not adequate

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**Table O5-2:** Comparison of process capability across the New Zealand tertiary sector

## Process O6.

*Students are provided with supplemental course information that outlines admission requirements, tuition and fees and other relevant administration information*

### Process Description

Consistent, clear information on the administrative aspects of courses ensures that staff are able to focus on teaching aspects rather than details of enrolment (Waterhouse and Rogers, 2004).

This process is one of the Quality on the Line student support benchmarks (IHEP, 2000) and is also part of the CanREGs (Barker, 2002) and the WCET guidelines (WCET, 2000).

Evidence of capability in the process is seen in clear documentation, complying with a consistent institutional template, setting out the administrative information. Policy should require that this information be accurate, regularly reviewed and provided to students in advance of enrolment. Templates should be provided to ensure a consistent organisation and content. Elements that are standard to all courses should use wording prescribed by policy.

Table O6-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Review information used to inform allocation of resources for services that support the students independently of the courses and programmes.
<b>4: Managed</b>	Materials regularly reviewed and feedback collected from students on the clarity and utility of the supplied information.
<b>3: Defined</b>	Institutional standards for advising students of supplemental administrative course information are defined and operational. Standard templates and examples are provided along with staff development to support their creation and maintenance.
<b>2: Planned</b>	Formal plan for informing students of administrative information in place within individual courses.
<b>1: Initial</b>	Administrative information supplied to students informally or is incomplete.
<b>0: Not performed</b>	No information supplied to students on administrative aspects.

**Table O6-1:** Descriptions of process practices by capability level

### Sector Performance

The uniformly strong result found across the sector for this process reflects the use of standard enrolment processes and information packs for all courses. The main suggestion for improvement relates to the earlier points made in processes C6, C7, O4 and also in process O9. Pre-enrolment listings for courses should provide much more information than they currently do about the technology expectations that will be placed on students and how the pedagogical approach adopted may differ significantly from what they might otherwise expect. This is important information about a course that is currently far too difficult for students to obtain prior to actually enrolling in courses.

O6: Students are provided with supplemental course information that outlines admission requirements, tuition and fees and other relevant administration information					
	1	2	3	4	5
University A	Fully adequate	Fully adequate	Fully adequate	Largely adequate	Not assessed
University B	Fully adequate	Fully adequate	Fully adequate	Largely adequate	Not assessed
University C	Fully adequate	Fully adequate	Fully adequate	Largely adequate	Not assessed
University D	Fully adequate	Fully adequate	Fully adequate	Largely adequate	Not assessed
University E	Fully adequate	Fully adequate	Fully adequate	Largely adequate	Not assessed
University F	Fully adequate	Fully adequate	Fully adequate	Not assessed	Not assessed
Polytechnic X	Fully adequate	Fully adequate	Fully adequate	Not assessed	Not assessed
Polytechnic Y	Fully adequate	Fully adequate	Fully adequate	Not assessed	Not assessed
Polytechnic Z	Fully adequate	Fully adequate	Fully adequate	Not assessed	Not assessed

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**Table O6-2:** Comparison of process capability across the New Zealand tertiary sector



## Process O7.

*Students are provided with supplemental course information that outlines requirements for additional resources such as books or other materials*

### Process Description

Consistent, clear information on the materials required for courses ensures that staff are able to focus on teaching aspects rather than communicating this information to students (Waterhouse and Rogers, 2004).

This process is one of the Quality on the Line student support benchmarks (IHEP, 2000).

Evidence of capability in the process is seen in clear documentation, complying with a consistent institutional template, setting out the necessary information. Policy should require that this information be accurate, regularly reviewed and provided to students in advance of enrolment. Templates should be provided to ensure a consistent organisation and content. Elements that are standard to all courses should use wording prescribed by policy.

Table O7-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Review information used to inform allocation of resources for services that support the students independently of the courses and programmes.
<b>4: Managed</b>	Materials regularly reviewed and feedback collected from students on the clarity and utility of the supplied information.
<b>3: Defined</b>	Institutional standards for advising students of supplemental course information on resources are defined and operational. Standard templates and examples are provided along with staff development to support their creation and maintenance.
<b>2: Planned</b>	Formal plan for informing students of resource information in place within individual courses.
<b>1: Initial</b>	Resource information supplied to students informally or is incomplete.
<b>0: Not performed</b>	No information supplied to students on resource requirements.

**Table O7-1:** Descriptions of process practices by capability level

### Sector Performance

As with processes O5 and O6, the strong result seen in the sector for this process reflects an extension of standard practice for all courses. The main weakness, shared with process C5, is the inconsistency of how the information is provided and the difficulty in getting the information prior to enrolment.

Improvements in this process, and in related ones such as L7, L9 and O5, can be achieved through standard templates and examples that model effective use of information such as learning objectives and timetables. Much of this information should also be provided through public websites, rather than restricted to students enrolled in the courses, as it can assist them with planning their programme of study and preparing for particular classes.

O7: Students are provided with supplemental course information that outlines requirements for additional resources such as books or other materials					
	1	2	3	4	5
University A	Fully adequate	Fully adequate	Fully adequate	Largely adequate	
University B	Fully adequate	Fully adequate	Fully adequate	Largely adequate	
University C	Fully adequate	Fully adequate	Fully adequate	Largely adequate	
University D	Largely adequate	Partially adequate			
University E	Largely adequate	Largely adequate			
University F	Largely adequate	Largely adequate			
Polytechnic X	Largely adequate	Largely adequate			
Polytechnic Y	Fully adequate	Fully adequate	Fully adequate	Partially adequate	
Polytechnic Z	Fully adequate	Fully adequate	Partially adequate		

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**Table O7-2:** Comparison of process capability across the New Zealand tertiary sector

## Process O8.

*Students are provided with supplemental course information that outlines student support services*

### Process Description

Consistent, clear information on the full range of support available to students beyond that of technology assistance (processes C5 and C8) is essential. The use of e-learning to remove the constraint that students attend courses face-to-face does not remove the need for institutions to provide as full a range of support services as possible (Sewart, 1993).

This process is one of the Quality on the Line student support benchmarks (IHEP, 2000) and is also part of the WCET guidelines (WCET, 2000).

Evidence of capability in the process is seen in clear documentation, complying with a consistent institutional template, setting out the information necessary for accessing all available student services. Policy should require that this information be accurate, regularly reviewed and provided to students in advance of enrolment. Templates should be provided to ensure a consistent organisation and content. Elements that are standard to all courses should use wording prescribed by policy.

Table O8-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Review information used to inform allocation of resources for services that support the students independently of the courses and programmes.
<b>4: Managed</b>	Materials regularly reviewed and feedback collected from students on the clarity and utility of the supplied information.
<b>3: Defined</b>	Institutional standards for advising students of supplemental course information on support services are defined and operational. Standard templates and examples are provided along with staff development to support their creation and maintenance.
<b>2: Planned</b>	Formal plan for informing students of student support services in place within individual courses.
<b>1: Initial</b>	Information on student support services supplied to students informally or is incomplete.
<b>0: Not performed</b>	No information supplied to students on student support services.

**Table O8-1:** Descriptions of process practices by capability level

### Sector Performance

In all cases, this information was supplied to students through the enrolment materials, although the amount of information provided varied significantly. Given the importance of these services and the need that students make use of them if necessary, this information could be presented in a more helpful way than commonly seen.

The strong set of services available from Polytechnic Y and the effectiveness with which the information is conveyed to students is clearly apparent. University B provided very strong practice of this process through a section of the course aimed at assisting students with finding help for a variety of educational and personal concerns. This is ideal information to be templated and reused extensively within an institution rather than recreated in a variety of inconsistent and potentially inaccurate ways. The material provided by University C, while not as extensive, had the advantage of consistency as a standard course outline template was mandated and contained essential contact information.

O8: Students are provided with supplemental course information that outlines student support services					
	1	2	3	4	5
University A	Fully adequate	Partially adequate	Partially adequate		
University B		Largely adequate	Partially adequate		
University C		Partially adequate			
University D	Largely adequate	Partially adequate			
University E	Fully adequate	Partially adequate			
University F	Fully adequate	Partially adequate			
Polytechnic X	Fully adequate	Partially adequate			
Polytechnic Y	Fully adequate	Fully adequate	Fully adequate		
Polytechnic Z	Largely adequate	Largely adequate	Not practised/not adequate		

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**Table O8-2:** Comparison of process capability across the New Zealand tertiary sector



## Process O9.

*Before starting a programme, students are advised of any particular technological requirements of that programme to ensure they have access to the minimal technology required by the course design*

### Process Description

As noted in processes C6, C7 and O4, the use of e-learning technologies and pedagogies is sufficiently unfamiliar to many students, and the range of possibilities so diverse that it is important to warn students and provide them with opportunities to familiarise themselves with what to expect (Hillesheim, 1998). Many students will need to make particular arrangements to ensure that they get the most benefit from e-learning and supplying them with the information in advance ensures that they are not forced to withdraw at a later date or to struggle to raise their skills (Waterhouse and Rogers, 2004).

This process is one of the Quality on the Line student support benchmarks (IHEP, 2000) and is also part of the WCET guidelines (WCET, 2000).

Evidence of capability in this process is seen in the incorporation of clear statements describing the use of various media and technologies and the requirements that this will impose on students. This description should also provide access to any support information or documentation. All of this should be provided publicly for students prior to enrolment and preferably also in enrolment packs. Policy should require that this information be provided and maintained along with guidelines that demonstrate how to communicate information on the standard technologies and media used in courses. Instructions for the use and support of standard technologies should be provided and maintained through a central repository.

Table O9-1 sets out examples of the characteristic practices which are observed in organisations operating at each level of process capability.

Level	Practice example
<b>5: Optimised</b>	Compliance information on the abilities of the student population to meet required technology skill levels used to determine the support and resourcing for courses and programmes and also for services that support the students independently of the courses and programmes.
<b>4: Managed</b>	Compliance with standards for advising students of technological requirements collected and reported on regularly along with the abilities of the student population to meet those requirements.
<b>3: Defined</b>	Institutional standards for advising students of technological requirements are defined and operational.
<b>2: Planned</b>	Formal plan for informing students of technology requirements in place within individual courses.
<b>1: Initial</b>	Information on technology requirements supplied informally or is incomplete.
<b>0: Not performed</b>	No information on technology requirements supplied to students.

**Table O9-1:** Descriptions of process practices by capability level

### Sector Performance

As noted in processes C6, C7 and O4, students are provided with very little information in advance on technology and other requirements for the projects assessed. At most, students are given basic information about LMS facilities and requirements.

As with process C6, it was particularly notable that only one institution provided details of technologies incorporated into course delivery in their enrolment materials and packs, even when these went well beyond standard LMS facilities and were required in order to complete the course. Polytechnic Y provided a clear statement in a consistent format on technology use and requirements on students that was available through their website to all interested students prior to enrolment. Similar information was provided in the enrolment materials along with minimum requirements for access to computers and specifications for equipment when appropriate. Also useful was a short skills assessment that guided students in whether they possessed the minimum skills required and suggestions for what to do to improve skills prior to enrolment.

Across the sector, there needs to be a significant improvement in the use of information and enrolment materials to prepare students for the technology expectations that will apply in courses, particularly as use becomes more common but not yet standardised. This information needs to cover general requirements of all courses as well as exceptions or additional requirements of individual courses.

<b>O9: Before starting a programme, students are advised of any particular technological requirements of that programme to ensure they have access to the minimal technology required by the course design</b>					
	1	2	3	4	5
University A	Partially adequate		Largely adequate		
University B	Largely adequate	Largely adequate	Partially adequate		
University C	Partially adequate		Partially adequate		
University D	Largely adequate	Partially adequate			
University E	Partially adequate		Partially adequate		
University F	Partially adequate				
Polytechnic X					
Polytechnic Y		Fully adequate	Fully adequate	Partially adequate	
Polytechnic Z	Partially adequate	Partially adequate			

Not practised/not adequate  
  Partially adequate  
  Largely adequate  
  Fully adequate  
  Not assessed

**Table O9-2:** Comparison of process capability across the New Zealand tertiary sector

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# Appendix A: Consent and Information Form

## E-Learning Process Capability Determination

### Information for Participants

This questionnaire is intended to assist the process of conducting an e-learning process capability determination. This research is being undertaken to better understand the factors which result in the ability of tertiary institutions to effectively deliver e-learning in New Zealand pedagogically, administratively and to a diverse range of learners, so as to inform strategic and operational planning and decision making at the institutional and sector-wide levels.

You are invited to participate in this research and to have the e-learning process capability of your institution assessed using the model developed by the investigators. All information collected through this process will remain confidential to you, your institution and the project team performing the analysis under the direction of Dr. Stephen Marshall. Information collected will only be reported to third parties in a summary or aggregate manner that ensures confidentiality and anonymity of results.

You are asked to supply information about your institution generally and also specific information on **three** separate e-learning projects or e-learning supported courses/units undertaken recently by your institution. This information will be used to generate a preliminary analysis of e-learning process capability. The project team members may then visit in person and work with you to refine the preliminary report through the addition of extra evidence and analysis, if you indicate your willingness to so do below. No personal information is collected or used in this research.

The approach being used is an evidence-based one and depends on documentary and similar evidence of how e-learning projects or courses are conducted; this will be used to support the individual analysis results in detail. All documents will be treated in the strictest confidence and will be destroyed on completion of this project.

You will be provided with a final analysis document that will be confidential to your institution and the project team. Information from the analyses of participating institutions will be reported publicly and to the Ministry of Education (the project funder) only in anonymous and/or summary form in order to inform understanding of e-learning capability nationally and to demonstrate the utility of the approach being used. All participating institutions will have an opportunity to comment on confidential drafts of these documents prior to their release so as to correct any errors or maintain confidentiality.

If you have any questions or concerns please feel free to contact the project team leader:

Dr Stephen Marshall  
University Teaching Development Centre, Victoria University of Wellington  
PO Box 600, Wellington  
(04) 463 5205 (ph)  
[Stephen.Marshall@vuw.ac.nz](mailto:Stephen.Marshall@vuw.ac.nz)

**An electronic copy of the questionnaire and this information sheet is available from [Stephen.Marshall@vuw.ac.nz](mailto:Stephen.Marshall@vuw.ac.nz) on request**

# E-Learning Process Capability Determination

Please read and retain the information sheet and if you are prepared to be involved in this study, complete and return the consent below to:

Dr Stephen Marshall  
University Teaching Development Centre, Victoria University of Wellington  
PO Box 600, Wellington  
(04) 463 5205 (ph)  
[Stephen.Marshall@vuw.ac.nz](mailto:Stephen.Marshall@vuw.ac.nz)

## Consent to participate in study

Name of Institution: \_\_\_\_\_

Your name: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

I would be prepared to be visited by the project team in order to refine the initial analysis

## Appendix B: Questionnaire

### E-Learning Process Capability Determination

#### Institutional Demographics

*This information is being collected in order to provide a means of contextualizing and grouping analysis outcomes for comparison and meaningful summary reporting. Care will be taken to ensure that the reporting categories used are wide and general enough to avoid any identification of participating institutions or individuals through meta-analysis.*

Name of Institution: \_\_\_\_\_

**Please supply this information for the last calendar year – 2003, not the current year**

\_\_\_\_\_ [D1] Total institutional revenue

\_\_\_\_\_ [D2] Total revenue from student fees and government fee top-ups

\_\_\_\_\_ [D3] Total number of teaching staff (EFTS) – please do not include staff who only conduct research, but include teaching assistants and administrative staff employed specifically to support teaching delivery

\_\_\_\_\_ [D4] Total number of students (EFTS)

\_\_\_\_\_ [D5] Total number of students (people)

\_\_\_\_\_ [D6] Percentage of students engaged in full-time study (EFTS)

\_\_\_\_\_ [D7] Percentage of students engaged in fully distance delivered study (EFTS) – no on-campus attendance required

\_\_\_\_\_ [D8] Percentage of students engaged in fully online study (EFTS) – no on-campus attendance required

\_\_\_\_\_ [D9] Percentage of mature (adult entry) students (EFTS)

\_\_\_\_\_ [D10] Total number of different courses/units taught

\_\_\_\_\_ [D11] Total number of courses/units taught in fully distance delivery

\_\_\_\_\_ [D12] Total number of courses/units taught in fully online mode

# Project/Course Self Assessment Questionnaire 1

**Please complete one project questionnaire for each project or course being used as evidence of e-learning process capability. We are interested in e-learning projects which are discrete entities and which were undertaken to support students learning. This can include the development of individual resources (such as CD's, videos etc), implementation of shared infrastructure (such as a student learning management system like Blackboard), or entire courses or units developed or redeveloped with e-learning objectives in mind.**

*Note: projects or courses should be representative rather than chosen because of their exemplary nature. If the project attracted special support or was unusual in how it was conducted, that should be noted below.*

Supporting material

**Wherever possible, please attach copies of original project or course information documents so that these can be analysed for supporting evidence of e-learning process capability. Please do not supply actual course or student material. All such materials will be treated in the strictest confidence and used only for this project.**

Completion of the form:

**If a question does not apply in the case of the particular project or course, please indicate by writing n/a in the space provided.**

**If you are unable to answer a particular question, please indicate why if possible.**

**If the answer to a question is provided in attached documents feel free to just refer to that document rather than supplying a separate answer.**

**If the same answer applies for multiple projects/courses feel free to indicate this rather than repeating information.**

[P1-1] Name of the project/course: \_\_\_\_\_

[P1-2] Person responsible for project/course: \_\_\_\_\_

[P1-3] Project manager/Course developer (if different): \_\_\_\_\_

[P1-4] Total project/course budget: \_\_\_\_\_

*If a project/course budget document was prepared, please attach*

*If a project/course cost analysis was conducted on completion, please attach*

[P1-5] If this project/course attracted special support or was unusual in how it was conducted, please describe this in detail (*attach a separate document if necessary*):

[P1-6] How was funding for the development of this project deliverable/course secured?

*Please include copies of any competitive criteria or institutional schemes used in securing of funds*

[P1-7] Please identify the learning objectives for this project deliverable/course.

*Please attach the course outline or introductory document for students if relevant*

[P1-8] Please identify how the project deliverable/course supports interaction between teaching staff and between students either individually or in groups.

*Please list all modes or forms of communication and indicate how often each is used in practice (for example, lectures, discussion forums, email etc.).*

[P1-9] How were students informed about these communication modes? Please indicate for each mode identified in P8.

*Please include copies of the information supplied*

[P1-10] Were students provided with information on how they would be responded to in each mode?

Please indicate for each mode identified in P7.

*Please include copies of the information supplied*

[P1-11] Can you provide examples of the type of feedback provided to students who were making use of the project deliverable or during the course? (General examples rather than specific are sufficient)

*Please attach any documents analyzing the feedback provided overall in this project/course*

[P1-12] Can you describe ways in which the project deliverable/course support student's conducting of research?

[P1-13] Can you provide details of how student learning is assessed in this project deliverable/course?

*Please attach any documents describing assessment processes & internal standards complied with*

[P1-14] Can you provide details of how student work was timetabled and deadlines communicated?

*Please indicate if students had any involvement in negotiating these timeframes*

[P1-15] What specific aspects of the project deliverable/course ensure accessibility?

*Please attach any documents describing testing or evaluation of accessibility*

[P1-16] What internal and external standards for teaching materials (if any) did the project/course comply with?

*Please attach documents describing any internal standards*

[P1-17] Is there any technology plan or strategy that defines standards or specifications for this project deliverable/course?

*Please include copies of any institutional technology plan or e-learning strategy*

[P1-18] What steps were taken to ensure the reliability and robustness of technology used in the project deliverable/course?

*Please attach any documents describing testing or evaluation of specific technologies used*

[P1-19] How was the decision made to use each different technology incorporated into the project deliverable/course?

*Please attach any documents describing testing or evaluation of specific technologies used*

[P1-20] What technical support was available to teaching staff for developing this project deliverable/course?

*Please attach documents describing the technical support available and any service level agreement for this support*

[P1-21] What technical support is available to teaching staff for delivering this project deliverable/course?

*Please attach documents describing the technical support available and any service level agreement for this support*

[P1-22] Please describe any training or support available to staff making use of e-learning approaches in their teaching

*Please attach any documents describing this training/support as well as any evaluation or feedback reports relating to its effectiveness*

[P1-23] What institutional infrastructure supports the development and delivery of this project/course?

*This includes people, technological infrastructure such as computers and networks and administrative support*

*Please include copies of any related service level agreements or descriptions*

[P1-24] What access to wider/external information resources is provided to students as part of the project deliverable/course?

[P1-25] What support or training is provided for students and teaching staff in the use of information resources in the context of this project deliverable/course?

*Please provide copies of any evaluations or analysis of performance of this support/training that have been conducted*

[P1-26] What support or training is provided for students and teaching staff in the use of e-learning technology in the context of this project/course?

*Please provide copies of any evaluations or analysis of performance of this support/training that have been conducted*

[P1-27] What support or training is provided for students and teaching staff in the use of information resources generally by the institution?

*Please provide copies of any evaluations or analysis of performance of this support/training that have been conducted as well as any service level agreements or statements*

[P1-28] What support or training is provided for students and teaching staff in the use of e-learning technology generally by the institution?

*Please provide copies of any evaluations or analysis of performance of this support/training that have been conducted as well as any service level agreements or statements*

[P1-29] In what ways was this project/course evaluated? Include evaluation of student outcomes as well as any other performance measure evaluated (including financial and technical).

*Please include any evaluation reports that have been produced for this project/course*

*Please provide any documents outlining institutional policies for project or course evaluation*

[P1-30] How was any evaluation conducted or feedback collected from teaching staff involved in this project deliverable/course?

*Please include copies of any reports resulting from this evaluation/feedback*

[P1-31] How were students informed about the requirements of this project deliverable/course?

*Please include copies of information supplied to students including course outlines or other promotional material and an indication of when each piece of information was supplied*

[P1-32] How were students informed about the support available for this project deliverable/course?

*Please include copies of information supplied to students including course outlines or other promotional material and an indication of when each piece of information was supplied*

[**Note:** two further project questionnaires and response areas for questions omitted for brevity]

# Appendix C: Sector process capability comparisons

**L1: Courses are designed to require students to engage themselves in analysis, synthesis, and evaluation as part of their course and program requirements**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate 
  Partially adequate 
  Largely adequate 
  Fully adequate 
  Not assessed

**L2: Student interaction with teaching staff and other students is an essential characteristic and is facilitated through a variety of ways**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate 
  Partially adequate 
  Largely adequate 
  Fully adequate 
  Not assessed

**L3: Teaching staff clearly communicate how communication channels should be used during a course or programme**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate 
  Partially adequate 
  Largely adequate 
  Fully adequate 
  Not assessed

**L4: Teaching staff manage student expectations over the type and timeliness of responses to student communications**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate 
  Partially adequate 
  Largely adequate 
  Fully adequate 
  Not assessed

**L5: Feedback to student assignments and questions is constructive and provided in a timely manner**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate 
  Partially adequate 
  Largely adequate 
  Fully adequate 
  Not assessed

**L6: Students are instructed in the proper methods of effective research, including assessment of the validity of resources**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate 
  Partially adequate 
  Largely adequate 
  Fully adequate 
  Not assessed

**L7: Learning outcomes for each course are summarized in a clearly written, straightforward statement**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate 
  Partially adequate 
  Largely adequate 
  Fully adequate 
  Not assessed

**L8: Assessment of students communicates high expectations**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate 
  Partially adequate 
  Largely adequate 
  Fully adequate 
  Not assessed

**L9: Student work is subject to clearly communicated timetables and deadlines**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate 
  Partially adequate 
  Largely adequate 
  Fully adequate 
  Not assessed

**L10: Courses are designed to support a diversity of learning styles and to ensure accessibility**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate 
  Partially adequate 
  Largely adequate 
  Fully adequate 
  Not assessed

**D1: Guidelines regarding minimum standards are used for course development, design and delivery**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate 
  Partially adequate 
  Largely adequate 
  Fully adequate 
  Not assessed

**D2: The reliability of the technology delivery system is as fail-safe as possible**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate 
  Partially adequate 
  Largely adequate 
  Fully adequate 
  Not assessed

**D3: Learning outcomes, not the availability of existing technology, determine the technology being used to deliver course content**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate 
  Partially adequate 
  Largely adequate 
  Fully adequate 
  Not assessed

**D4: Technical assistance in course development is available to teaching staff**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate 
  Partially adequate 
  Largely adequate 
  Fully adequate 
  Not assessed

**D5: Teaching staff are encouraged to use technical assistance when (re)developing courses**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate 
  Partially adequate 
  Largely adequate 
  Fully adequate 
  Not assessed



**D6: Teaching staff are assisted in the transition from classroom teaching to online instruction**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate
  Partially adequate
  Largely adequate
  Fully adequate
  Not assessed

**C1: A centralized system provides support for building and maintaining the e-learning infrastructure**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate
  Partially adequate
  Largely adequate
  Fully adequate
  Not assessed

**C2: Students have access to sufficient library resources that may include a "virtual library" accessible through the World Wide Web**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate
  Partially adequate
  Largely adequate
  Fully adequate
  Not assessed

**C3: Teaching staff and students agree upon expectations regarding times for student assignment completion and staff response**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate
  Partially adequate
  Largely adequate
  Fully adequate
  Not assessed

**C4: Students are provided with hands-on training and information to aid them in securing material from a range of sources consistent with the discipline or subject.**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate
  Partially adequate
  Largely adequate
  Fully adequate
  Not assessed

**C5: Students have convenient access to technical assistance throughout the duration of the course/program**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate
  Partially adequate
  Largely adequate
  Fully adequate
  Not assessed

**C6: Students are provided with detailed instructions regarding the electronic media used in a course prior to commencing it**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate
  Partially adequate
  Largely adequate
  Fully adequate
  Not assessed

**C7: Students are able to practice with any technologies prior to commencing a course**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate
  Partially adequate
  Largely adequate
  Fully adequate
  Not assessed

**C8: Questions directed to student service personnel are answered accurately and quickly**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate
  Partially adequate
  Largely adequate
  Fully adequate
  Not assessed

**C9: A structured system is in place to address student complaints**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate
  Partially adequate
  Largely adequate
  Fully adequate
  Not assessed

**C10: Teaching staff training and assistance continues through the progression of the online course**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate
  Partially adequate
  Largely adequate
  Fully adequate
  Not assessed

**C11: Teaching staff are provided with support resources to deal with issues arising from student use of electronically-accessed data**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate
  Partially adequate
  Largely adequate
  Fully adequate
  Not assessed

**E1: The programme's educational effectiveness is formatively and summatively assessed with multiple, standards based, and independent evaluations**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate
  Partially adequate
  Largely adequate
  Fully adequate
  Not assessed

**E2: The programme's teaching/learning process is formatively and summatively assessed with multiple, standards based, and independent evaluations**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate
  Partially adequate
  Largely adequate
  Fully adequate
  Not assessed

**E3: Summative data such as enrolment numbers, completion rates, and costing is used as a measure of effectiveness within course/programmes**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate
  Partially adequate
  Largely adequate
  Fully adequate
  Not assessed

**E4: Success of technology/innovation used as a measure of effectiveness within courses/programmes**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**E5: Intended learning outcomes are reviewed regularly to ensure clarity, utility, and appropriateness**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**E6: Instructional materials are reviewed periodically to ensure they meet programme standards**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**E7: Teaching staff capability in making the transition from classroom to online teaching is formally assessed during training**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**O1: A documented set of formal criteria are used to determine access to funding and other resources which support course and programme (re)development**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**O2: A documented technology plan is in place and operational to ensure quality of delivery standards**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**O3: A documented technology plan is in place and operational to ensure the integrity and validity of information delivered, collected and stored**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**O4: Before starting a programme, students are advised of any particular requirements of that programme to ensure they possess the personal and technical skills needed for that programme**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**O5: Students are provided with supplemental course information that outlines course objectives, concepts and ideas**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**O6: Students are provided with supplemental course information that outlines admission requirements, tuition and fees and other relevant administration information**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**O7: Students are provided with supplemental course information that outlines requirements for additional resources such as books or other materials**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

**O8: Students are provided with supplemental course information that outlines student support services**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

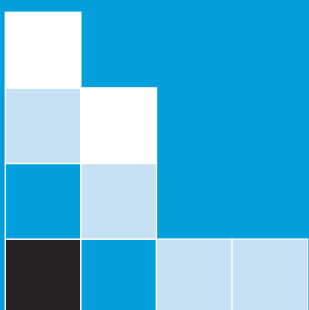
**O9: Before starting a programme, students are advised of any particular technological requirements of that programme to ensure they have access to the minimal technology required by the course design**

	1	2	3	4	5
University A					
University B					
University C					
University D					
University E					
University F					
Polytechnic X					
Polytechnic Y					
Polytechnic Z					

Not practised/not adequate  
 Partially adequate  
 Largely adequate  
 Fully adequate  
 Not assessed

	University A	University B	University C	University D	University E	University F	Polytechnic Z	Polytechnic Y	Polytechnic X
<b>Learning: Processes that directly impact on pedagogical aspects of e-learning</b>									
L1. Courses are designed to require students to engage themselves in analysis, synthesis, and evaluation as part of their course and program requirements	■	■	■	■	■	■	■	■	■
L2. Student interaction with faculty and other students is an essential characteristic and is facilitated through a variety of ways	■	■	■	■	■	■	■	■	■
L3. Teaching staff clearly communicate how communication channels should be used during a course or programme	■	■	■	■	■	■	■	■	■
L4. Teaching staff manage student expectations over the type and timeliness of responses to student communications	■	■	■	■	■	■	■	■	■
L5. Feedback to student assignments and questions is constructive and provided in a timely manner	■	■	■	■	■	■	■	■	■
L6. Students are instructed in the proper methods of effective research, including assessment of the validity of resources	■	■	■	■	■	■	■	■	■
L7. Learning outcomes for each course are summarized in a clearly written, straightforward statement	■	■	■	■	■	■	■	■	■
L8. Assessment of students communicates high expectations	■	■	■	■	■	■	■	■	■
L9. Student work is subject to clearly communicated timetables and deadlines	■	■	■	■	■	■	■	■	■
L10. Courses are designed to support a diversity of learning styles and to ensure accessibility	■	■	■	■	■	■	■	■	■
<b>Development: Processes surrounding the creation and maintenance of e-learning resources</b>									
D1. Guidelines regarding minimum standards are used for course development, design and delivery	■	■	■	■	■	■	■	■	■
D2. The reliability of the technology delivery system is as failsafe as possible	■	■	■	■	■	■	■	■	■
D3. Learning outcomes, not the availability of existing technology, determine the technology being used to deliver course content	■	■	■	■	■	■	■	■	■
D4. Technical assistance in course development is available to teaching staff	■	■	■	■	■	■	■	■	■
D5. Teaching staff are encouraged to use technical assistance when (re)developing courses	■	■	■	■	■	■	■	■	■
D6. Teaching staff are assisted in the transition from classroom teaching to online instruction	■	■	■	■	■	■	■	■	■
<b>Coordination &amp; Support: Processes around the day-to-day management and support of e-learning delivery</b>									
C1. A centralized system provides support for building and maintaining the e-learning infrastructure	■	■	■	■	■	■	■	■	■
C2. Students have access to sufficient library resources that may include a "virtual library" accessible through the World Wide Web	■	■	■	■	■	■	■	■	■
C3. Teaching staff and students agree upon expectations regarding times for student assignment completion and staff response	■	■	■	■	■	■	■	■	■
C4. Students are provided with hands-on training and information to aid them in securing material from a range of sources consistent with the discipline or subject.	■	■	■	■	■	■	■	■	■
C5. Students have convenient access to technical assistance throughout the duration of the course/program	■	■	■	■	■	■	■	■	■
C6. Students are provided with detailed instructions regarding the electronic media used in a course prior to commencing it	■	■	■	■	■	■	■	■	■
C7. Students are able to practice with any technologies prior to commencing a course	■	■	■	■	■	■	■	■	■
C8. Questions directed to student service personnel are answered accurately and quickly	■	■	■	■	■	■	■	■	■
C9. A structured system is in place to address student complaints	■	■	■	■	■	■	■	■	■
C10. Teaching staff training and assistance continues through the progression of the online course	■	■	■	■	■	■	■	■	■
C11. Teaching staff are provided with support resources to deal with issues arising from student use of electronically-accessed data	■	■	■	■	■	■	■	■	■
<b>Evaluation: Processes surrounding the evaluation and quality control of e-learning through its entire lifecycle</b>									
E1. The programme's educational effectiveness is formatively and summatively assessed with multiple, standards based, and independent evaluations	■	■	■	■	■	■	■	■	■
E2. The programme's teaching/learning process is formatively and summatively assessed with multiple, standards based, and independent evaluations	■	■	■	■	■	■	■	■	■
E3. Summative data such as enrolment numbers, completion rates, and costing is used as a measure of effectiveness within course/programmes	■	■	■	■	■	■	■	■	■
E4. Success of technology/innovation used as a measure of effectiveness within course/programmes	■	■	■	■	■	■	■	■	■
E5. Intended learning outcomes are reviewed regularly to ensure clarity, utility, and appropriateness	■	■	■	■	■	■	■	■	■
E6. Instructional materials are reviewed periodically to ensure they meet programme standards	■	■	■	■	■	■	■	■	■
E7. Teaching staff capability in making the transition from classroom to online teaching is formally assessed during training	■	■	■	■	■	■	■	■	■
<b>Organisation: Processes associated with institutional planning and management</b>									
O1. A documented set of formal criteria are used to determine access to funding and other resources which support course and programme (re)development	■	■	■	■	■	■	■	■	■
O2. A documented technology plan is in place and operational to ensure quality of delivery standards	■	■	■	■	■	■	■	■	■
O3. A documented technology plan is in place and operational to ensure the integrity and validity of information delivered, collected and stored	■	■	■	■	■	■	■	■	■
O4. Before starting a programme, students are advised of any particular requirements of that programme to ensure they possess the personal and technical skills needed for that programme	■	■	■	■	■	■	■	■	■
O5. Students are provided with supplemental course information that outlines course objectives, concepts and ideas	■	■	■	■	■	■	■	■	■
O6. Students are provided with supplemental course information that outlines admission requirements, tuition and fees and other relevant administration information	■	■	■	■	■	■	■	■	■
O7. Students are provided with supplemental course information that outlines requirements for additional resources such as books or other materials	■	■	■	■	■	■	■	■	■
O8. Students are provided with supplemental course information that outlines student support services	■	■	■	■	■	■	■	■	■
O9. Before starting a programme, students are advised of any particular technological requirements of that programme to ensure they have access to the minimal technology required by the course design	■	■	■	■	■	■	■	■	■

□	Not practised/not adequate
■	Partially adequate
■	Largely adequate
■	Fully adequate
□	Not assessed



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